ATTACHMENTS UNDER SEPARATE COVER

ITEM ATTACHMENT DETAILS

1. OFFICERS' REPORTS:

15.4 Memorabilia Items

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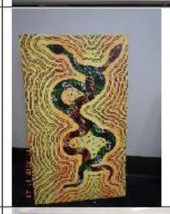
Date Audited: November 2018 – January 2020							
Item No	**Description Item**	**No. of Items:**	**Image of Item**	**Current Location of Item**	**Proposed Action (Sell/Dispose/Return/Council Asset/Donate)**	**Comments**	**Confirmed Decision on Item**
MEM0001	Brisbane Roar 2011 & 2012 Champions Back2Back Signed Soccer Ball, with a certificate of authenticity (Limited Edition 14 of 25)	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0002	XXX Gold Queensland Bulls 2006 – 2007 Signed Cricket Bat	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0003	Don Martin Old Stone Bridge, near Basle Switzerland 1999 (Painting)	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot		Possibly an art gallery item	
MEM0004	2x stitched peacocks with pink and red flowers on a green background in a dark wooden frame that spins	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0005	Helping people help themselves, The Big Issue (photograph of a man holding a copy of The Big Issue, wearing a red shirt and red hat with a neon vest)	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0006	Siegfried Manietta photographic print titled Temperate Rainforest, Tasmania 1995	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot		Possibly an art gallery item	

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MEM0007	Starlights Original Ipswich Rugby League Football Club framed jersey (celebrating 100 years of rugby league in Ipswich)	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0008	Aboriginal artwork with a photograph of a house, to Mayor Paul Pisasale from WPG & CEC	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0009	Sketch of 26 Downs Street, North Ipswich '1/25 To the City of Ipswich, yours in art – Chris S'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0010	2008 Queensland Team State of Origin Champions signed + framed jersey	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0011	Framed Greg Norman golf club and ball, with a photograph of Greg Norman and Paul Pisasale for the official opening of Brookwater Golf Club, 14th March 2002	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0012	Belvideres Original Ipswich Rugby League Football Club framed jersey, celebrating 100 years of rugby league in Ipswich	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0013	Starlights vs Belvideres framed Commemorative Centennial 'City vs Country' Jersey, celebrating 100 years of rugby league in Ipswich	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0014	Lyne Marshall Dreams and Schemes – Framed 86x98 acrylic, pastel ink on art board	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0015	Painting of a white goose on the grass in front of a brick building with white framed glass windows and greenery	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0016	Maria Field titled Ipswich Street Scene -	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0017	Shane Warne painting by Mark Sofilas	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0018	Brothers Rugby League Football Club framed jersey, Brothers A Grade Team 2014	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0019	Autographed Muhammed Ali photograph with certificate of authenticity	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0020	Triple Cox Plate Winner Kingston Town, Jockey Malcolm Johnston drawing by George S	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0021	XXXX Queensland Bulls Sheffield Shield Champions 1994-1995 framed cricket bat	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0022	Framed Heritage China from Pink Poodle Hotel	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0023	Sketch of 5 Owen Street Ipswich '1/25 To the City of Ipswich, yours in Art – Chris S'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0024	Sketch of 1 North Cote Street Ipswich '1/25 To the City of Ipswich, yours in art – Chris S'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0025	Phillip A Hine oil painting of a creek with two men tying a paddleboat to a post	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0026	'With Thanks from the Inaugural Cody Chesterfield Golf Charity Open 2003' Signed photograph of two men and a child	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0027	Aboriginal artwork of a man with a white beard and moustache with a red bandanna	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0028	Sketch of Murphy Street Ipswich '1/25 To the City of Ipswich, yours in art – Chris S'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0029	Don Martin oil canvas 2014 of Kakadu Lowlands	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0030	Abstract painting titled Explosion of Colour by M Gallagher	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0031	Oil painting titled Rio Brazil by Don Martin	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0032	Aboriginal print of a crab in a glass frame	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0033	Abstract painting of a chicken with raised paint by unknown artist	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0034	Sketch of 44 Moffatt Street Ipswich '1/25 To the City of Ipswich, yours in art – Chris S'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0035	Aboriginal canvas painting of two snakes (red and green) intertwined	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0036	Ethel Saxby Old Looking Lowood Scene Oil Painting in a green wooden frame	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0037	Callaway golf club bag	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0038	Wonder Woman sketch by Krummenie (1/3)	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0039	Vanessa Lund chicken pen canvas painting	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0040	Jinshan Peasant Painting Academy abstract chicken print	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0041	Photograph of the town clock	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0042	Elephant Sketch by A Rummenie	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0043	City of Ipswich Iconic Buildings Photograph series	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0044	Dandelion canvas painting	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0045	Villains Night Out sketch by K Rummenie (1/3)	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0046	Photograph of a historic Ipswich building	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0047	Wood etching of two koala's on a tree by Joanna Hietzke	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0048	Print of a red circle with flowers inside	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0049	Our Rainy Manchester sketch by Frances Lennon	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0050	Framed cloth painting of 3 birds (one red, black and white, one yellow and green and one red, white and brown)	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0051	Framed image of an elephant on a blue background	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0052	Painting of two white, black and yellow striped fish with the words 'Heniochus acuminatus Pennan Coralfish 'Symbol of the Magnetic North'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

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MEM0053	Watercolour painting of a duck and a bird in a nest of reeds	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0054	Framed sketch of the Princess Theatre, opening night (28/100)	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0055	Dirk Blohlaud sketch of Ipswich	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0056	Ipswich Hospice framed sketch by Stella Gibbs	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0057	Indigenous dot painting of a turtle, snake, kangaroo and emu	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0058	Sketch of a black, white, green and red bird with black feathers on its head standing over a nest of eggs	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0059	Small framed Japanese style drawing of a golden dragon	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0060	'Mekong in Flood- Vietnam' photograph by Wayne McDonnell	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0061	'Ha Long Bay, Vietnam' photograph by Wayne McDonnell	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0062	Drawing of four Indian women in the garden at night	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0063	Pink, purple and blue watercolour painting in a golden frame by B Bottom	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0064	Sketch of 40 Moffatt Street Ipswich '1/25 to the city of Ipswich, yours in art – Chris S'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0065	Aerial photograph of Riverlink	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot		10/12/18: A second aerial photograph was found, MEM0198	
MEM0066	Susan Peters Nerima Gardens landscape pastel	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0067	Artwork titled "The Environment" – Ocean and Rocks – by Val Martin (05/07)	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

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MEM0068	Photograph of the Bremer River titled 'Where else would I be?' by Lyn Mason	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0069	Photograph of waves hitting a tall rock titled 'The Pinnacle' Bruny Island Tasmania by Albert Hill	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0070	Illustration of Ipswich Grammar School and the town of Ipswich	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0071	Framed medieval stitchwork of a man on a white horse fighting a dragon	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0072	Framed canvas drawing of Bellevue Hotel	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0073	Framed sketch of a steam train	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0074	Framed mosaic painting of leaves in two squares	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

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MEM0075	Sketch on Chipboard of Franklin Street, West End Brisbane	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0076	Three framed images of Greg Norman "The Great White Shark" with a certificate of authenticity (middle photo has been autographed)	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0077	Before and after black and white photograph of St Mary's Church 1890 – 2004	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0078	Photograph of a QR train with the words '11 January 1865, Faugh-a-Ballagh hauls the first train in Queensland at the old North Ipswich Railway Workshops'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot		Another copy of this has been found, MEM0256	
MEM0079	Framed drawing of grapes	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0080	Framed painting of a mountain with two blue stick figures by Yasmin Thompson	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0081	Sunflower painting by Russell Algeo	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0082	Framed and signed 'Team of the Century Rugby League, The All Time Greatest Players 1908 – 2008'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0083	50th anniversary commemorative print titled 'The First Blue Nurse' by Helen Beaver	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0084	Framed stitchwork that says 'let your garden grow'	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0085	Large plastic golf ball, Precept 11 (signed)	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0086	2x signed Ipswich Jets footballs, sponsored by Highland bathrooms	2		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0087	Signed 2000 Olympics long jump suit from Jai Tareema	1	 	Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0088	Signed basketball 2008 sponsored by ABC learning	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0089	Signed Slazenger basketball	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0090	Signed 2004 Athens Olympics jacket from Anna Meares	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0091	Signed tshirt from Sydney 2000 Olympics from Hayley Lewis	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0092	Signed international tennis academy tshirt from Pat Cash	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0093	Signed Queensland Raceways yellow hat with black trim	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0094	Signed 2000 Sydney Olympics bag from Susie O'Neill	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0095	Signed 1980 maroon State of Origin tshirt	5		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0096	4x signed cricket singlets from Shane Watson	4		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0097	Signed cricket singlet from Tim Paine	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0098	Signed cricket polo shirt from Shane Watson	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0099	Signed track pants from Shane Watson	2		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0100	Signed tennis bag(white and green, brand Head) with a signed tennis racket from Ashleigh Barty	1		Room 1, Ground Floor Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
							
MEM0101	Pink Ipswich Jets Jerseys Luxury Paints – Ipswich Jets vs CQ Capras 10 May 2014	3		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0102	Constable T. Bear Edition 1 - 2012	7		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		Est RP$60	
MEM0102	Constable T Bear Edition 2 – 2014	3		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$60 on the CSP website	
MEM0103	Police Koala Bear	5		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$25on the Community Supporting Police (CSP) website	
MEM0103	Police Plastic Pen Holders (in packets)	9		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0104	Junior Police Caps (navy blue)	3		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$10 on the CSP website	

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MEM0104	Junior Police Polo Shirt (navy blue)	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$30 on the CSP website	
MEM0104	Soft plush police dogs from Victoria Police Blue Ribbon Foundation (2x golden named Buff and 2x grey named Dash)	4		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$25 on the Community Supporting Police (CSP) website	
MEM0104	Grey koala with a baby in its arms wearing a red ribbon and another baby on its back	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$40	
MEM0104	6x Connie the horse Queensland police plush	6		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$12 on the Community Supporting Police (CSP) website	
MEM0104	Mini Police Teddies	4		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$12 on the Community Supporting Police (CSP) website	
MEM0104	Mini German Shepherd plush dog (named Mace)	3		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		Est RP $12	
MEM0104	Beige Labrador police dog named Aussie	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$12 on the CSP website	

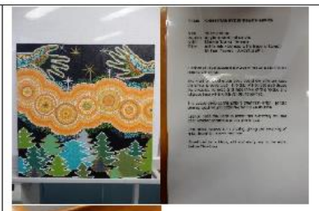
Date Audited: November 2018 – January 2020							
MEM0105	Chocolate Labrador police dog named Pez	4		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$12 on the CSP website	
MEM0105	Mini German shepherd police dog named Echo	4		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		Est RP $12	
MEM0105	Mini black Labrador police dogs named Toby	2		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		Est RP $12	
MEM0105	Mini black Labrador police dogs named Flipper	2		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		Est RP $12	
MEM0105	Mini black Labrador police dog named Tess	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		$12 on the CSP website	
MEM0106	Sydney 2000 Olympics signed bum bag (might be Jai Wallace?)	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0107	Signed 2016 Cronulla Sharks Jersey with certificate of authenticity on a black hanger in a dry cleaning bag	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0108	Signed Cronulla Sharks Jersey, sponsored by Martec and Coates Hire	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0109	Signed Rugby League World Cup Jersey from Tomahawks USA (might have been worn by a member of the team)	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0110	Signed jersey from West Tigers, sponsored by Allied Express and Bryden Lawyers	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0111	Signed Jersey from Maroons State of Origin Team 2004	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0112	Signed Brisbane Broncos Jersey	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0113	Signed Indigenous All Stars jersey, sponsored by Harvey Norman	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0114	Athens 2004 Olympics white men's polo shirt signed	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0115	Manly Warringah Sea Eagles 1947 – 2016 70th year signed jersey	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot		Slight tear in left sleeve	
MEM0116	Arthur Beetson Qld Rugby League Jersey	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0117	Ipswich SHS jersey sponsored by Cronulla Sharks and Swifts sports club	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0118	Blue Selwyn Simpson jersey titled 'Simo' and dated 29.1.76 – 28.3.10. Photograph of him running with a ball on the front and number 23 on the back	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0119	Blue jersey with 'Selwyn Simpson' on the bottom right hand corner, with a photograph in the middle titled Simo Team with a number seven on the back and Simo Team spelt out in yellow bubbles.	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			

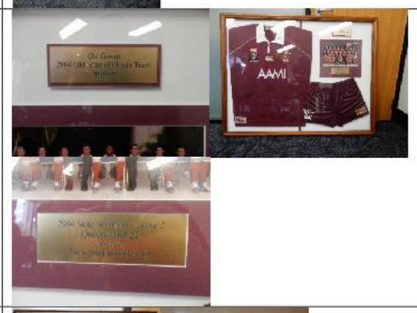
Date Audited: November 2018 – January 2020							
MEM0120	Jersey with a photograph on the front and the words 'SIMO, Graham Jack Simpson JNR Memorial Team' and the number 16 on the back	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0121	James Tamou NSW Blues Jersey, Game 3 Suncorp Stadium Brisbane 8 July 2015	1		Room 1, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0122	Muhammed Ali framed boxing glove and photograph (glove has been signed)	1		Level 3, Hayden Centre (now located in Room 2, Ground Floor Admin Building) 06.12.18: Taken to Yamanto Depot			
MEM0123	2007 Anzac Day Test Suncorp Stadium 20th April Australia 30 def. New Zealand 6 (signed)	1		Level 3, Hayden Centre (now located in Room 2, Ground Floor Admin Building) 06.12.18: Taken to Yamanto Depot			
MEM0124	Makybe Diva From Champions print signed by Glen Boss	1		Level 3, Hayden Centre (now located in Room 2, Ground Floor Admin Building) 06.12.18: Taken to Yamanto Depot			

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MEM0125	Don Bradman painting	1		Level 3, Hayden Centre (now located in Room 2, Ground Floor Admin Building) 06.12.18: Taken to Yamanto Depot			
MEM0126	2002 Michael Schumacher World champion signed hat in a frame	1		Level 3, Hayden Centre (now located in Room 2, Ground Floor Admin Building) 06.12.18: Taken to Yamanto Depot			
MEM0127	That's a Miracle State of Origin box frame w/ miniature jersey signed by Mark Coyne,	1		Level 3, Hayden Centre (now located in Room 2, Ground Floor Admin Building) 06.12.18: Taken to Yamanto Depot			
MEM0128	3x framed and signed picture titled Michael Voss Captain Brisbane Lions	1		Level 3, Hayden Centre (now located in Room 2, Ground Floor Admin Building) 06.12.18: Taken to Yamanto Depot			
MEM0129	Photograph of Johnathan Thurston kicking a football with a plaque titled Johnathan Thurston North Queensland Cowboys Captain 2007	1		Level 3, Hayden Centre (now located in Room 2, Ground Floor Admin Building) 06.12.18: Taken to Yamanto Depot			
MEM0130	Signed Poster titled 'The World's Biggest Stage, Ipswich Tennis International 2 – 10 May 2009, George Alder Tennis Centre, Ernest Street Leichhardt	2		Level 3, Hayden Centre (now located in Room 2, Ground Floor Admin Building) 06.12.18: Taken to Yamanto Depot			
MEM0131	Western Pride F.C. Signed Inaugral Jersey 2013	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			

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MEM0132	Indigenous painting titled 'Christmas Eve In Ipswich Series; by Maxene 'Macka' Bennetts	1	 	Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0133	Framed canvas painting of Brolgas Dancing by John Milenkovic	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0134	Photo series 2009 – 2013 Black Caviar	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0135	Signed +framed photos of Steve Waugh, 40th Test Caption of Australia	1	 	Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0136	Framed Photograph of Don Bradman w signed cricket bat and ball	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0137	Photograph of a steam train N° 692	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			

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MEM0138	Framed painting titled 'Over the City' by Peter Lawson	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0139	Photograph by Wayne McDonnell titled Old Roots	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0140	Note on the back: Cassandra Polard from The Big Issue, photograph of thanks from the launch in Ipswich. Photograph is blurred out and in the bottom right corner there is a man in a red shirt and cap wearing a neon green vest and crocs with socks holding a copy of The Big Issue.	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0141	Photograph of the inside of a shearing shed in a black corrugated frame	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0142	Photograph of a rural farm mill with purple skies and a plane in the air	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0143	Photograph of a shearing shed, with views of three doorways	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			

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MEM0144	Don Bradman cricket bat signed and framed with illustrations on the bat.	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0145	Framed wood inscriptions in a foreign language	2		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0146	Photograph of a pink/purple sunset over hills with fog	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0147	Photograph of a golf course with a plaque that says 'Proudly presented to IPSWICH CITY COUNCIL for sponsorship of the Brookwater Pro Am 2005'	1	 	Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0148	Framed and signed shirt from Jamie Whincup Townsville400 V8 Supercars July 9 – 11 2010	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0149	Framed and signed cricket bat titled The Champions of Cricket	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			

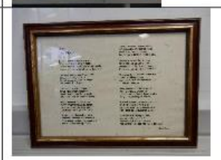
Date Audited: November 2018 – January 2020							
MEM0150	Signed and framed tennis ball with a photograph from Patrick Rafter, with a message on the photo saying 'To Mayor Paul, Love your work mate!'	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0151	Campbell & Lockyer signed jersey with a plaque saying 'Indigenous All Stars 16 – 10 NRL All Stars'	1		Room 2, Ground Floor, Administration Building 06.12.18: Taken to Yamanto Depot			
MEM0152	Signed and framed Dick Johnson V8 Telecom Race Team polo shirt sponsored by First Rock Home Loans	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0153	Signed and framed QLD State of Origin 2004 team polo shirt and shorts with a team photograph	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0154	Framed photograph of The Sun, a cricket bat, ball and trophy with a letter to certify that Commex concepts produced one copy on the Sun Newspaper	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0155	QLD State of Origin 2011 Darren Lockyer's Last Stand, Six Straight Series Wins! Signed and framed polo shirt with two x photographs on either side of the plaque.	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			

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MEM0156	Framed and signed cycling jersey from Ryan Bayley	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0157	Round 9 2001 Queensland 500, Queensland Raceway Won by Dick Johnson Racing. Signed and framed polo shirt with two name cards/mini biographies for Steven Johnson and Paul Radisich	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0158	Framed jersey from Ipswich Rangers Rugby Club Union, presented to Mayor Paul Pisasale	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0159	1980 Originals jersey signed by 2012 QLD State of Origin champions for their seventh straight win and framed	1	 	Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0160	Brisbane Bronco's first premiership 1992, framed jersey worn by Allan Langer	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			

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MEM0161	The Presidents Cup – twenty-four of the world's best Golders. Two iconic team captains. One epic event. Signed and framed poster w/ mini photographs of the golfers along the side.	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0162	Commemorating the Arrival of the First C 17 Globemaster III Aircraft to RAAF Base Amberley – 6 December 2006	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0163	Sir Donald Bradman, Australian Legend, framed photographs w/ statistics	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0164	Australian Kangaroos rugby league jersey signed and framed	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0165	Framed and signed Broncos Kevin Walters jersey, Brisbane Broncos team signatures 1993	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0166	Framed photograph of QLD Origin team celebrating, 52 QLD – NSW 06, The Decider. Game 3. State of Origin. Wed July 8th 2015.	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0167	Framed photograph of Willowbank Raceway 2016 City of Ipswich, Winternationals	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot		Frame is broken on the left hand side	

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MEM0168	Signed and framed Greg Norman polo shirt with a photograph.	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0169	SEQ Stars Inaugral season 2015-2016 signed and basketball jersey with a photograph of Paul Pisasale and an unknown woman underneath holding a basketball.	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0170	Gold Coast Titans signed and framed jersey	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0171	Framed photographs – Phar Lap, the Flemington Onslaught 1930	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0172	Qld State of Origin team photos with title '10 out of 11, WOW!' Limited edition 9 of 50	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0173	Allan Langer framed photograph of him about to catch a ball with plaque at the bottom of the photo with statistics	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0174	Photograph of the State of Origin Game 1, Suncorp Stadium 11th June 2003 with a plaque at the bottom stating the players' names from both teams.	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			

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MEM0175	Signed and framed photographs of the British Open Champions, Jack Nicklaus, Ian Baker-Finch, Greg Norman, Mark O'Meara, Gary Player and Tom Watson	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0176	XXXX Queensland Bulls 2003 – 2004 framed cricket bat with the player's names listed and signed.	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0177	The 11th Battalion at the Great Pyramid of Cheops Egypt Framed in Glass	1		Room 2, Ground Floor, Administration Building 12.02.19: Taken to Yamanto Depot			
MEM0178	Crescent Racing Craig Lowndes & Jamie Winchup, Bathurst Winners 2006 & 2007 signed and framed tshirt	1		Level 2 Admin Building, Corporate services 12.02.19: Taken to Yamanto Depot			
MEM0179	International League of Legends Ipswich 2005 signed and framed jersey, Queensland Times Maroons 46 *Drew* Mirvac Blues 46	1		Level 2 Admin Building, Corporate services 12.02.19: Taken to Yamanto Depot			
MEM0180	Framed and signed photograph of Mick Doohan racing on a motorcycle	1		Level 2 Admin Building, Corporate Services 12.02.19: Taken to Yamanto Depot			

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MEM0181	Northern Eagles 2001 signed and framed jersey	1		Level 2 Admin Building, Corporate services 12.02.19: Taken to Yamanto Depot			
MEM0182	Framed sketch of Arthur (Artie) Beetson (signed by Artie) with a plaque that says 'ARTIE, Arthur Henry Beetson OAM, The First Indigenous Australian to Captain his Country in any Sport'	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0183	Framed 'Thank You' message to Paul Pisasale from Vivica, including a CD and photographs/album artwork	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0184	Framed photographs and a signed plate, with a plaque that says Gambaro's Celebrity Cook Off 2000	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0185	The Crown and Jewel of Ipswich, framed poem by John Lambourne, East Ipswich 2012	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0186	2011 The Flood, framed poem by Laureen Adams	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0187	Belltone City of Ipswich Eye Liner stakes – 'Listed' Ipswich Turf Club June 16 2012 three photographs of race horses	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			

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MEM0188	Framed photographs presented to The Premier of Queensland 2 November 2002, Power Street – Parker Lane North Ipswich	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0189	Conservatorium Horse – City of Ipswich Eye Liner Stakes – 'Listed' Ipswich Turf Club June 15 2013, three photographs of race horses	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0190	Framed mini oval Japanese painting with Japanese writing underneath	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0191	Framed Japanese writing in a white circle with a yellowish background	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0192	Framed article/story on a red background with a sketch of a rugby player and a photograph of five people at the top, written by Rupert McCall	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0193	Tiger Woods British Open 2000, signed and framed 3x photographs (two are landscape of the course and one is of Tiger kissing a trophy)	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			
MEM0194	Photo series of Black Caviar, the wonder from down under (long, landscape frame)	1		Level 2 Admin Building, CEO's/Administrators Office 12.02.19: Taken to Yamanto Depot			

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MEM0195	Landscape photograph collage, celebrating 25 Years of the Ipswich Brisbane Broncos	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0196	Canvas of coloured handprints	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0197	Signed cricket shirt from Shane Watson	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0198	Aerial photograph of Riverlink	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot		First aerial photograph is MEM0065	
MEM0199	In Defence of Darwin By Norman Clifford Signed By Norman Clifford	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0200	Drawing of Mary and baby Jesus on a blue background	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0201	Drawing of a sporting oval by D Roach 97.	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to			

Date Audited: November 2018 – January 2020							
				Yamanto Depot			
MEM0202	Pineapple with a face wearing a bowtie, on a forklift drinking by a yellow man. Artist is: Mostert, Deb	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0203	Park2Park 31 July 2016 Thank You framed poster	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0204	Photograph of a wooden footbridge with greenery in the background, from WMAC	1		Andrew Antoniolli's Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0205	Medium sized watercolour painting of shells in a blue net by Lola Watts, est RP $175	1		Level 2 Admin Building, CEO's/Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0206	Framed and signed QLD State of Origin June 13 2012 jersey, 104 0f 180	1		Level 2 Admin Building, CEO's/Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0207	Small framed painting of a dolphin with a white mosaic, with a photograph of some kids and Paul Pisasale on the back of the frame.	1		Level 2 Admin Building, CEO's/Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot		Frame is broken	
MEM0208	City of Ipswich Eye Liner Stakes – "Listed", Ipswich Turf Club, June 16 2018 – I'm A Rippa photograph series (top photograph has Wayne Wendt in it)	1		Level 2 Admin Building, CEO's/Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			

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MEM0209	Ipswich North Rotary Club, Inaugural Police Officer of the Year awards 2013 signed by police officers	1		Level 2 Admin Building, CEO's/Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0210	Framed photograph of a yellow helicopter on a yellow background, with a plaque that says Ipswich City Council friend of CareFlight 2004	1		Level 2 Admin Building, CEO's/Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0211	Framed art paper stencil on a red background, Wenzhou University	1		Level 2 Admin Building, CEO's/Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0212	Framed boomerang with an indigenous kangaroo painted on it, presented to Mayor Paul Pisasale by Shirley O'Chin – President IDEA Inc at the Inaugural Debutante Ball Ipswich on 14 July 2007	1		Level 2 Admin Building, CEO's/Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0213	The Magnificent Seven QLD State of Origin framed Photo Series with game stats for 7 Consecutive State of Origin wins 2006 - 2011	1		Level 2 Admin Building, CEO's /Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0214	Three framed photographs of Alma's Fury, bay gelding 6 years by REFUSE TO BEND out of DANCE ATTENDANCE, City of Ipswich Eye Liner stakes – "Listed" Ipswich Turf Club June 14 2014 (both Paul Pisasale and Andrew Antoniolli are in the top left photo)	1		Level 2 Admin Building, CEO's /Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			

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MEM0215	Heart and Soul of Ipswich Aboriginal Painting in Framed Box (Artwork by Mayor Paul Pisasale and Sarah Ward)	1		Level 2 Admin Building, CEO's /Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0216	Gold helmet in a glass box with a plaque that says Celebrating 150 Years of Firefighting in the Ipswich Community 1865 to 2015	1		Level 2 Admin Building, CEO's /Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0217	Signed North Queensland Cowboys 2013 football, in a glass frame	1		Level 2 Admin Building, CEO's /Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0218	Mini ancient Chinese statue of a man holding a knife with a dragon on his stomach, in a perspex box	1		Level 2 Admin Building, CEO's /Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0219	Gold FIFA World Cup Trophy with two green bands at the base	1		Level 2 Admin Building, CEO's /Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0220	Ipswich City 100 Years 1904-2004 framed photographs with medallions	1		Level 2 Admin Building, CEO's /Administrators Office (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			

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MEM0221	Signed and framed jersey from Harry Kewell, Australian Soccer Legend	1		Tony Dileo's Office, Level 1 Hayden centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0222	Signed and framed US Open t-shirt from Patrick Rafter	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0223	Signed and framed half and half jersey, QLD Groups International Legends of League Ipswich 2007, QT Kiwis 26 defeated Mirvac Kangaroos 16	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0224	Signed and framed Socceroos 2006 jersey	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0225	Australian Olymic Gold Medallists Athens Olympic Games 2004, large framed and signed envelopes with postage stamps and a photo of the athlete	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0226	Signed and framed Brisbane Broncos – 2006 Premiers jersey with a small photograph of the team with the trophy	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			

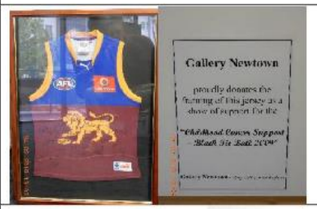
Date Audited: November 2018 – January 2020							
MEM0227	Large framed and signed sketch of Peter Brock, titled the Great Era of '82, an original painting by Greg McNeill	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0228	Framed and signed half and half jersey – QLD Group International Legends of League Ipswich 2008, QT Rest of the world 40 def. Mirvac Kangaroos 18	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0229	Framed and signed jersey, titled 'Kangaroo Captains' with a list of the previous captains around the outside from 1956 – 2003	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0230	Signed and framed jersey from David Beckham, World Soccer Legend	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0231	Casey Stoner, 2007 World Champion. Signed and framed photo collage	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0232	Framed photo collage, Shane Warne The King of Spin with a small signed card	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0233	Signed and framed cricket bat from Andrew Symonds, 2008	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			

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MEM0234	Signed and framed cricket bat from Donald Bradman with two paintings on it	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0235	Framed and signed photo collage of Darren Lockyer	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0236	Framed and signed biography of Susie O'Neil, Australian Olympic Heroes with a small photograph	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0237	Framed and signed photograph of Dan Marino with statistics on a plaque at the bottom	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0238	Signed and framed photographs titled 'Master and Apprentice', Jack Nicklaus and Tiger Woods with a blue piece of cardboard that says 'The Old Course'	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0239	Signed mini photographs of cricket players and statistics, with a larger group photos and more statistics in a frame titled The Invincibles – The Greats of '48	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			

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MEM0240	Signed and framed jersey from Canberra Raiders, 2008	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0241	Signed and framed cricket bat + photographs, William Alfred Brown (OAM) with a certificate of authenticity on the back	1	 	Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0242	Signed and framed painting by Jamie Cooper, titled 'Greatest Ever' 20/20 Athletes Edition	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0243	Framed photograph of Makybe Diva, signed by Glen Boss (jockey)	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0244	Framed mini photographs and statistics, titled The Originals Restoring Queensland Pride, Winfield State of Origin	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0245	Framed and signed Brisbane Broncos jersey, sponsored by WOW	1		Level 4 Hayden Centre (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			

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MEM0246	Framed and signed photograph of Marcia Hines with Paul Pisasale	1		Level 2, Admin building (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0247	Signed and framed photograph of Mal Meninga	1		Level 2, Admin building (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0248	Framed and signed photograph of Arthur Beetson	1		Level 2, Admin building (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0249	Framed photo collage of the 2006 Mayors Festival Ball Greatest Concert	1		Level 2, Admin building (Moved to Room 1) 12.02.19: Taken to Yamanto Depot			
MEM0250	Framed painting of two metallic rabbits in a brown box	1		Level 2, Admin building (Moved to Room 1) 12.02.19: Taken to Yamanto Depot		Front of the box says: Hand delivered 16.02.18 by Pat Boyle (Western Pride) Also has Andrew Antoniolli's name on the front of the box.	

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Item No	**Description Item**	**No. of Items:**	**Image of Item**	**Current Location of Item**	**Proposed Action (Sell/Dispose/Return/Council Asset/Donate)**	**Comments**	**Confirmed Decision on Item**
MEM0251	Framed and signed swimming cap, goggles and photograph from Susie O'Neill with a letter of authentication on the back.	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0252	Framed and signed cricket ball with two photographs from Shane Warne	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0253	Signed photograph and statistics of Glenn Lazarus, 1999 Premiership Winner	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0254	Signed photo series titled 'The Australian Cricket Legends', Frame by Frame (Jeff Thomson) Limited Edition, # 202/1500	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0255	Framed black and white photograph with a plaque that says 'Aubigny Place, To Ipswich City Council from Mater Foundation House for Life 2007)'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

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MEM0256	Photograph of a QR train with the words '11 January 1865, Faugh-a-Ballagh hauls the first train in Queensland at the old North Ipswich Railway Workshops'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot		Refer to MEM0078 for another copy.	
MEM0257	Framed photograph of a Race Car, with a plaque that says 'Queensland Events, proudly presented to Cr Paul Pisasale to recognise his hard work in promoting the growth and development of events in Ipswich'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0258	Framed and signed Lions jersey, donated by Gallery Newtown as a show of support for the 'Childhood cancer Support – Black Tie Ball 2009'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0259	Framed and signed jersey from Brisbane Lions 2005	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0260	Framed and signed jersey from Brisbane Lions 2001	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0261	Signed and framed miniature cricket bat and 2x photographs of Michael Clark	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

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MEM0262	Photo collage of airplanes from Air Lift Group presented to the people of Ipswich in recognition of their community support to Air Lift Group and our families as we work together in delivering air mobility in support of Australia. Presented by Air Commodore John Oddie AM CSC, June 2009	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0263	Framed drawing and description of the No.1 Squadron, Royal Australian Air Force RAAF Base Amberley, QLD 'The Fighting First' presented to Cr Paul Pisasale, Mayor of Ipswich, valued supporter and dear friend of 1 Squadron – RAAF Amberley	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0264	Framed painting titled 'Lion Dance' with a description/meaning on the back.	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0265	Framed photographs of Pat Cash and Pat Rafter with a signed sweatband	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0266	Framed photograph of 'Forest Jim' and Tony Pattillo, 2005 Ipswich Cup Champions, signed on the back	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

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MEM0267	Framed photograph of 'Eyeliner Stakes', Ipswich Turf Club June 18 2016	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0268	Framed newspaper, Ipswich News Thursday July 6 2006	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0269	Framed and signed photographs, from the 100th US Open at Pebble Beach Golf Links, Master and Apprentice (Tiger Woods + Jack Nicklaus)	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0270	2x Photographs, a miniature Gray Nicolls bat (signed by Matthew Hayden) and a soil sample taken from the same pitch on which the Test Record Score was made (Australia v New Zealand match) in a frame with a plaque that says Matthew Hayden, World Record – 380 Test Runs	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0271	Framed painting titled 'Sunlight & Shadow – Townsville' by Terry Lewitzka	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0272	Signed Lions jersey with a plaque that says 'Rhan Hooper Former Ipswich Cat Brisbane Lions 2006, First Ipswich Player in the AFL'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0273	Signed and framed swimsuit from Jodie Henry, 100m Freestyle Olympic Gold Medallist Athens 2004	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0274	Framed photo series of the Champions of the Turf, top 3 Prize Money Earners in Racing, plus The Heir Apparent	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0275	4x individual photos and 1x group photo of the British Open Champions Jack Nicklaus, Greg Norman, Gary Player, Tiger Woods	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0276	Framed drawing of 'Tulloch'	1	 	Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0277	Three framed photographs of Darren Lockyer (signed)	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0278	Framed and signed photograph of 'The Raging Bull' Gorden Tallis	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0279	Framed and signed photographs, State of Origin Heroes Hope Island 2002 Karrie Webb	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0280	Paul Attwood Photographs, Ripley Poster Print (certificate on the back)	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0281	Framed and signed photograph of Paul Pisasale and Wally Lewis, Wayne Bennett and others	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0282	Signed and framed Broncos banner with a small photograph of Gene Miles, Wally Lewis, Wayne Bennett, Allan Langer and Kevin Walters	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0283	Framed and signed boxing glove with 3x photographs of Kostya Tszyu, Undisputed Champion of the World WBC WBA IBF(2)	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0284	Celebrating 25 Years of Sports Greatest Rivalry photo collage	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0285	Framed photograph of a Successful Wheels Up Landing of the RF-111C A8-143	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0286	Framed photograph to commemorate the delivery of the first Royal Australian Air Force C-17 Globemaster III	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0287	Framed and signed photographs titled 'The Greatest, Makybe Diva'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0288	Framed and signed NRL boot from Alan Langer	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0289	Framed and signed Queensland Open Ipswich Golf Club polo shirt – Matthew Millar, Scott hend and Adam Blyth	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0290	Framed and signed Ipswich polo shirt with a photograph of Paul Pisasale and Kostya Tszyu	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0291	Legends of League 1st May 2004 QLD v NSW signed and framed jersey	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0292	Signed and framed DJR Shell Helix Racing Original crewShirt, worn for the duration of the 2003 Shell Australian Touring Car Championships	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0293	Signed and framed pants and stirrup from a jockey (J.A Cassidy)	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0294	Signed and framed photographs of planes, presented in support of Brisbane West Special Olympics (F-111 & 2x Bombers)	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot		No reference to the mayor	
MEM0295	Signed and framed photograph of a plane (F-111)	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot		No reference to the mayor	
MEM0296	Signed and framed photograph of an F-111	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot		No reference to the mayor	
MEM0297	Framed photograph of Brookwater Golf Club, signed by Greg Norman	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0298	Signed and framed jersey, QLD Group's International Legends of League Ipswich 2006, Mirvac Blues 44 defeated Queensland Times Maroons 42	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0299	Japanese painting presented to Cr Paul Pisasale by Deputy Mayor Xu Yuki	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0300	Wally Lewis 'The King' signed and framed photo series with a certificate on the back dated September 2011	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0301	Signed and framed photograph of David Spiell, addressed to Paul Pisasale	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0302	Canvas painting/artwork from Blair State School to Paul Pisasale	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0303	Framed fish artwork from the students at Ipswich West Special School, titled 'Follow Me'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0304	Photo collage/series of the 1st Flight presented to Mayor Paul Pisasale, signed by Mike Smith	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

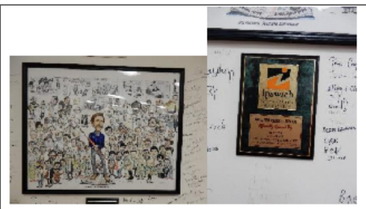
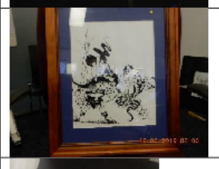
Date Audited: November 2018 – January 2020							
MEM0305	Photo collage of Ipswich, presented to Cr Paul Pisasale in recognition of 'Cherish the Environment – Ipswich'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0306	Photo Collage – Paul Pisasale, 1000 Days as Mayor	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0307	Photograph and plaque – Normanby Shire Council Meeting Table w/ Mayor Paul Pisasale and Cr David Pahlke	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0308	CROC Festival 2005 poster board, to the Mayor from DEST Moree	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0309	River Heart Parklands collage presented to Mayor Paul Pisasale in celebration of the opening of Rivert Heart Parklands on 3rd February 2007	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0310	Giant flower in a wooden frame	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0311	Framed photo and certificate 'Very Highly Commended Paul Pisasale'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0312	Framed certificate of recognition from The Commonwealth of Massachusetts, The House of Representatives	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0313	Framed abstract painting of a woman with red hair, created by the students at Ipswich West Special School	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0314	Grand Slam 2008 Framed photograph from Brothers Ipswich Football Club presented to Paul Pisasale	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0315	A Grade and Reserve Grade Premiers 2007 Grand Slam Winners 2006 and 1976, framed photograph from Brothers presented to Paul Pisasale	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0316	Framed QT newspaper clipping – Heavyweight Champion of Ipswich (has a photo of a boxer with Paul's face photo shopped on top)	2		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0317	Certificate of appreciation from Thistle Pipe Band Inc. to Mayor Paul Pisasale	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0318	Framed copy of Courier Mail QWeekend with Paul Pisasale on the cover 'wizard of the west, Paul Pisasale and the making of Ipswich'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0319	Drawing of Paul Pisasale by Nakita S	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0320	Mitanni Ipswich Turf Club Inc. 13 June 2009, framed photographs	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0321	Signed Don Bradman Centenary Calendar	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0322	Framed photographs of Pat Cash with a signed sweatband 1987 Wimbledon Champion			Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0323	Framed Message of Goodwill by Chloe Alldridge Yr 6 Student of Wallangarra State School and Southern Downs Regional Council	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0324	Photograph series presented to Ipswich Mayor Councillor Paul Pisasale from the members of 82 Wing Royal Australian Air Force 1st June 2010	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0325	Framed photograph of Paul Pisasale and an unknown man holding a certificate? For Partners for Queensland	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0326	Framed photograph of Vienna 'Rathaus' (Town Hall)	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0327	Framed QT Newspaper clipping – 'Ipswich Unit a Steal at $1.5 Million'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0328	Framed QT Newspaper clipping – '$10 Billion City'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0329	Framed QT Newspaper clipping – 'Mayor slams $1.5b 'mini-CBD''	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0330	Framed QT Newspaper clipping – '$10m Office plan for Ipswich CBD'	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0331	Painting of a bridge over a river from St Francis Xavier Primary School	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0332	Japanese fabric wall hanging (with a black tube in the middle)	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0333	World Expo 88 Flag	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0334	Sydney 2000 Olympics Flag	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0335	Wooden model airplane	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot		Missing one of the propellers	
MEM0336	Blue Union round neck tshirt with logo (8x large, 10x medium)	18		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0337	Black Union round neck tshirt with logo (10x large, 8x medium)	18		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			
MEM0337	Black collared shirt XL with a logo that says i-kneed.com	1		Level 2, Admin building (Moved to Room 1) 12.02.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0338	Wil Mitchell Political Cartoon Print (including Wil Mitchell)	1		Level 2 Admin Building Wil Mitchell Room 21.03.19 Moved to Yamanto Depot	08.02.19 – Advised that Allison Grant is proposing to donate this print back to the artist Wil Mitchell.	08.02.19 – Advised that Allison Grant is communicating with Wil Mitchell in relation to the donation of this item. All enquiries relating to this item, please refer to Allison Grant on 07 3810 7357.	
MEM0339	Wil Mitchell Arnotts 'Battle of Biscuits' cartoon	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0340	Wil Mitchell Kholo Gardens Wedding Area cartoon	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0341	Wil Mitchell cartoon 2004 – Dance with the Mayor at the Hospice Ball	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0342	David Green Cartoon, 2001 – Roman with a long mustache and a snake wearing a hat and boxing gloves	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0343	Wil Mitchell cartoon of a man wearing a BBQ apron that says 'COME AND GET IT' (Peter Beattie)	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0344	Wil Mitchel cartoon – 2x fish with the names Nugent and Pisasale chasing a worm that is labelled Ipswich Mayor	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0345	Wil Mitchell cartoon – banning blokes world	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0346	Wil Mitchell cartoon - 2004 into 2005, Happy New Year QT Readers (John Nugent + Paul Pisasale)			Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0347	WIl Mitchell cartoon – Paul Tully recycled water from Ipswich Sewage Treatment Plant	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0348	Wil Mitchell cartoon – Christmas eve sales fight	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0349	Wil Mitchell cartoon – Paul Pisasale on a sailboat labelled Ipswich Budget 2003, sailing towards the 2004 election	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0350	Wil Mitchell cartoon – Paul Pisasale 'Happy Birthday Gough'	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0351	Will Mitchell cartoon - Ipswich Dare to Defy, 2x men on a broomstick with a witch	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0352	Wil Mitchell cartoon, 2003 – Paul Pisasale on Santa's lap with Councillors in a crowd 'We don't want presents this Christmas Santa but hey,..... you can be real generous to us next March'	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0353	Wil Mitchel cartoon – fortune teller, 'will I win or won't I'	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0354	Wil Mitchell cartoon – Paul Pisasale recycled sewage chalice	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0355	Wil Mitchel cartoon – Paul Pisasale Ipswich Cup	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0356	Wil Mitchel cartoon – Spot the difference, Bob Menzies 1941 + John Howard 2006	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0357	'000' Charity Ball 2006 cartoon	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0358	Wil Mitchell cartoon – Paul Pisasale 1994 ICC Elections RIP	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0359	Wil Mitchell cartoon – Paul Pisasale as the Statue of Liberty	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot		Glass is broken and taped.	

Date Audited: November 2018 – January 2020							
MEM0360	Wil Mitchell cartoon – newly elected Mayor Paul Pisasale	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0361	Wil Mitchell cartoon – RIP Paul Pisasale, Pine Street Closure (cartoon of Paul digging his grave with a 40 speed sign)	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0362	Wil Mitchell cartoon – Paul Pisasale and unknown man, Bricking camels	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0363	Wil Mitchell cartoon – Federal Parliament booth, the Ipswich Welfare War Act Three	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0364	Wil Mitchell cartoon, Paul Pisasale 1000 days as mayor	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0365	Wil Mitchell cartoon, Paul Pisasale Indian of the Year 11th December 2004	1		Level 2 Admin Building (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0366	Calico vest with patterned banding	2		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			

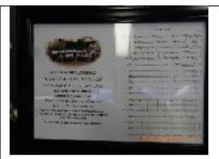
Date Audited: November 2018 – January 2020							
MEM0367	Sands of Gallipoli mini statue, commemorating the Centenary of ANZAC and Moreton District RSL 2018	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0368	Blue, purple, peach and white scarf with tassles	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0369	Traditional Japanese robe – black and white with a red flower on the back	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0370	Japanese robe – blue with a green ocean and birds flying above the water	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0371	Small blue bag with a stitched woollen band along the bottom	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0372	Silver necklace from KMX Collection	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0373	Red circular pendant necklace on green string in a golden box with a three leaf clover on the front of the box.	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0374	Wooden ANZAC hat and stand	1		(Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0375	'Hapiness' From No.Six Shengzhou Space Shuttle, Blessing of Health, Peace and Longivity from Jinqiu (Blue box with framed stitchwork inside)	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot		Colours of the stitchwork vary slightly from the below.	
MEM0376	'Hapiness' From No.Six Shengzhou Space Shuttle, Blessing of Health, Peace and Longivity from Jinqiu (Blue box with framed stitchwork inside and a CD)	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot		Colours of the stitchwork vary slightly from the above.	
MEM0377	Red box that says 'GUO JIA FEI WU ZHI WEN HUA YI CHAN' with a wooden box enclosed that holds 3x paintbrushes, 2x wooden paper blocks and an ink pot?	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0378	Samoan replica weapon/hunting tool	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0379	Jim Beam promotional pack in a woven basket	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			

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MEM0380	Red that has 'AN HUI WU HU JIN HUA' on the front, with a golden tree in a frame enclosed.	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0381	Pink scarf with a floral design in a wooden box	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0382	Small wooden mask in a black frame from Jakpro	1		Returned by Andrew Antoniolli (Moved to Room 1) 21.03.19 Moved to Yamanto Depot			
MEM0383	Purple koala sign with a sticker on the back that says 'Property of Mayor Paul Pisasale's office ICC'	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0384	Darren Lockyer Way 1995 – 2011 signed street signs	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0385	Giant bamboo	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0386	Framed shirt from Ipswich Force with 'Mayor Paul Pisasale Junior Basketball Academy' stitched into the left side of the chest, presented to Mayor Paul Pisasale in appreciation for his support of the Ipswich Force Junior Academy Program 2007	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0387	Wil Mitchell cartoon 2007 – Mayor Councillor Paul Pisasale and his Council team in a large black and gold decorative frame	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		Refer to MEM0405 for duplicate	
MEM0388	Blue arrow sign – Ipswich, pop. 435,000	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0389	Alexander Munro Av, Queens Park street sign	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0390	Ipswich St, iGo City of Ipswich street sign	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0391	Wil Mitchell cartoon 2010 – 150 years	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0392	Wil Mitchel cartoon, the Ipswich Hollywood Ball 2007 – Butch Cassidy and the Sundance Kid	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0393	Framed painting of Paul Pisasale and teacups, titled Demitazza + painted by Jessica Gossner, displayed in the QT Ipswich Art Awards	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0394	Wooden fan with silver horses running through a paddock	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0395	Caricature of Paul Pisasale and 2x unknown men and 1x unknown woman playing golf	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0396	Mini horse saddle and stand	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0397	Gree Didgeridoo – J.I Skeen, 2016	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0398	White porcelain mask with a green/gold/pink masquerade mask over the eyes, handmade by Sandra Evans	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0399	Black book titled 'The wildlife of Reg Grundy' address to Mayor Paul and The People of Ipswich, signed by Reg Grundy, 2006	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0400	Silver greek coin with 'Ipswich' engraved on it, presented by the Mayor of Ipswich (in a small blue box)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0401	RAAF Amberley Brass 'Fanfare for Ipswich' Composed by Michael Wheldon, Premiere Performance on the occasion of the 'Mayor's Command Charity Concert' in aid of 2013 Flood Relief. The score was presented to Paul Pisasale, Mayor of Ipswich, at the concert on Sunday 24th March 2013 at St Paul's Anglican Church Ipswich	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0402	Black and white photograph of a train passing through a forest	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		$17	
MEM0403	Black and white photograph a train with a man standing beside the front and buildings in the background	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0404	Black and white photograph of a building under construction/renovation in a black and gold frame	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0405	Wil Mitchell cartoon 2007 – Mayor Councillor Paul Pisasale and his Council team in a fitted black frame	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		Refer to MEM0387 for duplicate	
MEM0406	Small wooden box with 2x pins, 2x tickets and a silver medallion with an animated goat on the front inside	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0407	Slim green box with a black Japanese fan inside	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0408	Framed Ipswich News article clipping from Thursday, October 23 2008 – City Square SOLD	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0409	Small wooden Chinese box with a silver medallion and a gold medallion inside	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0410	Rainbow spiral award, presented to Mayor-Cr Paul Pisasale from Life Sciences Queensland Limited	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0411	Facial Makeup of Peking Opera – miniature privacy screen	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0412	Aluminium Asian pot	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0413	Wooden Asian flute with a red ribbon	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0414	Glass molds of leaves?? One is engraved with gold Chinese writing and the other is engraved with silver Chinese writing	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0415	Wooden gavel	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0416	The Rain Came Down DVD's (For the victims of the 2010/2011 QLD Floods) – Circular packaging with multiple discs and square packaging with 1 disc	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0417	Key to the Town of Yountsville	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0418	Brown Japanese fan with cut outs and a blue tassles in a slim green box with Japanese kanji's on the front	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0419	Japanese lacquerware in a small wooden box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0420	White German teapot with a silver lid and images of buildings along the sides and a crest on the front with the writing 'Hurnberg' (Hornberg) above	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0421	Metal plate on a wooden stand, engraved with a statue of a horse and carriage. Inside a blue box with gold details	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0422	Small green fabric box with two metal oriental coins and a stamp seal that says 'Customs Permission'	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0423	Chinese cultural book with silk scarf	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0424	Long wooden box with a gavel, gavel plate, duster, banner, 3x name tags and a telephone request message inside	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0425	Signed hardhat dated 11-1-2011 (2011 floods)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0426	Pat Cash signed pack – hat, shirt, sweatband and tennis	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0427	CD-RW Disc – Flooded Pet Shop 14th, 15th, 16th Jan 2011 – Goodna Pet Shop	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0428	Blue License Plate – QLD077 (2009 – Celebrating 150 Years)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0429	Blue License Plate – QLD044 (2009 – Celebrating 150 Years)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0430	Black IPSWICH licence plates in glass frames	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0431	Blue License Plate – QLD099 (2009 – Celebrating 150 Years)	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0432	Blue License Plate – QLD051 (2009 – Celebrating 150 Years)	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0433	Wil Mitchell cartoon, 2002 – 'I wish for new bridges for Ipswich' (ID # 2003.005)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0434	Wil Mitchell cartoon, 2001 – 'Run faster Merri Rose' (ID # 2003.006)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0435	Wil Mitchell cartoon, 2002 – 'I'm just checking to see if you have any pit bull terriers' (ID # 2003.007)	1		Wil Mitchell Room (Moved to Art Gallery)			

Date Audited: November 2018 – January 2020							
MEM0436	Wil Mitchell cartoon, 2001 – 'I'm here to complain about the negativity in your cartoons' (ID # 2003.008)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0437	Wil Mitchell cartoon, 2002 – 'Rachel Nolan and Paul Pisasale are fighting over the Ipswich CBD' (ID # 2003.009)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0438	Wil Mitchell cartoon, 2001 – 'I have good news and bad news' (ID # 2003.010)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0439	Wil Mitchell cartoon, 2001 – 'The beauty of building a Springfield to Ripley road' (ID # 2003.011)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0440	Wil Mitchell cartoon, 2002 – 'For God's sake madam, hold him back' (ID # 2003.012)	1		Wil Mitchell Room (Moved to Art Gallery)			

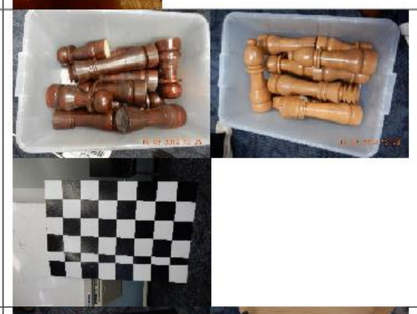
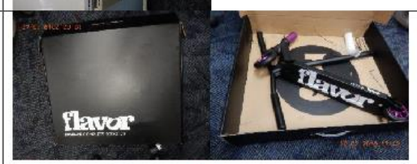
Date Audited: November 2018 – January 2020							
MEM0441	Wil Mitchell cartoon, 2002 – 'a cheeky little wine' (ID # 2003.013)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0442	Wil Mitchell cartoon, 2002 – ' the new One Mile bridge' (ID # 2003.014)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0443	Wil Mitchell cartoon, 2001 – 'So I said to Peter Beattie' (ID # 2003.015)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0444	Wil Mitchell cartoon, 2002 – 'You're dreaming again, John' (ID # 2003.016)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0445	Wil Mitchell cartoon, 2002 – 'Down at Redbank… on the movie set' (ID # 2003.017)	1		Wil Mitchell Room (Moved to Art Gallery)			

Date Audited: November 2018 – January 2020							
MEM0446	Wil Mitchell cartoon, 2001 – 'Hi I'm from the Queensland Children's Commission' (ID # 2003.018)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0447	Wil Mitchell cartoon, 2000 – 'During this council meeting, I ask you to keep your disguise on' (ID # 2003.019)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0448	Wil Mitchell cartoon, 2002 – 'No I am not Mayor John Nugent, I'm Deputy Mayor Paul Pisasale' (ID # 2003.020)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0449	Wil Mitchell cartoon, 2000 – 'Hi, I'm up here on Denmark Hill water tower' (ID # 2003.021)	1		Wil Mitchell Room (Moved to Art Gallery)			
MEM0450	Framed photograph of a crumbling stone building with a dilapidated steel structure in front	1		Claremont Room ? (Moved to Room 1) 21.03.19 Moved to Yamanto Depot		Item is to be disposed of due to the broken glass/frame (COO approval has been provided)	

Date Audited: November 2018 – January 2020							
MEM0451	Russian hat with black, yellow, blue and silver designs on it and a small silver and white brooch on the front and two yellow ribbons on the tip of the hat	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0452	Garden gnome painted by Mayor Paul Pisasale and Lisa Holliday (Office of the Mayor), August 2006. 'I was once called 'DOPEY', now I live in Ipswich they call me 'HAPPY''	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0453	Japanese painting of two panda bears in a small circular frame on a stand	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0454	Square Japanese bowl/tray (white and green) inside a wooden box with Japanese kanji's on the front	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0455	Wooden bowl with an image etched into it	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		$15	
MEM0456	Gold and silver plate from Wuxi China	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0457	Metal plate from Chile with images of a guitar, a hat, a scarf, spurs	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0458	Glamorous Guilin – a beautiful name card of China – Guilin People's Government	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0459	Oriental plate in a red box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0460	Cricket Australia hats signed by a cricket player	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0461	Red oriental vase with booklet inside a brown box with oriental writing on the top	1	 	Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0462	Royal Dolton tea set with four of each item	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0463	You, Me and Ipswich 'celebrating 20 years' 2x Coffee Cups and 1x saucer	37		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		3x boxes	
MEM0464	You, me and coffee – 2x Coffee Cups and 1x saucer	6		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0465	Srixon golf bag cover	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0466	Miniature fold out screen with paintings of Japanese masks	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0467	Semi-circle clear stone with a holographic image of a building in China/Japan	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0468	Red plate with an orange flower, a yellow flower, two birds and some oriental writing	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0469	Airplane made out of Jack Daniels cans and a double winged airplane made out of XXXX Gold cans	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		In an archiving box.	

Date Audited: November 2018 – January 2020							
MEM0470	Silver coin in the shape of a flower with oriental writing/images on it inside a red wooden box with oriental writing on the front	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0471	Canvas with photos from ANZAC Day 2015	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0472	Paul Pisasale Wil Mitchell Print Collection in a blue folder	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0473	Giant wooden chess pieces (light brown x 16, dark brown x 16) and 2x checkerboards	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0474	Black 'Flavor' scooter with purple wheels	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0475	Painting of Paul Pisasale by D Martin, 2015	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0476	Bamboo wall hanging with oriental writing in a red wooden box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0477	Thank you, City of Ipswich – Seventh Fleet Band	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0478	Wil Mitchell Drawing (WIL 101/39) – Ipswich Show	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0479	Wil Mitchel Drawing (WIL 072) – Development explosion	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0480	Wil Mitchel Drawing (WIL 83/15) – Drivers seat	1		Claremont Room, Moved to Room 2 Moved to Room 1		**Paul Pisasale requested item back.**	
MEM0481	Wil Mitchel Drawing (WIL 056) – Wild Ride, 2005 New Year	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0482	Wil Mitchell Drawing (WIL 0612) – Council Business 1989 – 2006	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0483	Wil Mitchell Drawing (WIL 108/32) – How to vote cards	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0484	Wil Mitchel Drawing (WIL 067) – an early Christmas present for Ipswich	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0485	Wil Mitchel Drawing (WIL 051) – QT, Council in damage control	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0486	Wil Mitchell Drawing (WIL 093) – On the run interviews	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0487	Wil Mitchell Drawing (WIL 075) – Where's Ipswich? Beats me	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0488	Wil Mitchel Drawing (WIL 084/31) – What do I need a disposable nappy for	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0489	Wil Mitchel Drawing (WIL 110/16) – Commonwealth bank deserts Ipswich	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0490	Wil Mitchell drawing 2010 – Ipswich welcomes Super Hornet	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0491	Wil Mitchell drawing (WIL 054) – Ipswich's budget	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0492	2x cartons with 7 boxes of 18 – Gold Medallions, Golf Western Oil 50th Winternationals 2017, Presented by City of Ipswich. In recognition of 50 years of the Winternationals – Mayor Paul Pisasale and Willowbank Raceway	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0493	Wil Mitchell Drawing (WIL 114/07) – Bob Grice Chairman SEQ Water	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0494	Wil Mitchell drawing (WIL 106/13) – Heads or tails	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0495	Wil Mitchell drawing (WIL 111/09) – Telstra White Pages	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0496	Wil Mitchell drawing (WIL 088/21) – and the winner is..	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0497	Wil Mitchell drawing (WIL 112/10) – Dick Smith endorsement	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0498	Wil Mitchell drawing (WIL 080/20) ICC Mayor's office, March 27	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0499	Wil Mitchell drawing (WIL 068) – Paul Pisasale The Peacemaker	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0500	Wil Mitchell drawing (WIL 059) – You asked for some rain	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
Item No	**Description Item**	**No. of Items:**	**Image of Item**	**Current Location of Item**	**Proposed Action (Sell/Dispose/Return/Council Asset/Donate)**	**Comments**	**Confirmed Decision on Item**
MEM0501	Wil Mitchell drawing (WIL 092/38) – More good news for Ipswich	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0502	Wil Mitchell drawing (WIL 099/22) – Wine bottle corks	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0503	Wil Mitchell drawing (WIL 076/17) – The Heiner Road ~~Bridge~~ Half Bridge	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0504	Indigenous boomerang	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0505	Mini yellow Buddha's	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0506	Buddha stone necklace on string	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0507	Small circular marble crest	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0508	Queensland rail belt buckle	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0509	Five small silver coins with an oriental dragon engraved on them in a wooden box	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0510	2x marble tied together with a blue tassels	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0511	Small silver coin with an image of a Chinese man in a red felt box	1	 	Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0512	Urushi Lacquer ware in a small wooden box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0513	Coffee mug with images of men on a boat and men riding horses	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

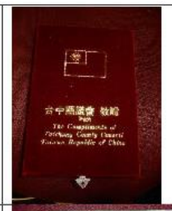
Date Audited: November 2018 – January 2020							
MEM0514	Oriental book – Yu Yuan You Piao She Ji da Shi Zuo Pin Ji	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0515	Dujinsheng Silk scarf	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale might have this requested item back**	
MEM0516	Indigenous food dish	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0517	Small black box with two elephants that says 'Thailand'	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0518	Two small oriental medallions (one silver with blue and white string, the other gold with red and white string)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0519	Book titled 'The Chinese Painting of Chen Guanfu'	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0520	Commemorative hammer with a certificate of recognition for Mayor Paul Pisasale 'In recognition of your continued support of Switch on INC'	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0521	Royal Doulton tea set (food dish and milk jug)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0522	Rotund oriental rabbit	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0523	Small glass jar with a looking glass that shows an image of Buddha (in a wooden box)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0524	Oriental wind up jewellery box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0525	Holographic Stone – A.O.R – N.C / Gold Coast: 2004 – Noumea: 2013	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0526	Oriental chopsticks	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0527	Oriental napkin set	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0528	Plain wooden chopsticks with oriental writing	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0529	Australia at War – Greece (small silver coin)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale might have this requested item back.**	
MEM0530	Clear stone with writing on the top inside a blue felt box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0531	Clear medallion with a green, blue, red and white ribbon attached and a small wooden carved face on brown string in a black box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0532	Tapestry wall hanging	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		Box is broken	
MEM0533	Sesquicentenary Anniversary 1864 – 2014 QLD Police medallion	5		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0534	Red and gold oriental robe	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0535	Maroon felt oriental robe	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0536	Relay for Life jersey	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0537	Ornamental statues (cream and gold with silver diamantes)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0538	Brookwater Golf & Country Club hat signed by John Senden	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0539	Wensli scarf in an orange box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0540	Small BBQ with a spit roast	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0541	Queensland Raceways cap with signatures from Mark Winterbottom and David Reynolds	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0542	Zero-X Rapture Drone, Rotor Blades and Battery	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0543	Jumbuck Orion Portable BBQ w/ enamel hood	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0544	Gold medallion with QR and Queensland Partners in Progress 150 years – 2009 on the back	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0545	seven virtuous in bamboo forest – silk brocade painting in a long black box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0546	Turtle ship in a blue felt box with a name tag that says 'FAYA 10th Anniversary - Ipswich Lord Mayor – Mr. Paul Pisasale'	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0547	Metal + felt plaque 'With the compliments of Taichung County Council Taiwan, Republic of China'	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
							
MEM0548	Painting of Tuddhistcany, Italy by Don Martin	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0549	Framed oriental metal etchings	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0550	White vase with red, blue and purple paint in a drip effect by Carole Mitchell	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		$50	
MEM0551	Patterned drawstring bag	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0552	Red oriental bag from Kiln Home.Chao	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0553	Bell shaped metal object with red fabric at the top and a leaf painted on one side	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0554	Small porcelain hexagonal box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0555	Conjoined monkeys in a wooden box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0556	Navy LGAQ silk tie from Aya Kawa	1	 	Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0557	Framed watercolour of the Town Hall, Ipswich by Chrissy N	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0558	Metal etching of the Ipswich Post Office and Old Railway Station	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0559	Framed oriental drawing in a pink box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0560	Red and white glass square plate	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0561	Red and orange circular glass plate with three golden leaves by Graham Heath	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		$55	
MEM0562	Orange and white square glass plate with butterfly print by Graham Heath	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		$60 **Paul might? have requested this item back**	
MEM0563	Square glass plate – blue, black and navy glitter	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul might? have requested this item back**	
MEM0564	Square glass plate - black, white and blue	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		$60 **Paul might? have requested this item back**	
MEM0565	White vase with an image of a lily	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

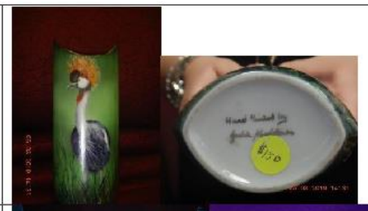
Date Audited: November 2018 – January 2020							
MEM0566	Small wooden fold out screen	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0567	Red wooden necklace and white shell necklace	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0568	Painted spoon with black, red and gold and images of strawberries	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0569	Green tapestry with tassels and stripes multi-coloured stripes	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0570	Keychain and business card holder from Holi Life Style	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0571	Metal canisters in a red oriental box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0572	Glass dome with a blue image	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0573	Wooden box with a metal lid with two birds and some flowers	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0574	Cardboard stands with a pin that says '50'	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0575	Green flower lapel (golden)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0576	Knife and knife cover (army green)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0577	Small brooch in a green felt box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		Box is broken	
MEM0578	Blue/green ceramic coaster	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0579	Oriental scroll wall hanging in a yellow box with a blue lid and images of a city	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
							
MEM0580	Oriental scroll wall hanging in a fabric box inside an orange red and black bag	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0581	Oriental scroll in a red material box with golden symbols	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0582	Oriental wall hanging in a box that says 'Tian Jin yang Liu Qing New Year Picture'	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0583	Oriental wall hanging of a wave in a dark green box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0584	Oriental wall hanging of three men and two women in a yellow patterned box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0585	Oriental stitch work wall hanging of a building inside a red box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0586	Oriental wall hanging in a wooden box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0587	Oriental wall hanging in a yellow fabric box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0588	Oriental wall hanging inside a cream cardboard fold out box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0589	Oriental wall hanging inside a blue box with red flowers	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0590	Mini green oriental umbrella with a red tassels	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0591	Wooden stick with plaited straw	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0592	Wil Mitchell drawing 2010 – 'swim over here'	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.sc**	
MEM0593	Oriental wall hangings -yellow background with a blue box with oriental symbols in gold -golden background with a painting of prawns and oriental symbols -golden background with a painting of leaves on a branch -green patterned background with an image of yellow, pink and red flowers outlined in gold thread -brown/blue patterned background with a drawing of flowers in a vase	5		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested back.**	

Date Audited: November 2018 – January 2020							
MEM0594	Green vase with a bird on both sides, hand painted by Julie Maddocks	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		$150	
MEM0595	Woodlore Jewellery Box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		$85	
MEM0596	Oriental book inside a golden/brown cardboard box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0597	Oriental hand fan inside a cream material box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale might have this requested item back.**	
MEM0598	White vase with blue, gold and silver detailing	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0599	Small framed drawing of the Municipal Library Building, Ipswich	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0600	Woodlore Key Holder Camphor Laurel	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		$20	

Date Audited: November 2018 – January 2020							
MEM0601	Blue desk clock	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0602	Australian Hardboards 1957 – 2001 – Placemat Set	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0603	Golden medallion in a red felt box – 360th anniversary of the Koonankurishu Oath	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		Box is broken	
MEM0604	Oriental fold out clock	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0605	Various sizes of metal rings in a black Powerlink Queensland box	1 box of 39		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

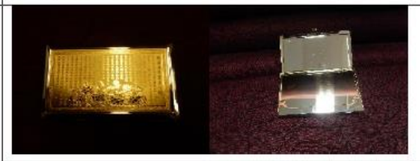
Date Audited: November 2018 – January 2020							
MEM0606	Gold and black 'Tiger' lighter in a maroon wooden box with a small packet of powder underneath the lighter.	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0607	Ipswich District Radio Club medallion in a black felt box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0608	Ipswich 22ct Gold Plated medallion	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0609	White cup with lid in a wooden box	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0610	Oracle Bone Inscriptions	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0611	Wil Mitchell Drawing (WIL 98/25) - Ipswich Budget Cake 2004	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0612	Wil Mitchell Drawing (WIL 69) – Cameron Thompson	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0613	Wil Mitchell Drawing (WIL 100/24) – Ipswich Motorway, Just Fix It	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0614	Wil Mitchell Drawing (WIL 50 – Everest of Mayors	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0615	Wil Mitchel Drawing (WIL85/27) – Mayor Pisasale's Grand Plan	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0616	Wil Mitchell Drawing (WIL 66) – ICC Christmas Wish List	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0617	Wil Mitchell Drawing (WIL 086/19) – Urgent basket	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0618	Wil Mitchell Drawing (WIL 113/18) – Great to have you back Paul Pisasale	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0619	Wil Mitchell Drawing (WIL 74/35) – Ipswich, I live in Ipswich	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

Date Audited: November 2018 – January 2020							
MEM0620	Wil Mitchell drawing (WIL 087/06) – Paterson Room	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0621	Wil Mitchell drawing (WIL 105/37) – Mayors Ball, Dancing With The Stars Competition	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0622	Box of highball glasses with the old ICC logo 'Ipswich the Heritage City'	3 boxes of 6		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		MEM0622, MEM0623 and MEM0624 are all in one box together	
MEM0623	Box of glasses with the ICC crest and the words 'City of Ipswich' in green	1 box of 6		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		MEM0622, MEM0623 and MEM0624 are all in one box together	
MEM0624	Box glasses with the ICC crest and words 'City of Ipswich' in green	2 boxes of 6		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		MEM0622, MEM0623 and MEM0624 are all in one box together	
MEM0625	Wil Mitchell drawing (WIL 077/14) – Fill his shoes	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0626	Wil Mitchell drawing (WIL 79/26) – Steel plant for Ripley Valley	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

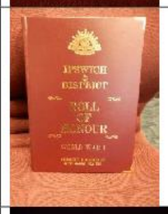
Date Audited: November 2018 – January 2020							
MEM0627	Wil Mitchell drawing (WIL 95/28) – 60th birthday	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0628	Wil Mitchell drawing (WIL 091/03) – luxury five star hotel	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0629	Wil Mitchell drawing (WIL 109/40) – flying fox fact finding task force	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0630	Wil Mitchell drawing (WIL 104/34) – first car to cross one mile bridge	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0631	Wooden model airplane parts 'black hawk'	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0632	Wooden model jet plane parts	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0633	Wil Mitchell drawing (WIL A9) – greater Springfield	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0634	Wil Mitchell drawing (WIL 089/01) – heavyweight fight for Ipswich Mayor's crown	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	

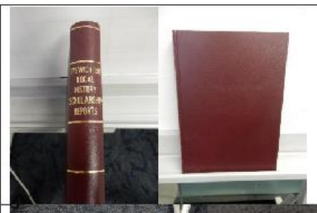
Date Audited: November 2018 – January 2020							
MEM0635	Wil Mitchell drawing (WIL 082/4) – Arnotts battle of biscuits	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0636	Wil Mitchell drawing (WIL 096/33) – Nerima Gardens Stage II Grand Opening Ceremony	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0637	Wil Mitchell drawing (WIL 097/02) – Skydiving	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0638	Wil Mitchell drawing (WIL 090/29) – Ipswich 100th birthday	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0639	Boxed Ornate China Clock with floral decoration with golden clock hands	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0640	Boxed Miniature Costume Dress Screen with Peking Opera Facial Makeup Images	1	 	Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
							
MEM0641	Silk Scarf with oriental birds and flowers with flannel backing and burgundy tassels	1	 	Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale might have this requested item back**	
MEM0642	Medal and Lapel from Republic of Vietnam Service from United States of America (boxed)	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0643	Ceramic Decorated Bangles of varied pattern and design (small)	3		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0644	Nerima City Mascot Hand Towel	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0645	Gold Plated Oriental Business Card Holder – Etched with writing and flowers	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0646	Boxed Lianji Taitung Taiwan Red Oolong Tea	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0647	Chinese Wooden Etched Decorative Facial Fans	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale might have this requested item back.**	
MEM0648	Oriental small sauce bowls contained in Cloth Bag with flower and wheat design marked with 2014 and 2015	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0649	Oriental Crystal Book Mark in Blue Tule Bag	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0650	Oriental Blue/White/Black Paper Facial Fan	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale might have this requested item back.**	
MEM0651	Silk Oriental Scarf with Township Print One Side and Farmland Map on riverside side	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale might have this requested item back**	

Date Audited: November 2018 – January 2020							
MEM0652	4 Paper posters 1 - Australians the empire needs you – Commonwealth of Australia Expeditionary Forces 2 - A Call from the Dardanelles Coo-ee- Won't YOU come? Enlist now 3 – The Trumpet Calls – Norman Lindsay 4 – Queensland Fall in We want YOU at the Front, Come and Help Enlist at Once Ca	4		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot	Note on the back – Can Mayoress have this for a Raffle Please – Di		
MEM0653	Wooden Cheese Board with Cheese Knife	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot	$ 39.95		
MEM0654	Framed Cross Stich picture of a Japans lady in a boat floating in water	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0655	Gold frames Picture of embossed Gold Flowers	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0656	Small Himalayan Salt Lamp with base. No Bulb	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0657	Extra Large Himalayan Salt Lamp with Base and Bulb and a bag of salt chips	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0658	Ipswich Municipal Centenary	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0659	Australian Ipswich & District Roll of Honour World War I Researched & Compiled By Edwin Habben OAM RFD	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0660	Signed by Lyn McCoombes, Margaret Nicol, Ken Sbeghen, Ipswich Historical Society The First 50 Year	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0661	Ipswich and District Pioneer Register Pre 1914 Volume 1 & Volume 2	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0662	Ipswich 150 Local History Scholarship Reports	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0663	Grey blankets from the Taiwan Buddhist Tzu Chi Foundation	3		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0664	Toyo Home Style blanket set	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0665	Mont Blanc pens	3 boxes of 2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0666	Swarovski crystal rabbits (small and medium)	2		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0667	Puer Tea Diaoyutai	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0668	Cheese board with 'Greater Springfield' embossed	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0669	Rothbury Estate Vintage Shiraz – Vintage 2014	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0670	Craggy Range Single Vineyard – Sauvignon Blanc – Martinborough New Zealand 2012	4		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0671	Shephard Hill Chardonnay 2014 – Margaret River	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0672	Bellvedere Vodka	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0673	Itineraire d'un curieux – Domaine Julien Cornud – AOC Ventoux – 2009	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0674	The Rothbury Estate Classic Shiraz 2013	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0675	Canadian Club 1858	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0676	Kinmen Kaoliang Liquor	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0677	Liquor in a green bottle with oriental writing	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0678	Fiano 2015 'Messing About' Ballandean Estate Wines	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0679	100 Years Ipswich Rugby League Inc – Centennial Vintage Port	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0680	Kweichow Moutai	2	 	Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0681	Deakin Estate Sauvignon Blanc 2016	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0682	Penfolds, Cabernet Sauvignon Bin 707 Vintage 1998	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0683	Oakridge, 864 Single Block Release Yarra Valley Cabernet Sauvignon 2010 Bottle NO:2137	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0684	Johnnie Walker Blue Label Scotch Whisky, A Blend of Our Rarest Whiskies 750ml	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0685	3 Little Coffee Cups 1 with a Bee, 1 with a Penguin and 1 with a Cat	3		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0686	6L Bottle of Wine – Queensland Open, Celebrating 90 Years, bottle 97 of 100	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0687	Bottle of liquor from Olive Farm Wines in a leather case	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0688	Bohemia – Crystal of Distinction – Goblet	1 box of 6		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot		**Paul Pisasale requested item back.**	
MEM0689	Tianxiakang Tea	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0690	Legends Sports hat with 2x signatures	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0691	PGA Championship Australia hat with signature	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0692	Queensland Raceway Ipswich hat with signatures	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0693	Framed wooden horse	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0694	Wooden chopsticks (brown and white with black designs of a dragon) with green fabric	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0695	Shaohsing Ghiew, cellar aged 20 years	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0696	Nantou tea	1		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
							
MEM0697	Small glass decorative dishes (blue)	3		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0698	Set of four – glass coasters (orange, blue, green and yellow)	8		Claremont Room, Moved to Room 2 Moved to Room 1 21.03.19 Moved to Yamanto Depot			
MEM0699	Abstract Painting By Elizabeth Strangman	1	 	Division 10 Office 14.06.19 Moved Admin Building 28.06.19 Moved to Yamanto Depot			
MEM0700	Landscape photograph collage, celebrating 25 Years of the Ipswich Brisbane Broncos with Certificate Limited Edition 542 of 1000	1	 	Division 10 Office 14.06.19 Moved Admin Building 28.06.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0701	Indigenous Painted Shell	1		Division 10 Office 14.06.19 Moved Admin Building 28.06.19 Moved to Yamanto Depot			
MEM0702	Signed Australia Cricket Bat	1		Division 6 Office 14.06.19 Moved Admin Building 28.06.19 Moved to Yamanto Depot			
MEM0703	Painting of Eucalyptus curtisii Ipswich Queensland Australia Artist Yelsel	1		Division 6 Office 14.06.19 Moved to Admin Building 28.06.19 Moved to Yamanto Depot			
MEM0704	Porcelain Doll	1		Division 6 Office 14.06.19 Moved to Admin Building 28.06.19 Moved to Yamanto Depot			

Date Audited: November 2018 – January 2020							
MEM0705	City of Ipswich, QLD, Australia Floods 12-01-2011	1		Division 8 Office 14.06.19 Moved to Admin Building 28.06.19 Moved to Yamanto Depot			
MEM0706	Team of The Century 100 Years of Australian Football with Certificate of Authenticity and Limitation 93 of 250	1		Division 8 Office 14.06.19 Moved to Admin Building 28.06.19 Moved to Yamanto Depot			
MEM0707	Hand painted Gnome by Wil Mitchell from the Great Ipswich Gnome Auction	1	 	10.07.19 Moved to Yamanto Depot			
MEM0708	Leather print of Horses with Chinese Writing	1	 	CEO Office 28.06.19 Moved to Ground Floor Admin Building 10.07.19 Moved to Yamanto Depot			
MEM0709	Signed Masters Cricket Dunlop Sport Polo – Black	1	 	Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Cr Victor Attwood items returned by CCC on 8 August 2019	

Date Audited: November 2018 – January 2020							
MEM0710	Singed Wallabies Jersey	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Cr Victor Attwood items returned by CCC on 8 August 2019	
MEM0711	St Edmunds Christian College Rugby Supporters Top - Blue Stripe	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Cr Victor Attwood items returned by CCC on 8 August 2019	
MEM0712	Signed Nike Athens Olympic 2004 singlet - White	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Cr Victor Attwood items returned by CCC on 8 August 2019	
MEM0713	DVD – Devastating Fire Reids Departmental Store – Ipswich – 17 August 1985	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Discovered in Executive Services Branch	
MEM0714	Signed Harvey Norman Backyard League Steeden Football	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Cr Victor Attwood items returned by CCC on 8 August 2019	
MEM0715	Necklace in box	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found at Division 6 Office	
MEM0716	Kingston Town Jockey – Malcolm Johnston Picture	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Cr Victor Attwood items returned by CCC on 8 August 2019	

Date Audited: November 2018 – January 2020							
MEM0717	Signed St Edmunds Christian College Cricket Hat - Blue & White	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Cr Victor Attwood items returned by CCC on 8 August 2019	
MEM0718	Signed Cricket Hat – White (Kerry O'Keefe)	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Cr Victor Attwood items returned by CCC on 8 August 2019	
MEM0719	Wooden Ipswich Shield	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found at Division 2 Office	
MEM0720	Plaque - Sponsor - Bremer Boys Camp and SU Chaplaincy 2004	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0721	Plaque - Yupi Challenge – Presented to Paul Pisasale, Executive Adviser - Recognition of 22 years of outstanding service and job creation - August 1998	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0722	Plaque – presented to Deputy Mayor Paul Pisasale for continued support for Fire Awareness Programs in Ipswich - 23 November 2001	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0723	Plaque - Appreciation for support of the Ipswich Eastern Region Community Carols by Candlelight	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	

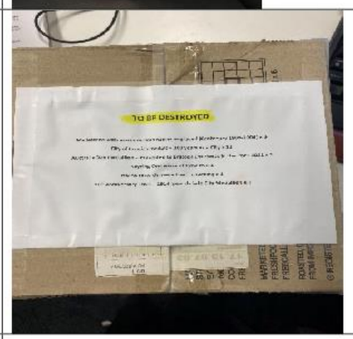
Date Audited: November 2018 – January 2020							
MEM0724	Plaque – Turkeys – Presented to Paul Pisasale 1st Anniversary 1989	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0725	Plaque - Yupi Challenge – Presented to Paul Pisasale, Life Member - Recognition of 22 years of outstanding service and job creation – September 1998	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0726	Plaque – Japan Association of City of Mayors	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0727	Majlis Perbandaran Petaling Jaya	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0728	Sponsor – Presented to Councillor Paul Pisasale ICC for support throughout 2001	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0729	Plaque – presented to Paul Pisasale in Appreciate of support and friendship towards Taiwan – 27 November 1997	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0730	Korea Hockey Association	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	

Date Audited: November 2018 – January 2020							
MEM0731	Plaque – Presented to Councillor Paul Pisasale from TFAQ	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0732	Plaque – The Bundamba Hill Winery. Presented to Yupi-Paul Pisasale – August 1990	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0733	Plaque – Presented to Deputy Mayor of Ipswich Paul Pisasale for support to the Taiwanese Chamber of Commerce in Oceania – 11 February 2001	1		Administrators Office, Level 2 Administration Building, 50 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Found in Storage Room in Claremont Room	
MEM0734	Large Size Bronze Medallion – Athens to Atlanta – 100 Year Journey – Australian Olympic Team Fund 1996	1		Level 4, Hayden Building, 37 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Originally found on Level 4, Hayden Building, 37 South Street, Ipswich when staff relocations occurred in September/October 2019.	
MEM735	"Pat Cash" signed Tennis Ball	1		Level 4, Hayden Building, 37 South Street 06.05.2020 – relocated to Yamanto Depot Storage Cages		Originally found on Level 4, Hayden Building, 37 South Street, Ipswich when staff relocations occurred in September/October 2019	

Date Audited: November 2018 – January 2020							
MEM736	Wooden Stand and Plaque with Winged Eagle. (Brigadier-General David M 'Tanker' Synder, USAF Hickam Air Force Base, Hawaii, USE on the occasion of 2007 VP Day Commemoration Service Held at Manson Park, Cemetery Road, Raceview, Ipswich on Saturday 11 August 2007).	1		Mayor's Office, Level 2 Administration Building, 50 South Street		Returned to Art Gallery. Item identified as a catalogued art piece from the gallery.	
MEM737	Desktop Pen Holder. (Made from a hand-split Rosewood timber slab removed by Rochlitz Maclean from a collapsed 100 year old hand dug well on his property at The Bluff, Ipswich February 2019. The brass key was an original general master key for the Ipswich City Council Administration Building in South Street Ipswich, opened in 1985).	1 \	 	Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM738	Aussie All-Rounder Hat	1	 	Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM739	Framed Photo Gifted to the City of Ipswich from Nantou County and Hsinchu Country during road trip. Smart City Conference Taipei 21 – 27 March 2018.	1		Mayor's Office, Level 2 Administration Building, 50 South Street			

Date Audited: November 2018 – January 2020							
MEM740	Promotional Invitation Wednesday December 24th 2005.	1		Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM741	Boxed Ornament	1		Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM742	Business Card Holder	1		Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM743	Vase and Base Plate	1		Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM744	Plaque – Presented in the Spirit of Friendship and Prosperity by Mayor Andrew Antoniolli March 2018.	1		Mayor's Office, Level 2 Administration Building, 50 South Street			

Date Audited: November 2018 – January 2020							
MEM745	Framed Photo – Ipswich City Council Elected Representatives 2008-2012.	1		Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM746	Boxed Plate and Stand. Presented to Mayor Antoniolli. Smart City Chiu Chuing Chun.	1		Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM747	Hung Framed Painting	1		Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM748	Framed Photo. Ipswich Events Corporation Ltd 2017-2018. Presented to Cr Wayne Wendt.	1		Mayor's Office, Level 2 Administration Building, 50 South Street			
MEM749	Removed from Roadside. Roadside Plaque - Car Accident 8 April 2011.	1		Mayor's Office, Level 2 Administration Building, 50 South Street			

Date Audited: November 2018 – January 2020							
MEM750	Sinnathamby Award for Excellence Plaque	1		Delivered from CCED office by officer			
MEM751	Various Medals and Medallions	20		Former Mayor's Office (provided by the Office to the CEO for inclusion on Register)			
MEM752	Ipswich Toowoomba Masters Team 2007 Jersey	1		Former Mayor's Office (provided by the CEO's Office)			
MEM753	Charge of the Light Horseman – Battle of Beersheba Framed Image and Story	1		Former Mayor's Office (provided by the CEO's Office)			

Date Audited: November 2018 – January 2020							
MEM754	Painted Portrait of Paul Pisasale (Artist – Lesley Shelley)	1		Provided by the Ipswich Gallery (July 2020) as a returned item for the memorabilia register. Artist is a local resident			
MEM755	Flood Glass Etching by Lauraine Alford-Doyle. Poem included on the etching.	1		Originally gifted to former Councillor David Pahlke. Held in the Ipswich Library – South Street.		Note: Item is also registered on the Councillor Gift Register.	

MICHAEL FAHEY
Sports Memorabilia Australia

17th June 2019

[redacted]
[redacted]

Planning and Regulatory Services Department
Ipswich City Council.

Dear [redacted]

Re: Valuation of Sports Memorabilia

Please find attached complete valuation across the two lists supplied. I will also supply many pages printed from auctions sites, dealer offerings and web pages listing results, values and sales. These are numbered and provide further information that may be useful in the future or to auditors.

I regard to this collection I should point out that there are four types of sports memorabilia;

- The primary artefact – game worn, or game used
- The official endorsed and licensed signed limited-edition memorabilia
- The unofficial signed memorabilia
- Ephemera – unsigned merchandise

Much of this collection is unofficial signed memorabilia. Often it was a signed photo, with no third part verification, that has been framed with other items.

A small amount are officially licensed memorabilia these have third part verification and authenticity, are of better quality and are normally more expensive at time of purchase.

There are a handful are primary items. That is match worn or used. Two of these in this instance are quite rare, important and valuable.

The average value is $348 but the median value is just $200. The most expensive 19 items (of 148) account for more than half of the value of the collection

I have consulted several online auction results web sites, online auction house and hard copy catalogues as well as sports memorabilia sites and online trading forums such as eBay.

~~3/48-68 Hotham Parade, Artarmon NSW 2064~~
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ABN 94 074 266 210 PO Box 585 Lane Cove NSW 1595

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Online dealers;

Memorabilia Australia, Thesportsmemorabilia.com, atg memorabilia, Australian Sports, Sportsonline, ProSports Memorabilia, serepgraph.com.au, MichaelEastick.com, www.diecast4u.com.au, Blazed in Glory, Memorabiliawarehouse, Cardshowcase, Icons of sport, countryclubeditions.com,

Online Auctions;
Mossgreen Auctions (Melbourne), Thegoldauction.com, Green jacket Auctions, Leski Auctions (Melbourne), Puregolfauctions, Leonard Joel (Melbourne), Graham Budd Auctions (UK)

Trading sites;
eBay, Allbids.com.au

Retails sites;
FOGS Queensland, The big Australian Punter, Legends Under Glass

Value $53,985

We value the above item for the purpose of insurance at a figure of A$53,985 (Fify Three Thousand, Nine hundred and Eighty Five dollars), this being the figure at which, in our opinion, the items could be replaced with similar items in similar condition if purchased in the ordinary retail market. This figure does not represent our opinion as to the value of the items for sale or for any other purpose.

Regards,

Michael Fahey
B.Ec. (Sydney) GDAFI (SIA)

Approved to value all forms of sporting memorabilia for the Australian Government's Cultural Gifts Program.

The valuer to the National Sports Museum, Australian Rugby Archives, Sydney Cricket Ground Trust Museum, and The Bradman Foundation & Museum

Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
1	Brisbane Roar 2011 & 2012 Champions Back2Back Signed Soccer Ball, with a certificate of authenticity (Limited Edition 14 of 25)	1		$400	I found a ball signed by 2011 side. There is also a lithograph 'Back to back' signed by 2012 premiership squad/team. Retails framed for $495.
2	XXX Gold Queensland Bulls 2006 – 2007 Signed Cricket Bat	1		$80	QLD were 4th in the Pura Cup in 2006-07. They did win the Ford Ranger One Day Cup. A 2005/06 bat listed on eBay for $100. Hundreds of bats are signed each season and used for promotional activities
3	2008 Queensland Team State of Origin Champions signed + framed jersey	1		$400	
4	Shane Warne painting by Mark Sofilas	1		$75	Limited edition of 550. Numerous signed editions were produced when he retired. Auctioned Mossgreen 19/9/16 Lot # 341 achieved $74.

Attachment C – Schedule of Prices
To be completed by the Supplier for the purpose of providing fixed quote pricing in response to RFQ - 13595

Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
5	Autographed Muhammad Ali photograph with certificate of authenticity	1		$2,000	A Graham Budd auction 2015 (UK) sold for GBP700. SM Sports Memorabilia selling $2,499
6	Triple Cox Plate Winner Kingston Town, Jockey Malcolm Johnston drawing by George S with a certificate of authenticity	1		$75	Photos of KT signed by Peter Cook and Malcolm Johnston are on eBay for $18.

Attachment C – Schedule of Prices
To be completed by the Supplier for the purpose of providing fixed quote pricing in response to RFQ - 13595

Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
7	XXXX Queensland Bulls Sheffield Shield Champions 1994-1995 framed cricket bat	1		$500	Queensland's 1st Shield win after 63 years in the competition. A number of these have come on the market the last two; Mossgreen 5/12/2913 Lot # 855 achieved $366 (estimates of $150-$200) Mossgreen 23/4/2015 Lot # 235 $610 (unframed)
8	Callaway golf club bag	1		$100	New - $210 - $260.
9	Three framed images of Greg Norman "The Great White Shark" with a certificate of authenticity (middle photo has been autographed)	1		$300	
10	Framed and signed 'Team of the Century Rugby League, The All Time Greatest Players 1908 – 2008'	1		$900	A limited edition of 200. Of the 18 players listed it was signed personally by 11 (those living as at 2008) None have been auctioned. One listed on eBay for a hefty $4,999. Others signed just by Coote and Langlands retail for $395

Attachment C – Schedule of Prices
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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
11	Large plastic golf ball, Precept 11 (signed)	**1**		$400	
12	Signed 2000 Olympics long jump suit from Jai Taurima	**1**		$300	These uniforms are awkward to frame and become large pieces. He won silver at Sydney 2000.
13	Signed basketball 2008 sponsored by ABC learning	**1**		$50	

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
14	Signed Slazenger basketball	**1**		$50	Signed Andrew Gaze.
15	Signed 2004 Athens Olympics jacket from Anna Meares	**1**		$100	A 2012 flag signed by her selling for just $99.
16	Signed t-shirt from Sydney 2000 Olympics from Hayley Lewis	**1**		$75	

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
17	Signed international tennis academy t-shirt from Pat Cash	1		$75	
18	Signed Queensland Raceways yellow hat with black trim	1		$50	
19	Signed 2000 Sydney Olympics bag from Susie O'Neill	1		$75	

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
20	Signed 1980 maroon State of Origin t-shirt	5		$450	A retro 1980 jersey signed by Langer, Meninga, Lewis, Miles and Tallis. A jersey signed by these plus Lockyer on sale by ATG Memorabilia for $549
21	4x signed cricket singlets from Shane Watson	4		$600	Australian One Day International vest. A test shirt (replica) signed by him selling for $299 from Australian Sports. Less for ODI. Say $150 each x 4
22	Signed cricket singlet from Tim Paine	1		$150	

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
23	Signed cricket polo shirt from Shane Watson	**1**		$150	This is an Australian ODI shirt
24	Signed track pants from Shane Watson	**2**		$100	These are ODI pants.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
25	Signed tennis bag(white and green, brand Head) with a signed tennis racket from Ashleigh Barty	**1**		$350	Obviously in the news now following her French Open win. Signed photos on eBay for just $20
26	Sydney 2000 Olympics signed bum bag (might be Jai Wallace?)	**1**		$75	Ji competed at the 2000 Summer Olympics in Sydney, where he received a silver medal in trampoline

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
27	Signed 2016 Cronulla Sharks Jersey with certificate of authenticity on a black hanger in a dry-cleaning bag	**1**	 	$900	Premiers. Sportsonline selling licenced product for $995 unframed.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
28	Signed Cronulla Sharks Jersey, sponsored by Martec and Coates Hire	**1**		$300	C 2016 jersey . Just one or two signatures
29	Signed Rugby League World Cup Jersey from Tomahawks USA (might have been worn by a member of the team)	**1**		$75	Little interest in US RL Jerseys
30	Signed jersey from West Tigers, sponsored by Allied Express and Brydens Lawyers	**1**		$200	

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
31	Signed Jersey from Maroons State of Origin Team 2004	**1**		$250	A 2006 signed jersey on eBay (unframed) for $299
32	Signed Brisbane Broncos Jersey	**1**		$250	This is home jersey c 2012. Broncos were knocked out of the finals in the 1st elimination final.
33	Signed Indigenous All Stars jersey, sponsored by Harvey Norman	**1**		$350	Appears to be the 2013 jersey. A framed and signed 2010 jersey on sale at Memorabilia Australia with asking price of $1,595. However, the FOGS store has this for $495 framed. 2010 was the inaugural year.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
34	Athens 2004 Olympics white men's polo shirt signed	**1**		$50	Unknown signature
35	Manly Warringah Sea Eagles 1947 – 2016 70th year signed jersey	**1**		$150	
36	Arthur Beetson Qld Rugby League Jersey	**1**		$150	"The Deadly Maroons" campaign is an amazing partnership initiative between the Queensland Rugby League and the Institute for Urban Indigenous Health's Deadly Choices preventative health program," confirmed Harden. This wasn't worn by Beetson but is a commemorative jersey produced in 2016 in conjunction with Ipswich Jets.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
37	James Tamou NSW Blues Jersey, Game 3 Suncorp Stadium Brisbane 8 July 2015	**1**		$500	
38	Muhammad Ali framed boxing glove and photograph (glove has been signed)	**1**		$900	There is an incredibly wide range of prices for signed Ali gloves online from $400 to $5,000!
39	2007 Anzac Day Test Suncorp Stadium 20th April Australia 30 def. New Zealand 6 (signed)	**1**		$500	

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
40	Makybe Diva from Champions print signed by Glen Boss	**1**		$200	Produced by Legends Genuine Memorabilia. Licenced product. Sportsonline selling for $395 framed.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
41	Don Bradman painting	**1**		$300	There have been numerous artists paint a Bradman portrait. The value lies in the reputation of the artist, not the fame of the subject. Numerous Bradman ''original' paintings have sold for less than $300.
42	2002 Michael Schumacher World champion signed hat in a frame	**1**		$900	Unframed signed hats on eBay from $999
43	That's a Miracle State of Origin box frame w/ miniature jersey signed by Mark Coyne,	**1**		$150	
44	3x framed and signed picture titled Michael Voss Captain Brisbane Lions	**1**		$100	

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
45	Photograph of Johnathan Thurston kicking a football with a plaque titled Johnathan Thurston North Queensland Cowboys Captain 2007	1		$50	Unsigned
46	Photo series 2009 – 2013 Black Caviar	1		$150	A similar licenced item with facsimile signatures retails on Memorabilia Australia site for $199 framed.
47	Signed +framed photos of Steve Waugh, 40th Test Caption of Australia	1		$100	Unofficial collection of photos with plaque

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
48	Framed Photograph of Don Bradman w signed cricket bat and ball	**1**		$1,500	Bradman signed thousands if not 10s of thousands of bats. Certainly, a much smaller number of balls were signed
49	Don Bradman cricket bat signed and framed with illustrations on the bat.	**1**		$1,250	Numerous bats signed by Bradman with paintings by Dave Thomas are available or have sold at auction. Some auction results $1,178/ $868/ $806 and down to $584. Retail achieves more but there are thousands of these signed.
50	Framed and signed shirt from Jamie Whincup Townsville400 V8 Supercars July 9 – 11 2010	**1**		$300	Dealer Australian Sports have one unframed for $399

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
51	Framed and signed cricket bat titled The Champions of Cricket	**1**		$500	Limited edition of 500 produced by Blazed in Glory – random selection (of whoever agreed to do it) Signed by Signed by all the Cricketing greats, Sir Viv Richards, Asanka Gurusinha, Greg Chappell, Barry Richards, Doug Walters, Sir Garfield Sobers, Ian Botham, Sir Richard Hadlee, Sir Alec Bedser, Rod Marsh, Wes Hall. Asking $650
52	Campbell & Lockyer signed jersey with a plaque saying 'Indigenous All Stars 16 – 10 NRL All Stars'	**1**		$300	Half/half shirt. Appears to be a commercial run. Listed on eBay for $450
53	Signed and framed Dick Johnson V8 Telecom Race Team polo shirt sponsored by First Rock Home Loans	**1**		$150	

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
54	Signed and framed QLD State of Origin 2004 team polo shirt and shorts with a team photograph	**1**		$350	
55	Framed photograph of The Sun, a cricket bat, ball and trophy with a letter to certify that Commex concepts produced one copy on the Sun Newspaper	**1**		$3,000	Bat is signed by the NSW and QLD teams that played against each other for the first time competing for the Sheffield Shield. Bat used by Leo O'Connor. He score 196 in 2nd innings (run out) NSW won by just 8 runs. This is an important item as used by QLD Captain in the first match, highlighted by his big score and signed by both teams. Ordinarily bats used by players even in tests attract a few thousand dollars. QCA Cap awarded to EC Benstead wo scored 4 and 14 and took 3-62 in the second innings.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
56	QLD State of Origin 2011 Darren Lockyer's Last Stand, Six Straight Series Wins! Signed and framed polo shirt with two x photographs on either side of the plaque.	1		$600	Framed and signed jersey not polo.
57	Framed and signed cycling jersey from Ryan Bayley	1		$250	2004 Olympic gold Medallist and 2006 C Games Gold Medallists. Can see nothing available

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
58	Round 9 2001 Queensland 500, Queensland Raceway Won by Dick Johnson Racing. Signed and framed polo shirt with two name cards/mini biographies for Steven Johnson and Paul Radisich	**1**		$400	
59	1980 Originals jersey signed by 2012 QLD State of Origin champions for their seventh straight win and framed	**1**		$600	FOGS have a 2012 signed jersey (not on a 1980 replica) for $950.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
60	Brisbane Bronco's first premiership 1992, framed jersey worn by Allan Langer	1		$7,000	One of the Broncos greats and their 1st premiership. Other matches used Broncos jerseys on the market $590 - $649 (both Sam Thaiday) for run of the mill club round jerseys. Some match stats as they relate to Langer; Broncos very first premiership 1992 *they repeated in 1993 * Alfie was captain *Alfie won the Clive Churchill medal-man of the match in that 1992 game. *Alfie won the Rothmans medal in 1992 Langer was also Broncos back of the year and Clubman of the year.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
61	The Presidents Cup – twenty-four of the world's best golfers. Two iconic team captains. One epic event. Signed and framed poster w/ mini photographs of the golfers along the side.	**1**		$600	This appears to be the 2009 event. A number of the signed posters have been auctioned in the US with prices achieved; www.thegolfauction 2011 signed by 12 $612/ 2013 signed by 12 US$460/ Green Jacket auctions 31/4/2019 , signed by 14 sold US$398.
62	Sir Donald Bradman, Australian Legend, framed photographs w/ statistics	**1**		$150	A random collection of images.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
63	Australian Kangaroos rugby league jersey signed and framed	1		$500	Prices vary online from $450 - $700
64	Framed and signed Broncos Kevin Walters jersey, Brisbane Broncos team signatures 1993	1	 	$900	

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
65	Framed photograph of QLD Origin team celebrating, 52 QLD – NSW 06, The Decider. Game 3. State of Origin. Wed July 8th, 2015.	1		$75	Unsigned photo
66	Signed and framed Greg Norman polo shirt with a photograph.	1		$200	
67	Gold Coast Titans signed and framed jersey	1		$150	
68	Framed photographs – Phar Lap, the Flemington Onslaught 1930	1		$120	Unsigned un-numbered poster. Listed on various sites "Big Australian Punter for $165 and ProSports Memorabilia $239.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
69	Qld State of Origin team photos with title '10 out of 11, WOW!' Limited edition 9 of 50	1		$50	Unsigned print
70	Allan Langer framed photograph of him about to catch a ball with plaque at the bottom of the photo with statistics	1		$95	Appears to be signed

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
71	Photograph of the State of Origin Game 1, Suncorp Stadium 11th June 2003 with a plaque at the bottom stating the players' names from both teams.	**1**		$150	Appears to be signed by Gordon Tallis
72	Signed and framed photographs of the British Open Champions, Jack Nicklaus, Ian Baker-Finch, Greg Norman, Mark O'Meara, Gary Player and Tom Watson	**1**		$300	A collection of unlicensed photos

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
73	XXXX Queensland Bulls 2003 – 2004 framed cricket bat with the player's names listed and signed.	**1**		$100	Victoria defeated QLD in the Final of the Sheffield Shield. A bat signed by QLD and WA from 2001 (the 2000-2001 season QLD won) was offered Leski Auctions 5/11/2008 Lot # 350 unsold (estimates $200-$250) Another signed by 2005/06 Bulls team listed on eBay for $100 (unframed)
74	Crescent Racing Craig Lowndes & Jamie Whincup, Bathurst Winners 2006 & 2007 signed and framed t-shirt	**1**		$300	
75	International League of Legends Ipswich 2005 signed and framed jersey, Queensland Times Maroons 46 *Drew* Mirvac Blues 46	**1**		$250	

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
76	Framed and signed photograph of Mick Doohan racing on a motorcycle	**1**		$70	An unofficial release. There are numerous signed framed photos available on internet $75-$95
77	Framed sketch of Arthur (Artie) Beetson (signed by Artie) with a plaque that says 'ARTIE, Arthur Henry Beetson OAM, The First Indigenous Australian to Captain his Country in any Sport'	**1**		$450	This was painted by CB Robinson and was a limited edition of 100. Signed by Artie and artist. Other pieces signed by Artie sell framed for $35-$249. I can see just one of these listed on eBay with an asking price of $2,000! If I allow a premium for this artwork over and above other signed Beetson memorabilia then a value $450.
78	Tiger Woods British Open 2000, signed and framed 3x photographs (two are landscape of the course and one is of Tiger kissing a trophy)	**1**		$300	The two wider photos were produced by Grabart and sold on Ch9. The signed photo an unofficial piece

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79	Photo series of Black Caviar, the wonder from down under (long, landscape frame)	**1**		$50	An unsigned print. Limited edition of 1,000 units (large) Offered on eBay unframed $19.99
80	Signed cricket shirt from Shane Watson	**1**		$150	One is available from Wiseinvestmentsportmemorabilia on eBay for $199
81	Framed and signed QLD State of Origin June 13, 2012 jersey, 104 0f 180	**1**		$900	The 2012 was the 7th consecutive for QLD, they did go on and win the following season. An official release with 107 units was produced (listed on ProSports memorabilia for $2,396) This is a non-official release

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82	The Magnificent Seven QLD State of Origin framed Photo Series with game stats for 7 Consecutive State of Origin wins 2006 - 2011	**1**		$100	This is an unsigned and unnumbered poster. Surprisingly still retailing framed at Screpgraph for $299. Others offering on eBay for $*9 unframed (a more realistic amount) BTW it must be 2012.
83	Signed North Queensland Cowboys 2013 football, in a glass frame	**1**		$250	North Queensland came 8th this season and were knocked out in the 1st Elimination final.
84	Signed and framed jersey from Harry Kewell, Australian Soccer Legend	**1**		$100	

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85	Signed and framed US Open t-shirt from Patrick Rafter	**1**		$100	
86	Signed and framed Socceroos 2006 jersey	**1**		$150	Clearly not an official release
87	Australian Olympic Gold Medallists Athens Olympic Games 2004, large framed and signed envelopes with postage stamps and a photo of the athlete	**1**		$120	The FDC (First day covers) featuring the stamps and images of the Gold medallists retail for $5 each.

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Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
88	Signed and framed Brisbane Broncos – 2006 Premiers jersey with a small photograph of the team with the trophy	1		$800	Legends Genuine Memorabilia produced the officially licenced signed jersey. There were 400 and they retail for $1,199. This was a white jersey as worn in the GF. The jersey shown also worn during the year. So not an official release and not as worn in the GF which means some discount also.
89	Large framed and signed sketch of Peter Brock, titled the Great Era of '82, an original painting by Greg McNeill	1		$860	This was a limited edition of 250 signed by Peter brock and artist Greg McNeill. One sold Shannon's Auctions for $900 ($945 w BP) another list for sale on www.diecast4u.com for $950
90	Framed and signed jersey, titled 'Kangaroo Captains' with a list of the previous captains around the outside from 1956 – 2003	1		$450	Blazed in Glory produced this. Limited edition of 500, signed by 22 captains. Retailing on their site for $515

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91	Signed and framed jersey from David Beckham, World Soccer Legend	**1**		$500	They vary in price online for $300-$800
92	Casey Stoner, 2007 World Champion. Signed and framed photo collage	**1**		$250	Print appears to have been produced unsigned. Retailed online framed $149

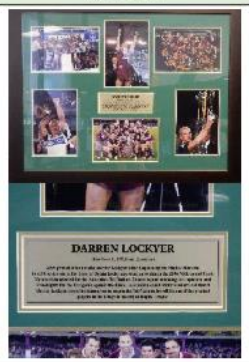
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93	Framed photo collage, Shane Warne The King of Spin with a small signed card	**1**		$250	An unofficial release – a licenced signed card added to an unsigned poster. "Cardshowcase" on eBay selling card for $150.
94	Signed and framed cricket bat from Andrew Symonds, 2008	**1**		$225	Two listed in eBay $150 and $199 unframed
95	Signed and framed cricket bat from Donald Bradman with two paintings on it	**1**		$1,250	

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96	Framed and signed photo collage of Darren Lockyer	**1**		$90	
97	Framed and signed biography of Susie O'Neil, Australian Olympic Heroes with a small photograph	**1**		$80	
98	Framed and signed photograph of Dan Marino with statistics on a plaque at the bottom	**1**		$100	A number have ben auctioned

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99	Signed and framed photographs titled 'Master and Apprentice', Jack Nicklaus and Tiger Woods with a blue piece of cardboard that says 'The Old Course'	**1**		$400	The 'blue cardboard' is probably scorecard from the St Andrews' Old Course.
100	Signed mini photographs of cricket players and statistics, with a larger group photos and more statistics in a frame titled The Invincibles – The Greats of '48	**1**		$525	This version hand signed by just 5 – Harvey, Brown. Loxton, Hammence and ring. The others are facsimile signatures. Similar items with 4 signatures retail for $495

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101	Signed and framed jersey from Canberra Raiders, 2008	**1**		$200	A framed and signed 2008 Raiders jersey was auctioned at allbids.com.au 27/11/2013 and achieved $200
102	Signed and framed cricket bat + photographs, William Alfred Brown (OAM) with a certificate of authenticity on the back	**1**		$300	I can't find a bat just signed by Bill but located the "Australian Cricket masters" bat produce late 1990s 1,000 signed. Bill is one of c 11 signatories, Sell framed $500
103	Signed and framed painting by Jamie Cooper, titled 'Greatest Ever' 20/20 Athletes Edition	**1**		$200	I assume this is - Brisbane Greatest Ever sports Stars by Jamie Cooper signed by 13 athletes. Was a limited edition of 100. This was an athlete's edition (meaning it was not part of the limited edition - a way for the maker to reward athletes for signing often at little or no expense, but

Attachment C – Schedule of Prices
To be completed by the Supplier for the purpose of providing fixed quote pricing in response to RFQ - 13595

Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
					not lessen the number available for sale) On was auctioned Leski Auctions in 2004. With estimates for $400-$600 it achieved just $300. The market for large signed framed limited editions has been flat since the Global Financial crisis of late 2008. Added to that the vast oversupply of material into the Australian market and the massive fire-sale of Legends stock c 2010. This has seen values fall by over 50% on original retail. A Melbourne edition was made l/e of 300 with 14 signatures one sold Mossgreen Auction for just $61 7/9/2015 lot # 60
104	Framed photograph of Makybe Diva, signed by Glen Boss (jockey)	**1**		$250	There are numerous editions, many official signed by Boss. Prices vary from $85-$795

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
105	Framed mini photographs and statistics, titled The Originals Restoring Queensland Pride, Winfield State of Origin	**1**		$400	
106	Framed and signed Brisbane Broncos jersey, sponsored by WOW	**1**		$400	I believe this is the 2008 centenary Jersey. Broncos came 5th and were knocked out of the finals. Prices online vary from $199-$499 unframed
107	Signed and framed photograph of Mal Meninga	**1**		$90	eBay

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
108	Framed and signed photograph of Arthur Beetson	**1**		$175	Official releases retailing for $250. This isn't.
109	Framed and signed swimming cap, goggles and photograph from Susie O'Neill with a letter of authentication on the back.	**1**		$90	An unframed but signed Susie O'Neill cap offered on eBay for $50
110	Framed and signed cricket ball with two photographs from Shane Warne	**1**		$175	A signed Warne ball $150. Plus, photos This is an unofficial release.

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
111	Signed photograph and statistics of Glenn Lazarus, 1999 Premiership Winner	**1**		$90	
112	Signed photo series titled 'The Australian Cricket Legends', Frame by Frame (Jeff Thomson) Limited Edition, # 202/1500	**1**		$120	These were produced in late 1990s. There have been a number of signed 'Thommo' items on the market.
113	Framed and signed Lions jersey, donated by Gallery Newtown as a show of support for the 'Childhood cancer Support – Black Tie Ball 2009'	**1**		$250	Looks like a 2009 jersey, one which appears to have been worn by Daniel Bradshaw 9and signed by team) listed on eBay framed for $480. Less for a non-player jersey

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
114	Framed and signed jersey from Brisbane Lions 2005	1		$250	
115	Framed and signed jersey from Brisbane Lions 2001	1		$600	2001 was the 5th season for the Brisbane Lions. They won the first of 3 premierships. Framed signed jerseys have sold at auction for $575 and $566.
116	Signed and framed miniature cricket bat and 2x photographs of Michael Clark	1		$150	A variety of Michael Clarke signed mini bats listed on eBay from $135 unframed. Those framed $179-$199. A collection of 10 mini bats signed by various former captains and current players was offered Graham Budd Auctions 3/6/19 and unsold (estimates GBP350-450) Thus unsold at c $70 each unframed

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
117	Framed photographs of Pat Cash and Pat Rafter with a signed sweatband	**1**		$120	See item # 137
118	Framed and signed photographs, from the 100th US Open at Pebble Beach Golf Links, Master and Apprentice (Tiger Woods + Jack Nicklaus)	**1**		$250	Two signed photos framed together

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
119	2x Photographs, a miniature Gray Nicolls bat (signed by Matthew Hayden) and a soil sample taken from the same pitch on which the Test Record Score was made (Australia v New Zealand match) in a frame with a plaque that says Matthew Hayden, World Record – 380 Test Runs	1		$150	Strange combination – I my opinion soil a gimmick. This Test record was not embraced as it was against a very weak opposition. It Was broken soon after by Brian Lara

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
120	Signed Lions jersey with a plaque that says 'Rhan Hooper Former Ipswich Cat Brisbane Lions 2006, First Ipswich Player in the AFL'	1		$200	Appears to be a Brisbane Lions jersey signed by 2006 team. With plaque. Club was 13th out of 16th on the ladder. Hooper played 54 AFL games across 5 years for 2 clubs. A framed signed jersey listed in Gumtree for $300

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
121	Signed and framed swimsuit from Jodie Henry, 100m Freestyle Olympic Gold Medallist Athens 2004	**1**		$100	Little demand at auction for framed swimsuits; Leski Auctions 25/9/2008 lot # 833 Sydney 2000 suit signed Susie O'Neill framed with plaque and images achieved $140. Leonard Joel 28/8/14 Sydney 2000 swimsuit signed Women's water polo side – gold medallists. Lot # 139 unsold despite estimates $100-$200.
122	Framed photo series of the Champions of the Turf, top 3 Prize Money Earners in Racing, plus The Heir Apparent	**1**		$275	Limited edition of 1,500 signed by Personally signed by Jim Cassidy, Shane Dye, and Darren Beadman (Twice) Retails framed for $395 from Sportsonline

Attachment C – Schedule of Prices
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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
123	4x individual photos and 1x group photo of the British Open Champions Jack Nicklaus, Greg Norman, Gary Player, Tiger Woods, with certificate of authenticity	**1**		$150	The photo of the winner is available for $120 from wwwcountryclubeditions.com. Just framed up with 4 other photo and plaques

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
124	Framed drawing of 'Tulloch' with certificate of authenticity	**1**		$50	I have no record of this selling or auctioned. Estimate
125	Three framed photographs of Darren Lockyer (signed)	**1**		$125	One photo signed

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
126	Framed and signed photograph of 'The Raging Bull' Gordon Tallis	**1**		$125	Similar – a signed photo framed listed on Legends Under Glass store website $149
127	Framed and signed photographs, State of Origin Heroes Hope Island 2002 Karrie Webb	**1**		$75	A Karrie Webb signed Queensland heroes of Sport card selling for $23. Framed photos from $92.
128	Signed and framed Broncos banner with a small photograph of Gene Miles, Wally Lewis, Wayne Bennett, Allan Langer and Kevin Walters	**1**		$200	Appears to be signed by the 5. Quirky piece but again unofficial.

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
129	Framed and signed boxing glove with 3x photographs of Kostya Tszyu, Undisputed Champion of the World WBC WBA IBF(2)	**1**		$400	
130	Celebrating 25 Years of Sports Greatest Rivalry photo collage	**1**		$20	This is merely a poster. Unsigned and un-numbered. Some listed unframed for $3.
131	Framed and signed photographs titled 'The Greatest, Makybe Diva'	**1**		$125	Memorabilia Warehouse selling framed new $150. Unfarmed for sale from $30. Clearly original release did not sell out.

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
132	Framed and signed NRL boot from Alan Langer	**1**		$150	Merely a signed (and not played in boot) Listed on eBay are 2 boots – one signed Alan the other QLG 5/6 Kev Walters. Listed at $259. This is one boot and one signature
133	Legends of League 1st May 2004 QLD v NSW signed and framed jersey	**1**		$200	Former player match has less value than commemorative jerseys or those signed by actual teams
134	Signed and framed DJR Shell Helix Racing Original Crew Shirt, worn for the duration of the 2003 Shell Australian Touring Car Championships	**1**		$150	Marcus Ambrose of Stine Bros racing won in 2003 (and also 2004) This has little market significance

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
135	Signed and framed pants and stirrup from a jockey (J.A Cassidy)	**1**		$250	Normally jockeys sign silks as they are more identifiable with the trainer/horse and more attractive to view. Jockey pants seldom offered
136	Wally Lewis 'The King' signed and framed photo series with a certificate of authenticity on the back dated September 2011	**1**	 	$200	This is an unofficial release. It is merely a signed card or photo which is cobbled together with other images. No royalties paid to the teams nor the signatory.

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
137	Framed photographs of Pat Cash with a signed sweatband 1987 Wimbledon Champion	**1**		$120	Prices have varied a dual photo framed item (one signed) auctioned at Leski Auctions 16/2/10 :Lot # 534 achieved $299. Market has softened further since; signed framed photo now listed on eBay $89. Slight premium for a signed replica sweatband.
138	World Expo 88 Flag	**1**		$250	
139	Sydney 2000 Olympics Flag	**1**		$250	Can't see any having been auctioned or still for sale. I don't believe it is worth much. Similar (new) available eBay for $300

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
140	Pat Cash signed pack – hat, shirt, sweatband and tennis ball	**1**		$400	Appears to be 4 items each signed. While I can find a sign tennis ball available for $249, I think as a group the value would be less that that x 4.
142	Cricket Australia hats signed by a cricket player	**2**		$100	I can't make out the signature. These are merchandise caps which have been signed. Approx. $50 each
143	Srixon golf bag cover	**1**		$85	Merchandise not memorabilia – appears to retail for $86
144	Queensland Raceways cap with signatures from Mark Winterbottom and David Reynolds	**1**		$50	Caps signed by Mark (can't see any signed by both) available on eBay from $35 - $199.

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

Item #	Description of item/s to be valued	Quantity of items	Digital Image of item	Price (GST excluded)	Valuer notes
145	Landscape photograph collage, celebrating 25 Years of the Ipswich Brisbane Broncos	1		$120	Released as a limited-edition of 1000 units (which is quite large) appears to be an unsigned release. One available on eBay for $185. Numerous others are available unframed so was not a sell-out.

Pricing Option 1 **SumTotal** excluding Goods and Services Tax: (Respondants will insert the sum of all values provided above in the Price column) This includes the 4 extra items (146-149)	**$52,085**
Pricing Option 2 **Lump sum Offer** excluding Goods and Services Tax: (Respondants may choose to provide a Lump sum price to value each and all of the above listed items numbered 1 – 145, at a 'one of' lump sum rate)	**$2,175.00**

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Ipswich City Council – Schedule of Prices – Valuation of Sporting Memorabilia

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Description Item	No. of Items:	Image of Item	Notes	Value $
146. Signed Australian Cricket Bat (Zimbabwe 2004)	1			$150
147. Team of The Century 100 Years of Australian Football with Certificate of Authenticity and Limitation 93 of 250	1	 	Australian Rules side of the 100 years from Queensland. Signed by two who had long VFL?AFL careers. Limited edition of 250, signed by Michael Voss and Jason Dunstall. I cant see any coming on the market	$200
148 149Landscape photograph collage, celebrating 25 Years of the Ipswich Brisbane Broncos with Certificate Limited Edition 542 of 1000 One in a Black Frame One in a Silver Frame with Certificate	2	 	As per item # 145 in the main list; Released as a limited-edition of 1000 units (which is quite large) appears to be an unsigned release. One available on eBay for $185. Numerous others are available unframed so was not a sell-out. 2 x $120	$240

Description Item	No. of Items:	Image of Item	Notes	Value $
				

[redacted]

From: Tony Dunleavy
Sent: Tuesday, 8 December 2020 8:40 AM
To: [redacted]
Cc: [redacted]
Subject: FW: Property from Operation Windage

[redacted]

Just confirming that the CCC have no further interest in the memorabilia held by Council.

All the property belonging to Paul Pisasale has been collected on his behalf.

Council are free to dispose of the remaining property in accordance with the *Local Government Act 2009* and *Local Government Regulation 2012*.

Cheers

Tony

Tony Dunleavy | Manager, Legal and Governance (General Counsel)
Corporate Services Department
[redacted]

From: Justin McWatt [redacted]
Sent: Tuesday, 8 December 2020 8:34 AM
To: Tony Dunleavy
Cc: Makeeta McIntyre
Subject: RE: Property from Operation Windage

Good morning Tony,

Sorry for the delay. I can confirm that the CCC has no further interest in the Memorabilia items that are in the Ipswich City Council's possession, which the CCC did not seize in relation to any offences.

The CCC acknowledges that council wishes to deal with that property however appropriately.

Just to let you know also Tony, Saskia has left the CCC and returned back to QPS.

Regards,

Justin McWatt
Investigator
Crime and Corruption Commission
[redacted]
Level 2 North Tower, 515 St Pauls Tce, Fortitude Valley QLD 4006 | GPO Box 3123, Brisbane QLD 4001
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1



The Crime and Corruption Commission acknowledge the Traditional Owners of the lands where we live and work and pay our respects to their Elders – past, present and emerging. We recognise and celebrate the vibrant and unique cultures of all Aboriginal and Torres Strait Islander peoples.

From: Tony Dunleavy [redacted]
Sent: Thursday, 3 December 2020 4:42 PM
To: Saskia Toohey [redacted]
Cc: Justin McWatt [redacted]
Subject: Property from Operation Windage

Good Afternoon Saskia/Justin,

I am making further inquiries In relation to the personal property (**memorabilia**) which was the subject of the investigations and court matters for Operation Windage.

The personal property of Paul Pisasale, which is confirmed as belonging to him (excluding all relevant memorabilia retained by Council) has recently been collected on his behalf.

There was also a significant amount of further outstanding memorabilia items, which was not subject to seizure by the CCC, and which did not relate to any person charged with offences.

The outstanding memorabilia and other personal property which was not the subject of any further charges, currently remains in Council's possession and appears to be legitimately either have been purchased with Council monies, or owned by Council.

Council now wishes to deal with the property in its possession, in accordance with Council's statutory obligations for disposal of property under *the Local Government Act 2009* and the *Local Government Regulation 2012*.

Council wants to consider its options in relation to disposal of the Memorabilia and seeks the Crime and Corruption Commission's (**CCC**) confirmation, that the CCC no longer have an interest in the retained memorabilia.

Council would like to establish the following:

1. Whether the CCC have any further interest in any of the Memorabilia in Council's possession, and if so which items?

2. If there is no further interest in the Memorabilia items, please confirm you no longer hold an interest in any of the relevant memorabilia in Council's possession.

Council will undertake to deal with the outstanding memorabilia in accordance with its statutory obligations for disposal of property once the CCC confirms no further interest.

Thanks for your assistance and please do not hesitate to contact me with any queries.

Thanks

Tony

Warning: *this advice is subject to* ***Legal Professional Privilege*** *(LPP). To avoid waiving LPP, this advice and/or reference to its contents should not be distributed any wider than is necessary, and should not be distributed outside of Council without first consulting Legal Services. If LPP is waived, it can prejudice proceedings, and the advice may be accessed under the Right to Information Act 2009 and the Information Privacy Act 2009.*

Tony Dunleavy | Manager, Legal and Governance (General Counsel)
Legal and Governance Branch
Corporate Services Department

IPSWICH CITY COUNCIL T| [redacted]



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IPSWICH CITY COUNCIL - SMART CITY PROJECT DETAILS							
Project	**Name/Task**	**Expenditure Type**	**Total**	**Asset created**	**Cost**	**Acc dep**	**WDV**
REVENUE							
	Advancing Regional Innovation Program						
		Govt grant subsidy op rev	475,875				
			475,875				
	Fire Station 101						
		Internal trading revenue	11,273				
		Other sundry receipts	71,990				
		Govt grant	70,000				
			153,262				
		Total revenue	629,137				
EXPENDITURE							
FPM00364	**Smart Digital City**			**FPM00364 – Smart City Program Blueprint Research, Development and Implementation**			
	External Labour						
		Info Technology Consultants	55,697				
		Labour Contracts	20,422				
			76,119				
	Internal Labour						
		Employee Labour	28,046				
			28,046				
	Materials and Service						
		Conferences and Deputations	2,429				
		Entertainment Expenses	53				
		Info Technology Consultants	27,400				
		Miscellaneous Consultants	967,250				
		Other Services	1,469				
		Other: Goods	418				
		Travel and Accommodation	252,849				
			1,251,869				
	Overheads						
		Employee Labour	56,007				
			56,007				
	Smart Digital City total		**1,412,041**				

IPSWICH CITY COUNCIL - SMART CITY PROJECT DETAILS							
Project	**Name/Task**	**Expenditure Type**	**Total**	**Asset created**	**Cost**	**Acc dep**	**WDV**
EDM00022 & ECD00002	**Office of Economic Development**			**ECD00002 and EDM00022 – Fire Station 101 and ARIP Operations**			
	Advancing Regional Innovation Program						
		Advertising and Promotion	(4,839)				
		Conferences and Deputations	7,619				
		Employee Labour	236,947				
		Miscellaneous Consultants	39,837				
		Motor Vehicle Expenditure	155				
		Other Services	152,146				
		SLA Charges	3,247				
		Travel and Accommodation	234				
			435,345				
	Firestation 101						
		Advertising and Promotion	30,160				
		Communications	644				
		Conferences and Deputations	13,161				
		Employee Labour	81,572				
		Entertainment Expenses	231				
		Expense Transferred In	4,613				
		Info Tech Equip and Access	589				
		Labour Contracts	94,548				
		Maintenance	3,846				
		Materials	161				
		Miscellaneous Consultants	2,236				
		Motor Vehicle Expenditure	116				
		Office Supplies	7,154				
		Other Services	3,838				
		Other: Goods	885				
		Plant & Equip Usage	17,131				
		Service Contracts	3,001				
		SLA Charges	2,727				
		Store Consumables	119				
			266,732				

IPSWICH CITY COUNCIL - SMART CITY PROJECT DETAILS							
Project	Name/Task	Expenditure Type	Total	Asset created	Cost	Acc dep	WDV
	Innovation Smart City						
		Advertising and Promotion	578				
		Employee Labour	251,616				
		Engineering Consultants	25,000				
		Other Services	13,755				
		Service Contracts	448				
		SLA Charges	767				
		Study Assistance	1,000				
		Travel and Accommodation	920				
			294,084				
	Office of Economic Development total		**996,161**				

IPSWICH CITY COUNCIL - SMART CITY PROJECT DETAILS							
Project	**Name/Task**	**Expenditure Type**	**Total**	**Asset created**	**Cost**	**Acc dep**	**WDV**
FPM00381	**Smart City**			**FPM00381 – Public WiFi and Sensor Network Deployment and Operations**			
	External Labour						
		Labour Contracts	168,019	Smart City - IP/design/footprint	219,384	(167,585)	51,799
			168,019	Network Infrastructure - including servers 2017	758,896	(579,712)	179,184
	Internal Labour						
		Employee Labour	6,218				
			6,218				
	Overheads						
		Employee Labour	45,147				
			45,147				
	Physical Asset Purch						
		Info Tech Equip and Access	586,942				
		Other Services	171,954				
			758,896				
	Smart City total		**978,279**		**978,279**	**(747,297)**	**230,983**
INF02355	**Nth Ipswich Reserve Smart City**			**INFO2355, INFO2356, INFO2408 and WPR00001 – Proof of Concept Pilots**			
	Operational Costs						
		SLA Charges	128	SMART CITY Air Quality Monitor 17/18	31,001	(21,313)	9,688
			128	Surveillance Cameras 17/18	121,126	(66,619)	54,507
	Service Works			Irrigation Monitor 17/18	24,507	(16,849)	7,659
		Electricity	698	SMART CITY Robotic Mower 17/18	21,304	(14,647)	6,658
		Info Technology Consultants	416,541	SMART CITY Smart Bench 17/18	22,056	(15,164)	6,893
		Other Services	5,220	SMART CITY Hardware 17/18	4,411	(4,044)	368
		Other: Goods	8,101	SMART CITY Software 17/18	50,963	(20,021)	30,942
			430,560	Smart Lights North Ipswich Reserve 17/18	45,261	(31,117)	14,144
	Works, Parks & Recre			Smart Poles North Ipswich Reserve 17/18	45,329	(31,164)	14,165
		Expense Transferred In	6,319	SMART CITY Waste Chain Sensor 17/18	58,511	(40,226)	18,285
			6,319				
	Nth Ipswich Reserve Smart City total		**437,007**		**424,471**	**(261,164)**	**163,307**

IPSWICH CITY COUNCIL - SMART CITY PROJECT DETAILS							
Project	**Name/Task**	**Expenditure Type**	**Total**	**Asset created**	**Cost**	**Acc dep**	**WDV**
INF02356	**Rosewood Showground Smart City**			**INFO2355, INFO2356, INFO2408 and WPR00001 – Proof of Concept Pilots**			
	Infrastructure Services						
		Expense Transferred In	741	Rosewood Community Hall - Services	64,760	(2,316)	62,444
			741	Rosewood Community Hall - Superstructure	2,104	(1,168)	936
	Operational Costs			Bin Enclosures (Dual) x 4	52,746	(9,011)	43,735
		Info Technology Consultants	1,213	Counter Controllers	7,374	(6,145)	1,229
			1,213	Caravan GPO Controllers	19,550	(16,292)	3,258
	Smart City Initiative			SmartBin Sensors	16,244	(13,536)	2,707
		Info Tech Equip and Access	316,000	Smart Light - Luminaire Controllers	38,453	(32,044)	6,409
		Info Technology Consultants	66,295	10KW solar power system	83,663	(69,719)	13,944
		Materials	732	MeshNet Pole Sub-Board Controllers	55,502	(46,252)	9,250
		Other Services	2,919	Video Recorder and Communication System	12,765	(8,510)	4,255
		Other: Goods	16,201	Ultrasonic Range Finder for Water Tank	3,594	(2,995)	599
			402,147	Lufft Weather Station	28,606	(23,839)	4,768
	Works, Parks & Recreation						
		Expense Transferred In	5,809				
			5,809				
	Rosewood Showground Smart City total		**409,910**		**385,361**	**(231,827)**	**153,534**
INF02408	**SportE Project**			**INFO2355, INFO2356, INFO2408 and WPR00001 – Proof of Concept Pilots**			
	Tivoli Sports Centre						
		Service Contracts	607	Woodend Park remote sport light control (SportE) - Syste	18,242	(18,242)	
	Woodend Park		607	Systems Software (Network) - Tivoli Sports Centre remot	18,242	(18,242)	
		Employee Labour	230				
		Expense Transferred In	30				
		Info Technology Consultants	34,700				
		Materials	329				
		Plant & Equip Usage	38				
			35,327				
	Works, Parks & Recreation						
		Expense Transferred In	549				
			549				
	SportE Project total		**36,484**		**36,484**	**(36,484)**	**0**
WPR00001	**WPR Administration**			**INFO2355, INFO2356, INFO2408 and WPR00001 – Proof of Concept Pilots**			

IPSWICH CITY COUNCIL - SMART CITY PROJECT DETAILS							
Project	**Name/Task**	**Expenditure Type**	**Total**	**Asset created**	**Cost**	**Acc dep**	**WDV**
	Assessments						
		Engineering Consultants	8,600				
			8,600				
	Smart City Admin						
		Conferences and Deputations	86				
		Employee Labour	130,471				
		Entertainment Expenses	47				
		Info Tech Equip and Access	6,454				
		Info Technology Consultants	3,803				
		Motor Vehicle Expenditure	28				
		Office Supplies	65				
		Other Services	389				
		Travel and Accommodation	873				
			142,217				
	Streetlight Network						
		Advertising and Promotion	1,840				
		Communications	84,100				
		Conferences and Deputations	3,052				
		Electricity	14,070				
		Engineering Consultants	22,510				
		Labour Contracts	109,853				
		Legal Expenses	47,000				
		Materials	138				
		Miscellaneous Consultants	6,720				
		Motor Vehicle Expenditure	9				
		Other Services	119				
		Travel and Accommodation	450				
			289,860				
	WPR Administration total		**440,677**				
TOTAL EXPENDITURE			**4,710,558**				

IPSWICH CITY COUNCIL - SMART CITY PROJECT DETAILS
SUPPLIER PAYMENT DETAILS

Employee/Supplier 2	Expnd Type 2	Total
ACCENTURE AUSTRALIA PTY LTD		**1,065,385.68**
	Miscellaneous Consultants	967,250.00
	Travel and Accomodation	98,135.68
APN NEWSPAPERS PTY LTD		**258.30**
	Advertising and Promotion	258.30
ARCSG PTY LTD		**337,207.45**
	Info Tech Equip and Access	316,000.00
	Info Technology Consultants	21,207.45
ARUP		**8,600.00**
	Engineering Consultants	8,600.00
ASHBURNER FRANCIS PTY LTD		**11,220.00**
	Engineering Consultants	4,500.00
	Miscellaneous Consultants	6,720.00
BROTHER & CO PTY LTD		**31,750.00**
	Info Technology Consultants	5,750.00
	Other Services	26,000.00
N/A		**1,000.00**
	Miscellaneous Consultants	1,000.00
CHUBB FIRE & SECURITY PTY LTD		**3,001.13**
	Service Contracts	3,001.13
CREATE XP		**10,650.25**
	Miscellaneous Consultants	10,650.25
CV ENERGY SERVICES PTY LTD		**15,690.00**
	Communications	15,690.00
DOC-SEARCH		**140.00**
	General Expenditure	140.00
ERM BUSINESS ENERGY		**14,070.22**
	Electricity	14,070.22
FUJI XEROX AUSTRALIA PTY. LIMITED		**3,846.05**
	Maintenance	3,846.05
FUTURE ANYTHING PTY LTD		**10,000.00**
	Other Services	10,000.00
GERARD LIGHTING PTY LTD		**45,164.70**
	Communications	45,164.70
GLASSANDCO PTY LTD		**28,946.02**
	Miscellaneous Consultants	28,946.02
GREATER SPRINGFIELD CHAMBER OF COMMERCE		**4,000.00**
	Other Services	4,000.00
HAPPY PANDA TWO PTY LTD		**12,450.00**
	Other Services	12,450.00
HAYMANS ELECTRICAL		**186.81**
	Materials	186.81
HAYS SPECIALIST RECRUITMENT (AUSTRALIA) PTY LIMITED		**150,752.25**
	Labour Contracts	150,752.25
N/A		**3,010.00**
	Engineering Consultants	3,010.00
N/A		**3,870.00**
	Other Services	3,870.00
KINGSWOOD PRESS PTY. LTD.		**5,192.81**
	Advertising and Promotion	5,192.81
LOCATRIX		**1,600.00**
	Other Services	1,600.00
MCCULLOUGH ROBERTSON LAWYERS		**47,000.00**
	Legal Expenses	47,000.00
MCLEAN IMAGES PTY LTD		**578.00**
	Advertising and Promotion	578.00
MESHED PTY LIMITED		**27,400.00**

	Info Technology Consultants	27,400.00
MP LINES AND SIGNS PTY LTD		**545.00**
	Service Contracts	545.00
ONTALENT PTY LIMITED		**244,137.64**
	Info Technology Consultants	55,696.80
	Labour Contracts	188,440.84
OPTIMUM MEDIA DIRECTION		1,382.01
	Advertising and Promotion	1,382.01
N/A		**473.00**
	Other Services	473.00
PRINT PLUS		**130.00**
	Office Supplies	130.00
QUEENSLAND PATHWAYS STATE COLLEGE		**9,063.00**
	Other Services	9,063.00
REEKOH PTY LTD		**10,000.00**
	Other Services	10,000.00
RIVERCITY LOCKSMITHS AND SECURITY		**683.73**
	Service Contracts	683.73
RZCRL PTY LTD		**607.27**
	Service Contracts	607.27
SECURE ACCESS SYSTEMS PTY LTD		**20,123.58**
	Info Technology Consultants	19,350.00
	Other Services	773.58
SMARTER TECHNOLOGY SOLUTIONS PTY LTD		**422,573.11**
	Info Tech Equip and Access	6,032.01
	Info Technology Consultants	416,541.10
SPORTE SOLUTIONS PTY LTD		37,100.00
	Info Technology Consultants	37,100.00
STEM PUNKS VENTURES PTY LTD		**10,000.00**
	Other Services	10,000.00
STOWE AUSTRALIA PTY LIMITED		**195,362.55**
	Electricity	697.79
	Engineering Consultants	15,000.00
	Info Tech Equip and Access	131,210.76
	Other Services	48,454.00
SURREAL SIGNS PTY LTD		**3,250.00**
	Advertising and Promotion	3,250.00
TELSTRA CORPORATION LIMITED		**569,231.00**
	Info Tech Equip and Access	455,731.00
	Other Services	113,500.00
THE OFFICE OF STATE REVENUE		**1,056.01**
	General Expenditure	1,056.01
THE TRUSTEE FOR MEEHAN FAMILY TRUST		**23,244.80**
	Communications	23,244.80
THE TRUSTEE FOR THE SHOP IPSWICH TRUST		**5,000.00**
	Other Services	5,000.00
THE TRUSTEE FOR THINKBOX GROUP TRUST		**24,715.18**
	Info Technology Consultants	24,715.18
TOP OFFICE GROUP PTY LTD		**28,940.64**
	Labour Contracts	28,940.64
UNISITE STREET & PARK FURNITURE		**23,484.00**
	Other: Goods	23,484.00
UNIVERSITY OF SOUTHERN QUEENSLAND		**13,200.00**
	Other Services	13,200.00
URBANE AESTHETICS GROUP PTY LTD		**4,313.18**
	Other Services	3,495.00
	Other: Goods	818.18
URBIS PTY LTD		**25,000.00**
	Engineering Consultants	25,000.00
WILSON SECURITY PTY LTD		**447.89**
	Service Contracts	447.89

XXX DIRECT PAYMENT		**1,000.00**
	Study Assistance	1,000.00
ZZZ ONE TIME SUPPLIER		**58,455.93**
	Conferences and Deputations	19,997.27
	Other Services	32,958.66
	Service Contracts	5,500.00
Employee Labour		**692,531.43**
	Employee Expenses	692,531.43
Journal Entry		**240,202.12**
	Advertising and Promotion	-5,000.00
	Books Journals Subscript	252.28
	Conferences and Deputations	0.00
	Employee Expenses	143,721.60
	Entertainment Expenses	230.55
	Expense Transferred In	18,301.42
	Info Technology Consultants	3,637.80
	Labour Contracts	24,707.76
	Miscellaneous Consultants	40,723.18
	Office Supplies	0.00
	Other Services	6,640.02
	SLA Charges	6,868.75
	Store Consumables	118.76
Credit card purchase		**184,120.45**
	Advertising and Promotion	922.60
	Books Journals Subscript	269.25
	Communications	889.75
	Conferences and Deputations	9,191.17
	Entertainment Expenses	253.73
	Expense Transferred In	72.00
	Info Tech Equip and Access	1,846.62
	Materials	1,172.45
	Miscellaneous Consultants	350.00
	Motor Vehicle Expenditure	446.97
	Office Supplies	831.68
	Other Services	7,533.53
	Other Utilities	81.77
	Other: Goods	3,052.82
	Purchase Card Purchases	15.00
	Travel and Accomodation	157,191.11
Plant and equipment usage		**17,169.50**
	Plant & Equip Usage	17,169.50
Grand Total		**4,710,512.69**

Name/Task	Revenue or Expenditure Type	Total	Asset created	Cost	Acc dep	WDV
REVENUE						
Ipswich City Enterprises Pty Ltd						
Fire Station 101						
	Cost recovery	13				
	Grants	18,000				
	Bad debt recovery	450				
	Other revenue	1,526				
	Sales	190,817				
	Gains on disposal	1,060				
	Total revenue	211,866				
EXPENDITURE						
Ipswich City Enterprises Pty Ltd						
	Travel and Accommodation	24,096				
Fire Station 101						
	Bad Debts	12,155				
	Consulting Services	216,439				
	Other Professional Services	14,455				
	Depreciation	26,482				
	Travel	939				
	Entertainment	20,604				
	Electricity	37,140				
	Cleaning	53,818				
	Administration	59,054				
	Phone and Internet	29,107				
	Other Materials and Services	110,034				
	Rent and outgoings (to ICD)	277,388				
	Wages and Staffing	316,413				
	Total Expenses	1,198,122				
Ipswich City Enterprises Pty Ltd		**(986,256)**				

IPSWICH CITY DEVELOPMENTS PTY LTD - 101 LIMESTONE STREET (Firestation Building)						
Name/Task	Revenue or Expenditure Type	Total	Asset created	Cost	Acc dep	WDV
REVENUE						
101 Limestone Street						
	Rent and outgoings (ICE)	277,336				
	Total revenue	277,336				
EXPENDITURE						
101 Limestone Street						
	Council Rates	38,568				
	Land Tax	74,061				
	Consultancy Fees	35,503				
	Legal, Property Management, Insurance Fe	31,280				
	Repairs and Maintenance	12,257				
	Electricity and Utilities	19,888				
	Other Owner Expenses	81,916				
	Project finance costs	273,918				
	Total Expenses	567,391				
Ipswich City Developments Pty Ltd		**(290,055)**				

IPSWICH CITY DEVELOPMENTS PTY LTD - 101 LIMESTONE STREET (building purchase and holding costs)					
Name/Task	Revenue or Expenditure Type	Asset created	Cost	Acc dep	WDV
PURCHASE OF THE BUILDING					
	Purchase	101 Limestone Street	1,471,884		
	Refurbishment of building	101 Limestone Street	1,357,154		
	Sale partial (external)		(550,649)		
	Sale to Council		(2,000,000)		
	Loss on Sale		(278,389)		
	Purchase plant & equip and fitout	101 Limestone Street	90,331	-26481	63,850
	Sale plant and equipment to Council				-67571
	Profit on sale (P&E)		(90,331)	26481	3,721
Ipswich City Developments Pty Ltd			**0**	**0**	**0**

New Zealand

Tuesday 11 August 2015 – Sunday 16 August 2015

Travel Summary

Tuesday 11 August 2015		
11.20 am	**Pickup ICC – Back carpark**	Event Limousines
1:25pm **3.00pm**	**Qantas QF529** Depart Brisbane Arrive Sydney	Lunch on flight
	Transfer – Domestic to International airport	
5.35pm **10.40pm**	**Qantas QF139** Depart Sydney Arrive Christchurch, New Zealand	Dinner on flight 3 hr flying time 2 hour time difference
	Transfer –Airport to Hotel **Accommodation x 2 nights** **Rendezvous Hotel** 166 Gloucester St Christchurch Phone: 64 3 943 3888	A2B Luxury Lines. Representative will meet at airport with sign. Buffet Breakfast included Free WI FI

Wednesday 12 August 2015		
	Walk from Hotel to Christchurch Council **53 Hereford Street** **Christchurch**	5 minute walk Christchurch Council is located next to Christchurch Centre Development Unit who is hosting the Tour for the day.
9.00 – 5.00pm	**Site Tour of Reconstruction Effort in Christchurch**	Light lunch provided See attached Itinerary for details.
7.00pm	**Dinner - TBA**	

] **Thursday 13 August 2015**		
8.30 am	**Check out of Hotel** **Pick up from Hotel**	Bags to be left with driver. A2B Luxury Lines
9.00 am **-** **10.00 am**	**Site Tour – Digital Incubator Inspection** **Ministry of Awesome** 208 Madras Street Christchurch	
	Pick up for next site tour	A2B Luxury Lines
10.30 am **-** **11.30 am**	**Site Tour – Digital Incubator Inspection** **Lighting Lab & Greenhouse Ventures** 146A Lichfield St Christchurch	
11.45am	**Transfer to Airport**	A2B Luxury Lines
2.45 pm **4.05 pm**	**Qantas WF 4930** Depart Christchurch Arrive Auckland	Lunch on Flight
	Transfer Airport – Hotel	Hallmark Limousines. Rep will meet at airport.
	Accommodation x 3 nights **Citylife Auckland** 171 Queen Street Auckland Phone: 64 9979 7295	Buffet Breakfast Free WI FI
7.00pm	**Dinner - TBA**	

Friday 14 August 2015		
8.30 am	**Pick up from Hotel**	Hallmark Limousines.
9.00 am **-** **12.00 pm**	**Site Tour – Digital Incubator Inspection** **Grid AKL, Bizdojo/Icehouse** Level 8, 139 Quay Street Auckland	
12.00pm	**Pick up to next tour**	Hallmark Limousines.
12.30 pm - **2.30pm** *approximately*	**Site tour – Auckland Council Property Limited** ACPL Level 9 Bledisloe Building 24 Wellesley Street Auckland	Lunch Provided.
2.30pm	**Pick up to Hotel**	Hallmark Limousines
6.00 pm – 7.00pm	**Dinner – TBA**	

Saturday 15 August 2015		
10.00 am	**Pick up for Property Site tour**	Hallmark Limousines
10.00 am – 12.00pm	**Site Tour of Developments**	Hallmark Limousines
	Free Afternoon	

Sunday 16 August 2015		
12 noon	**Pick up Hotel to Airport**	Hallmark Limousines
3.55 pm - **5.00 pm**	**Qantas QF126** Depart Auckland Arrive Brisbane	Meal on Flight
	Pick up Hotel to Home	Event Limousines

SMART CITY BLUEPRINT

File Name: ICC SCB – Smart City Blueprint
Version: 1.2
Last Updated: 29th July 2016
Release State: Final

DOCUMENT VERSION HISTORY

DOCUMENT VERSION	ISSUE DATE	COMMENTS
1.0	15-Jul-2016	Original draft release, circulated for review.
1.1	19-Jul-2016	Updates made as per feedback from the following: • Andrew Roach • Ben Pole • Matthew Schultz
1.2	29-Jul-2016	Exec Summary included

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EXECUTIVE SUMMARY

Cities are complex system of systems that exists and thrives through human behaviour. Citizens tend to live, work and relax in a city based on the fruitful interactions and relations they can create with the built and natural environments. From their inception, local governments have faced this enormous challenge of understanding these real-time systems to support economic development and delivering the right services for the city. To compound the challenge, around 66% of world population is projected to live in urban regions by 2050.

Ipswich is in the cusp of this urban movement, with a rapidly growing population from 190,000 to a projected 435,000 by 2031. Notably, the median age of citizens is at 32 (and expected to reduce further) which is considerably lower than the Queensland state median. From an economic perspective, the city is undergoing a transition from a manufacturing base towards knowledge based industries.

In response to this new environment, the Council has developed an Advance Ipswich Strategy that sets out the overall direction for the city. Additionally, to accelerate the transition of the city to knowledge based economy the Council has set up an innovation Lab – Fire Station 101 to foster innovation and entrepreneurship. As a testament to these efforts Ipswich City was recognised as one of the Top 7 cities in the Intelligent Communities Forum in 2015.

To continue on this journey and truly position the future of the City, Council has embarked on a Smart City Blueprint and Implementation Plan project. 3 key outcomes are envisaged namely, optimised citizen engagement and decision making; enhanced citizen efficiencies and revenue opportunities arising from data and other investments.

What does it mean to be "Smart City"?

The advent of Internet of Things which is essentially is considered the "infrastructure of the information society", digital technologies coupled with the power of ubiquitous communication networks has meant data can be readily collected and utilised. This has led to considerable focus on developing new technology solutions to provide better or new services for citizens.

Ipswich City has adopted a human centred design approach to developing the Smart City Blueprint. This implies the needs and wants of citizens, local entrepreneurs, city workers, tourists etc. have been central in developing the blueprint.

The word "Smart" denotes the ability of the city to meld the human centric design with latest technological innovations to build ingenious solutions and create new opportunities. The Smart City Blueprint is all about the city and its residents and less about the technology!

The Vision and Blueprint

A compelling and aspirational vision statement has been defined for the Smart City journey.

"Ipswich will be Australia's most liveable and prosperous Smart City"

Attaining this Vision, is not a singular effort undertaken by the Council. At the heart of the Vision statement, is the implicit understanding that the entire city is involved and contributes towards this journey. Only a strong community engagement and inclusive approach will help achieve the desired outcomes.

The strategy to achieve the Smart City Vision is underpinned by 3 core drivers namely - Jobs, Growth and Liveability. These 3 drivers are truly integrated with the Advance Ipswich plan for the city. A set of 8 actionable Themes have been defined that fall under the 3 core drivers.

Jobs:

The primary intent of this driver is to support the creation of jobs in the city. There are two Themes that sit under this driver, namely Education and CBD Revitalisation. The intent of education is to provide opportunities for all residents to develop Digital Skills and create an environment for innovation. CBD revitalisation has been identified as the single most important outcome citizens expect as part of Advance Ipswich, and implementing Smart City capabilities in the CBD precinct will add to the attraction of new jobs and businesses.

Expected Outcome – Invest in Digital Skills and foster economic activity in the CBD and wider city.

Growth:

The objective of this core driver will be to develop a sustainable city as it undergoes considerable growth in the next 10 years. 3 Themes namely Energy, Transport and Workforce Management sit under this driver. The intent of energy and transportation Themes is to trial new technologies such as microgrids, autonomous cars etc. while implementing efficiency solutions such as smart street lighting and switching Council fleet to electric cars. The last theme of workforce management revolves around the ability to improve asset utilisation and efficient field services.

Expected Outcome – Create innovative partnerships to advance a sustainable city of the future.

Liveability:

The purpose of this core driver is to create a city that is a place people will like to live, work and play. There are 3 key Themes within this core driver namely Health, Safety and Citizen Engagement. The Health theme is aimed at implementing initiatives that provide actionable strategies and interventions that improve quality of life for citizens. The Safety theme is primarily focussed on leveraging on the existing capability and utilising social media to slowly change the incorrect perception of the city. Finally, the Citizen Engagement theme will help create simple and digital modes of engagement with the Council.

Expected Outcome – Provide Healthy, active and fulfilling lives for all residents of Ipswich.

The Smart City Blueprint document provides a detailed description of the 8 Themes and the initiatives selected under each theme for implementation. The Blueprint document will form the basis to create an actionable implementation plan which would start the Smart City journey.

1. SMART CITY

1.1. CONTEXT

1.1.1. MACRO TRENDS

The world is undergoing a major wave of urbanisation. In 2015, for the first time in history, more than 50% of the world's population lived in cities. This is further exacerbated by an absolute growth in population. The urban population is expected to double by 2050 to seven billion people. This global shift towards urban life will have a substantial impact on a range of issues, including access to food, water, energy and sanitation. This places an increasingly important burden and responsibility on city governments to help manage the growth.

Cities compete for business, residents, visitors, and private and public funding. Given increasing growth with the same finite resources, cities will experience even greater competitiveness. Cities will need to figure out how to compete responsibly: maintaining government and services sustainably, reducing their impact on the environment and creating an attractive economic and social environment.

Furthermore, technology is advancing at an increasingly fast pace. This has deep impacts on the economy, cities and people. Technology is changing the way people live and work. As more and more people move into cities, and away from farms, forests and mines, they are becoming part of the digital economy. Cities around the world are evolving from physical to digital hubs that proactively nurture their digital economies. Cities are bringing together multiple actors to collaborate, innovate and build new digital businesses and services.

The combination of rampant urbanisation and rapidly changing technology has given rise to smart cities – cities that have decided to thrive in this era of competitive responsibility by proactively and systematically planning and by intelligently leveraging new technologies.

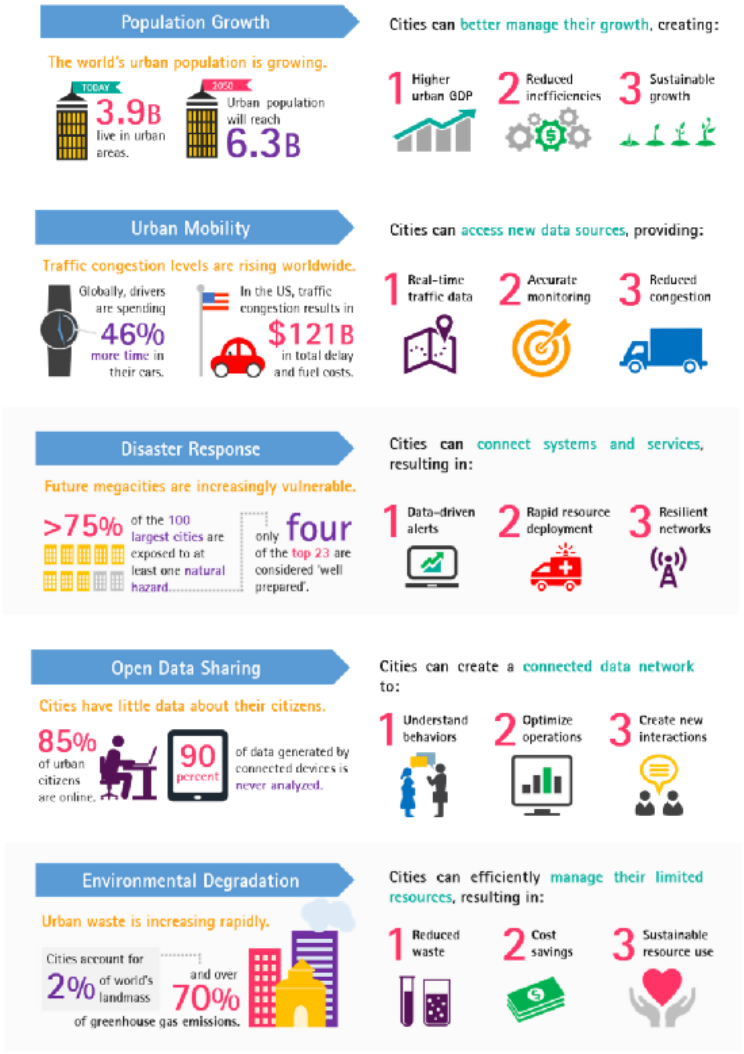


Figure 1. Macro Trends for Cities around the Globe

1.1.2. CONTEXTUAL TRENDS

The City of Ipswich represents the trend in urbanisation very strongly, with rapid growth from 190,000 to 435,000 people by 2031. Ipswich is a young city, with a current median age of 32 and a predicted 40% of the population under the age of 25 by 2031. These younger residents, or millennials, are digital natives, growing up surrounded by digital technologies. They have high technological expectations for the services provided to them in their cities.

Ipswich wants to reinvent itself from its current profile as a manufacturing hub towards becoming a strong digital economy. Ipswich wants to create an environment that fosters innovation to achieve better economic and social outcomes. To position itself for the future, Ipswich City Council has embarked on a Smart City journey with the aim of optimising citizen engagement and decision making, enhancing efficiencies in the city and generating new economic opportunities.

1.1.3. DIGITAL ECONOMIC FRAMEWORK

The journey to become a smarter city is part of Ipswich City Council's broader digital plan. As the city pivots towards a digital economy, it has adopted a digital economic framework that comprises the following indicators: broadband, digital inclusion, knowledge workforce, innovation and advocacy. The City has one of the highest penetrations of broadband in Queensland, leading the way in high speed broadband infrastructure.

Furthermore, in March 2016, Ipswich City Council launched Fire Station 101, an innovation hub that provides a space, resources and a community for the city's entrepreneurs. This demonstrates a strong step towards fostering innovation, creating knowledge workers and emphasising digital inclusion. The Smart City program aims to push the digital agenda forward even further.

1.2. APPROACH AND METHODOLOGY

1.2.1. APPROACH AND METHODOLOGY SUMMARY

A robust and detailed methodology was applied in developing the Smart City Blueprint and Implementation Plan. The overall project was broken down into two phases:

- Phase 1: Blueprint
- Phase 2: Implementation Plan

These phases are illustrated in the following diagram:

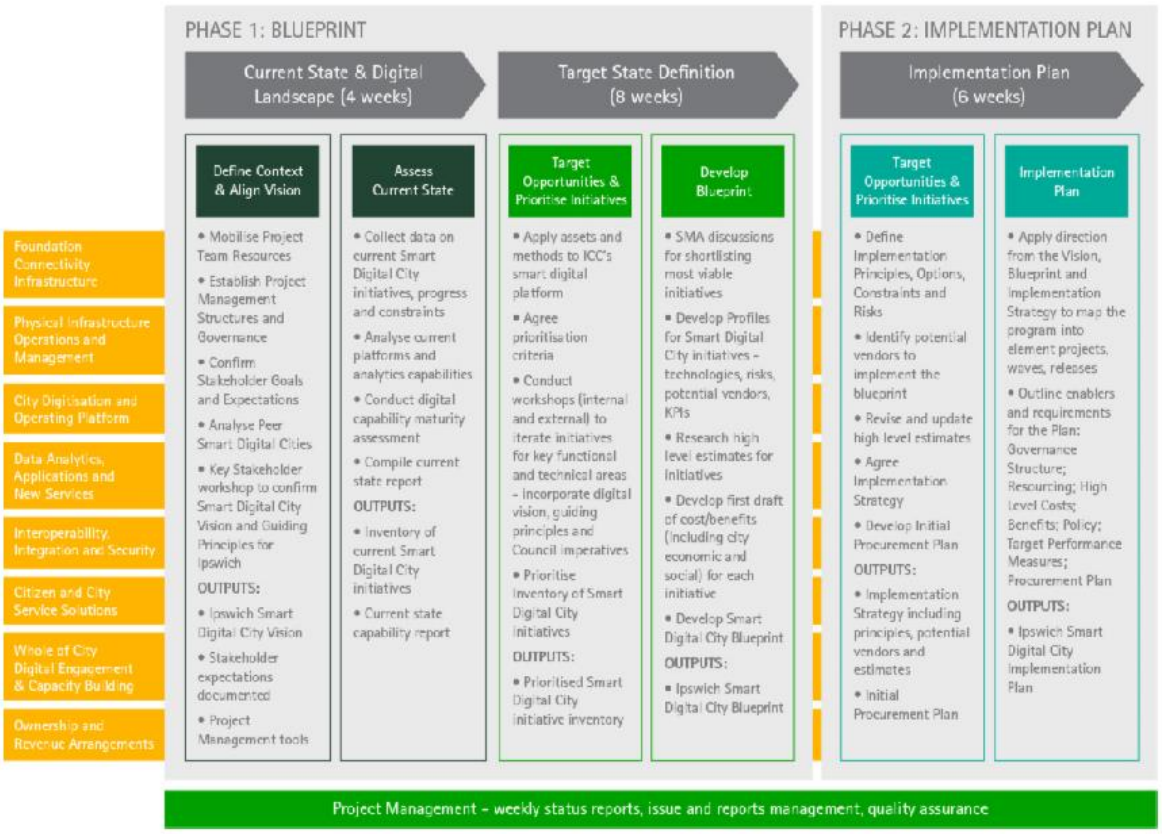


Figure 2. Overview of Smart City Blueprint and Implementation Project

The culmination of Phase 1 will be the finalisation of this document (that is, the Smart City Blueprint) and an Implementation Plan will be the output from the Implementation Plan phase.

1.2.1.1. PHASE 1: BLUEPRINT

The first phase was broken down into 4 work elements: Define Context and Align Vision; Assess Current State; Target Opportunities and Prioritise Initiative; and Develop Blueprint.

- Define Context and Align Vision: This work element included activities such as conducting a peer city assessment to determine key learning 1-1 meetings with executive team to understand their perspectives and finally a visioning workshop. The intent of this work element was to build a common base level understanding across the leadership team and develop a draft vision statement which will be refined over the course of the project.
- Assess Current State: A high level assessment was conducted on the Smart City capability for Ipswich City Council. Accenture had utilised a Smart City Framework to carry out the assessment. The main objective of this assessment was to identify the key issues/opportunities to be addressed by the city. The following diagram illustrates this Smart City Framework:

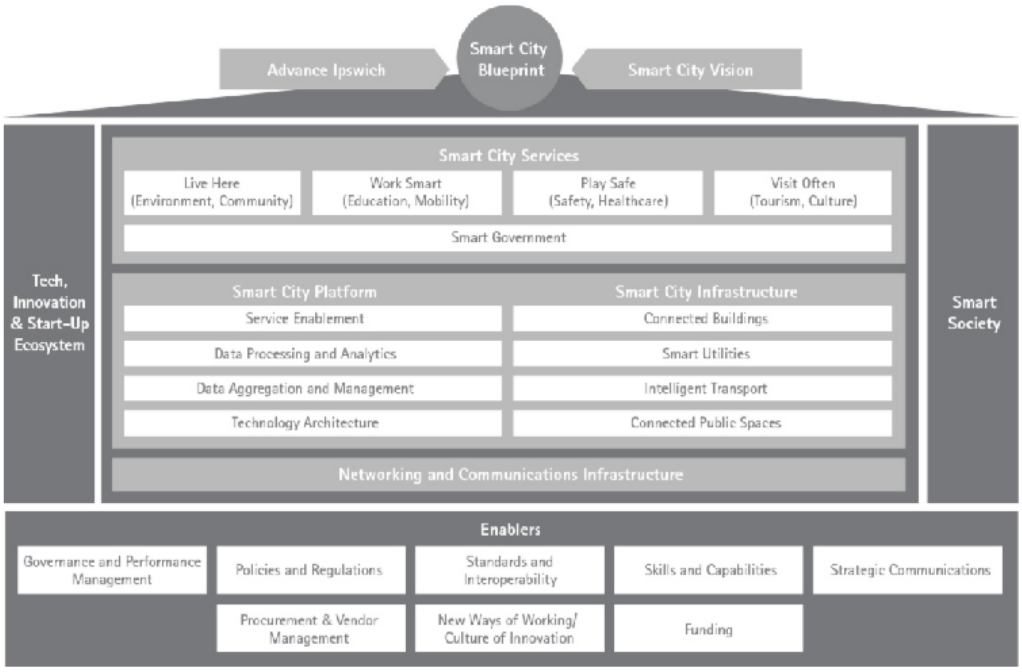


Figure 3. Smart City Framework

- Target Opportunities and Prioritise Initiative: In this work element, the project team prioritised the key issues/opportunities that need to be addressed in the next 3-5 year time frame. A prioritised list of 8 Themes were identified from a long list of 21 issues/opportunities. Subsequently, a detailed list of 400+ ideas were generated which was analysed and prioritised to finalise on 16 initiatives to be implemented in the next 5 years. The following diagram illustrates this approach:

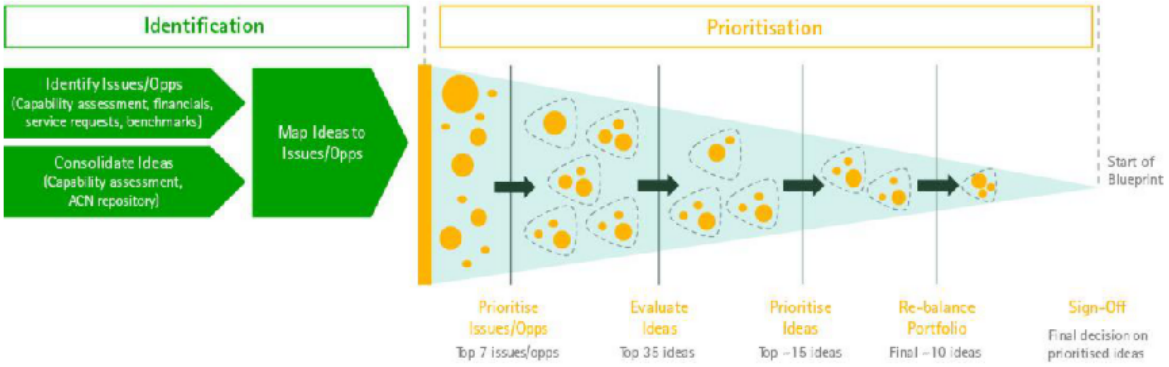


Figure 4. Prioritisation Approach

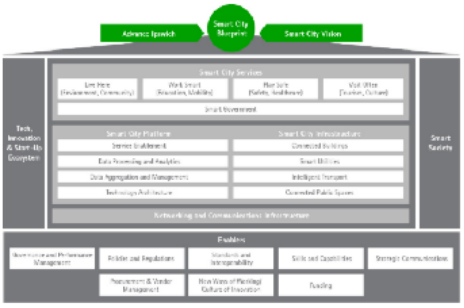
- Develop Blueprint: The final element of this phase is the creation of a Blueprint document that describes the Vision for the Smart City Program, the associated strategy and a detailed profile of the 16 Initiatives including their associated Enablers and foundational capability.

1.2.1.2. PHASE 2: IMPLEMENTATION PLAN

Phase 2 elements are not described in this document, as they will be part of the Implementation Plan and not fully relevant for the Blueprint documentation.

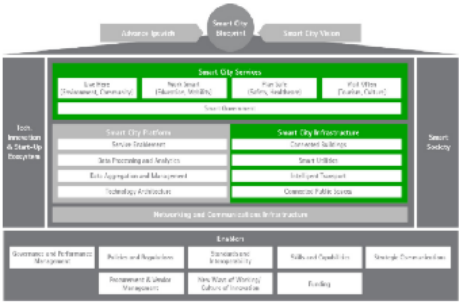
1.2.2. DOCUMENT STRUCTURE

The Accenture Smart City capability model has been used as the basis for structuring this document. The following section provides the detail of which section in the document covers each aspect of the capability model.



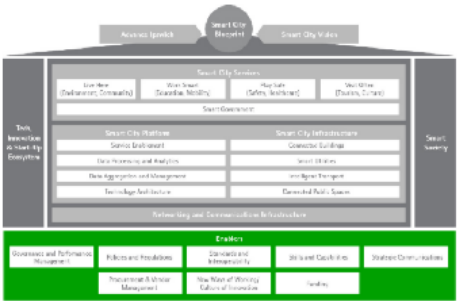
Section 1.3 Defining the Future

- Introduces the Smart City Vision, provides a deconstruction of the Vision statement.
- Explains the link between Advance Ipswich and Smart City.
- Describes the strategy, the 3 core drivers and 8 Themes



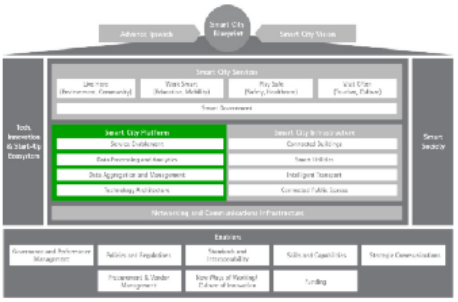
Section 2 Smart City Initiatives

- Provide a detailed profile overview for the 16 shortlisted initiatives, including a detailed description of each Initiative including scope, outcomes etc.
- Includes implications details, outlining the level of risk, challenges and risks associated with each Initiative.
- Provides an overview of capability required, high level costs, and key assumptions associated with each Initiative



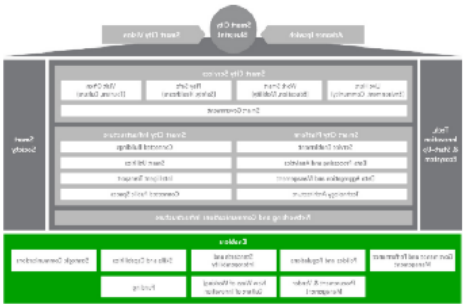
Section 3.1 Smart City Enablers

- Provides a detailed description of the Enablers required to support and develop Smart City initiatives.
- Includes Governance Structure, Performance Management/Benefits Realisation, Skills and Capabilities, Policies and Regulations, Strategic Communications.



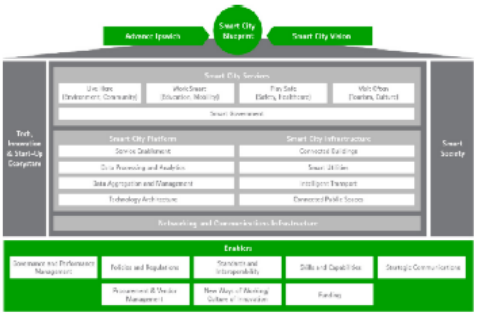
Section 3.2 Platform

- Provides a detailed description of the technology capability required to establish a Smart City Platform.
- Includes the elements around Service Enablement, Data Processing and Analysis, Data Aggregation and Management, Technical Architecture.
- Each of the elements are described separately.



Section 3.1 Smart City Enablers

- Certain capabilities are foundational in nature and needs to be developed very early on in developing the Smart City Project.
- Capabilities such as Procurement, Sustainability, Funding, and People are discussed under this section.



Section 3.4 Other Considerations for the Smart City Program

- Provides considerations or recommendations for Ipswich City Council to consider while setting up the Smart City Program

1.3. DEFINING THE FUTURE

1.3.1. OVERVIEW

Extraordinary technological change is transforming how we live, work and communicate. We need to embrace digital technology and innovation to create and harness new sources of growth to deliver the next age of community and economic prosperity in Ipswich.

The National Innovation and Science Agenda has established the Federal Government's operating framework based on 4 key pillars: Culture and Capital, Collaboration, Talent and Skills and Government as an Exemplar.

Advance Queensland is the State Government's comprehensive suite of programs designed to create the knowledge based jobs of the future, drive productivity improvements and build on our natural advantages.

The Advance Ipswich plan details at least 30 Goals, Strategies and Key Actions that require improved digital technology and innovation to benefit the Ipswich community and economy.

To ensure the wide range of activities are coordinated, resourced, progressed and vetted – a new Smart City Blueprint has been introduced.

1.3.2. ADVANCE IPSWICH

Ipswich City Council have developed an 'Advance Ipswich' document that details the long-term plan for the city beyond 2020. The intent of Advance Ipswich is to develop a Shared Vision for the future for the city and identify key Themes/areas for action. This was done through engagement with the community.

The following 5 Themes were defined as part of Advanced Ipswich –

- Strengthening our Local Economy and Building Property (Jobs)
- Managing Growth and Delivering Key Infrastructure
- Caring for our Community
- Caring for our Environment

- Listening, Leading and Financial Management

The Smart City Blueprint has assumed 'Advance Ipswich' as the Vision of the city. The five Themes formed the basis for defining the Smart City Vision and Strategy.

1.3.3. SMART CITY VISION

1.3.3.1. THE PROCESS

A Program Governance Group (PGG) which consisted of the Project Control Group (PCG), Digital Innovation Steering Committee (DISC), Leadership team (i.e. COOs) and CEO. The PGG was an integral part in crafting the Vision statement. A two pronged approach was followed in developing the Vision Statement -

- At the start of the project, the Program Governance Group were involved in a workshop. The following aspects were discussed:
  - Open conversation on each individual's understanding of a Smart City and why that is relevant for Ipswich city
  - Discussion on "Peer City" analysis and key learnings which will be relevant for Ipswich city
  - Brainstorming to form a common view of the Vision for Ipswich city
  - A common view of the Themes that will be relevant for the city to address in the next 3-5 years
- Subsequently, the project went through the process of Issue/Opportunity prioritisation followed by shortlist of initiatives. The PGG came back together to review the first draft of Vision statement:
  - Revisit developed Vision statement and through the learning in the 8 week period – do they have new thoughts?
  - Reflection on whether the shortlist of initiatives are adequately represented in the Vision statement
  - Group discussion to finalise the Vision statement.

Through this process the Vision statement for Smart City was crafted by at the Ipswich City Council.

1.3.3.2. THE VISION

The Executive Management Team have agreed on the following Vision Statement for Smart City:

"Ipswich will be Australia's most liveable and prosperous Smart City"

The following table deconstructs the Vision Statement to provide a detailed brief on what the statement means to the Program Governance Group (PGG) and how it ties with the Smart City Plan for next 3-5 years.

VISION STATEMENT	DECONSTRUCTED MEANING
"Ipswich will be Australia's most…"	This section of the Vision Statement means: • Creates a sense of pride within the community that Ipswich will be a leading player in this space • A bold and actionable goal that will grab the attention of people outside of Ipswich • An ambitious target for the city to move the vision statement from "Ipswich will be Australia's most" to Ipswich is Australia's most" During the brainstorming session words such as "Community", "Pride", "Culture" and a sense of pride of living in Ipswich were mentioned multiple times. The leadership also wanted the Vision statement to be ambitious and generates a sense of pride within Council staff and the city around the Smart City Program. Being Australia's best city will evoke a lot of interest and pride with residents of Ipswich. Additionally, the leadership wanted to clearly make a bold statement to rest of Australia on what their ambition is. The hope of the leadership team is that in 5 years team the Vision statement can be changed from "Australia will be Australia's most" to "Ipswich is Australia's most liveable and prosperous city.

"…liveable…"	This section of the Vision Statement means: • Support Ipswich in becoming an ideal place for people to live, work and play • Create an active, healthy and connected lifestyle for citizens • Council engages actively with citizens to provide the requisite services During the visioning exercise and subsequently all through the project duration words such as "sporting city", "active lifestyle", "connected", "citizen engagement", "healthy', "education", "genuine" etc. were used. The common theme that emerged from this was the fact that the Smart City Initiatives should help Ipswich become a city that people would like to call home, work in the city and participate in recreational activities. The leadership team felt Ipswich city should be a place where people would like to Live, Work and Play. This has been encompassed in one word "Liveability".
"…and prosperous…"	This section of the Vision Statement means: • Provides a platform for job creation in the city • Accelerates economic activity and attracts investments into the city (industry, commercial and leisure) Words such as "Opportunity". "Job creation", "Attract business", "Open Data" were mentioned as key areas where the Smart City Program should be supporting 'Advance Ipswich' direction. It essentially boiled down to the description that the city needs to strive for prosperity in terms of jobs creation, economic activity and growth which will improve standard of living for residents. Additionally, the city provides adequate opportunities to make people take the decision to call Ipswich home to start their business and live in the city.
"…Smart City "	This section of the Vision Statement means: • Provides global recognition that Ipswich is moving towards being a "smart" city • The vision is not just for the Council but for the entire city (i.e. residents) • A new way of thinking to solve civic issues or create opportunities The word "Smart" is being used extensively by all cities across the world to describe the new way of addressing civic issues and fostering innovation. It is important to use this word to ensure the average reader is able to recognise the connection that Ipswich is moving towards being a Smart City. Also the word "Smart" connotes that the city will think differently and out of the box in solving existing issues or creating new opportunities. The word "City" explains the fact that the Smart City Vision is not constrained just to the Council but extends to the entire city and all of its residents (citizens, businesses, educational institutions etc.)

Table 1. Deconstructing the Vision Statement

1.3.4. HIGH LEVEL STRATEGY OF THE SMART CITY BLUEPRINT

The Smart City Blueprint is intended to act as an accelerator and complements the business plan of the Council in achieving the strategies defined as part of Advance Ipswich'. The following picture succinctly brings to life the overall Smart City strategy/blueprint for the city.

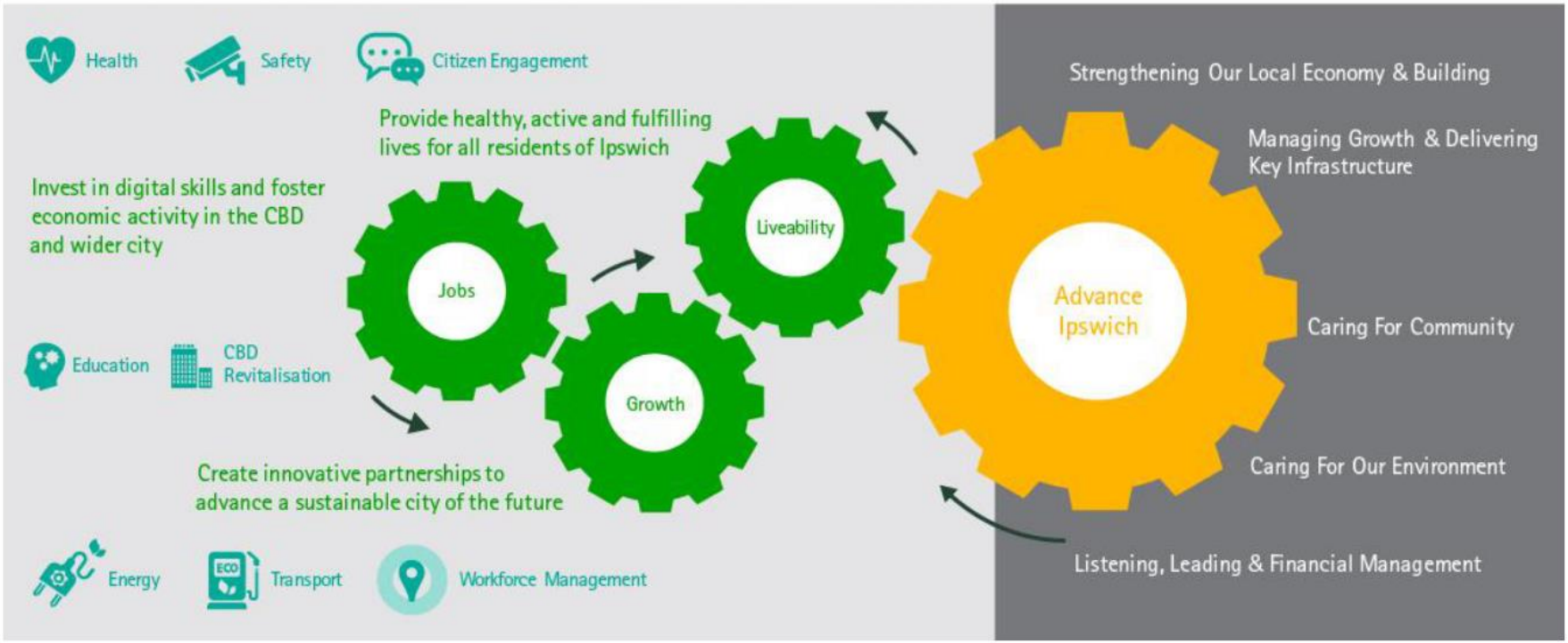


Figure 5. Smart City Strategy for the Blueprint

The strategy to achieve the Smart City Vision is underpinned by 3 core drivers namely - Jobs, Growth and Liveability. These 3 drivers are truly integrated with the Advance Ipswich plan for the city. A set of 8 actionable Themes have been defined that fall under the 3 core drivers. These 8 Themes will help achieve the outcomes defined against each of the core drivers. For the purposes of creating a blueprint and implementation plan, a shortlist of 16 initiatives have been identified. These 16 initiatives sit under the 8 Themes and form the projects/initiatives for the Smart City Program. A detailed profile of each Initiative is provided in the subsequent sections.

The following paragraphs provide a brief overview of the outcome to be achieved from each core driver and a description of each theme that sits under the core driver.

1.3.4.1. CORE DRIVER 1: JOBS

Expected Outcome: Invest in Digital Skills and foster economic activity in the CBD and the wider city.

The key objective of this core driver is to implement Initiatives that will aid in creating the right types of jobs in a digital era. There are broadly two Themes that fall under this core driver; namely Education and CBD Revitalisation.

THEMES	DESCRIPTION
EDUCATION	The intention of this theme is to support two key outcomes – firstly provide opportunities to residents of Ipswich to develop Digital Skills and secondly create an environment for innovation to thrive and grow within the city. The Smart City standard defined by ISO – ISO 37120 has 17 Themes of which education is considered one of the important Themes central to a city's future. It has been observed across multiple cities that a close relationship formed between the city, Universities and industries creates a strong culture of innovation and entrepreneurship. Ipswich has embarked on this journey with the setup of Fire Station 101. The intent would be to capitalise on Fire Station 101 and start developing deeper relationships with educational institutions. Given the manufacturing legacy of the city, it is imperative there are ample opportunities for citizens of Ipswich irrespective of their economic status, ethnic background or social status to have access to quality digital education towards building their skills for the future.
CBD REVITALISATION	CBD revitalisation was identified through Advance Ipswich as the single most important outcome that residents of Ipswich wanted in the next 5 years. While a completely revamped CBD in itself does not deliver a Smart City outcome, developing the right commercial infrastructure and creating recreational spaces that are distinct, unique and reflects the character of Ipswich will be critical in attracting business and citizens to the city. "Placemaking" will be crucial in developing an active CBD and the Smart City Program will work closely with the CBD project to implement relevant Initiative in the CBD precinct to reflect a true Smart City.

Table 2. Key Themes of the Jobs Driver

1.3.4.2. CORE DRIVER 2: GROWTH

Expected Outcome: Create innovative partnerships to advance a sustainable city of the future.

The objective of this core driver will be to develop a sustainable city as it goes through a considerable growth in the next 10 years focused on improving quality of life for citizens, trialling energy efficiency solutions that deliver cost efficiencies for citizens.

THEMES	DESCRIPTION
TRANSPORT	While Ipswich does not face a significant congestion issue yet, with CBD revitalisation and population growth this will be the natural end result in few years. Given the time lag between congestion problems reaching a peak and the time to build infrastructure or finding alternative solutions, it is imperative Ipswich starts formulating interventions now. The transport Initiative will aim to slowly move Council vehicles from Internal Combustion Engines (ICE) to Electric Vehicles (EV) which will reduce maintenance costs while improving environmental sustainability. Additionally, Ipswich is uniquely well positioned for undertaking trials on autonomous vehicles. Trials conducted on autonomous public transport vehicles would help determine the best strategies to move citizens from cars to public transport.

ENERGY	South East Queensland has one of the highest penetration of solar panels in the world. More than 1GW of power capacity from solar panels is connected to the grid in this region. It is imperative that Ipswich leverages this very advantageous position to trial and scale distributed generation technology such as battery storage, microgrids, smart street lighting etc. With increasing energy costs, this will deliver direct financial benefits to citizens while utilising sustainable modes of energy creation leading to energy efficient city. The aim of this intent to be a forerunner in trialling and adopting latest distributed energy capability that will reduce energy costs for citizens while moving to a more sustainable city.
WORKFORCE MANAGEMENT	One of the key outcomes that a Council needs to drive for a city is the ability to efficiently provide services. A considerable part of Council expenditure will revolve around asset maintenance including the effort expended in monitoring and tracking. It has been established in commercial organisations that implementing workforce management initiatives could drive cost reduction in the range of 10-20%. The intent of this theme is to implement operational efficiency projects that will deliver benefits to Council and in turn to citizens. Capabilities such as sensors to monitor asset performance, drones and 5D modelling will be implemented which will improve asset maintenance and reduce wasted costs.

Table 3. Key Themes of the Growth Driver

1.3.4.3. CORE DRIVER 3: LIVABILITY

Expected Outcome: Provide healthy, active and fulfilling lives for all residents of Ipswich

The main objective of this driver is to create a city that is a place people would like to live, work and play. Creating fulfilling lives for citizens through a city environment that foster healthy and active living, provides a safe environment and an engaged Council that interacts deeply with citizens in understanding their needs to deliver services.

THEMES	DESCRIPTION
HEALTH	Health and wellbeing of citizens is a critical element that delivers fulfilling lives for citizens. Adult obesity in Ipswich was found to be higher than the Queensland average per the 2011/12 statistical data. 2014 Health of Queenslander reported around 72% of Ipswich region residents were considerably overw8. Clearly the city needs to pay attention to this aspect and provide adequate opportunities for citizens to move towards healthy active lives. The intent of this theme is to develop clearly actionable strategies and interventions to help citizens of Ipswich. Very few longitudinal studies have been conducted on this topic in Australia to truly understand their emergence and ways of addressing aspects such as obesity. A Health Living Lab followed by a Research and Development Lab will help in identifying the right interventions in transforming to a healthy and active city.
SAFETY	Crime trends in Ipswich are comparable and in line with averages across Queensland. There is a spike in low intensity crime around the CBD region which is potentially driven by limited occupancy which would be addressed by the CBD revitalisation project. The extent of investment in Safe City capability has meant there is no "real" safety issues. But, what exists is a perception within and predominantly outside of Ipswich that the city is unsafe. The safe city project will primarily aim to use social media approaches such as "Humans of New York" style initiatives to start pushing a positive message about Ipswich to Australia and rest of the world. In addition, leveraging the existing Safe City capability a 'safe precinct' will be set up especially at the CBD to create a perception of a safe location attracting citizens to work and play.
CITIZEN ENGAGEMENT	In all the internal engagement with Council staff, it was clearly evident that the extent of citizen interaction and two-way communication was lacking. Cities that have embarked on Smart initiatives have developed an inherent capability of engaging with citizens as and when required. Greater participation of residents will allow for grater adoption and ownership of smart initiatives that the city implements. Certain cities have taken it a step further, for example the city of Paris sets aside a part of the city budget to be decided by city residents on where it is invested. The Smart City Program will develop the capability to move towards a digital platform for engaging with citizens and move towards a single point of connect for all citizen needs. Additionally an Application Studio will be set up that will primarily focus on collaborating with citizens to solve civic problems. These two initiatives will aim to considerably increase engagement with citizens of Ipswich.

Table 4. Key Themes of the Liveability Driver

1.3.5. GUIDING PRINCIPLES

The first step in developing a detailed Blueprint and Implementation plan for a Smart City is the definition of Guiding Principles. The Guiding Principles will form the core tenants by which all participants in the Smart City Program will live by. Following the defined guiding principles will be the buttress on which the culture for smart cities will be built. These guiding principles will have to be weaved in at appropriate locations across the Smart City Program. It will be the responsibility of the Smart City Sponsor(s) to ensure the integrity of the guiding principles is always maintained and in the event of departures necessary action taken.

- "We Know; They Know" A robust communication strategy needs to be implemented that shares successes and project details on an ongoing basis. Create feedback loops to learn what works with the city in regards to communication. Being a "Best-in-class" and progressive Smart City requires open communication with citizens and building trust.
- "The Whole is Greater than the Sum of its Parts" A collaborative partnership ecosystem needs to be developed to support Smart City initiatives. The Smart City Program should look for ways and means to partner with private sector, public institutions, academia and non-profits to solve civic issues which allow for diverse thinking and accelerated resolutions.
- "Create Data Capital" Adopt a data centric approach to implementing solutions. Understand what data to collect, how to store and analyse the data, where can I utilise it again before embarking on the project.
- "Adequate Governance not Bureaucracy" Developing and adhering to a governance model that supports working with multiple partners is crucial for delivering outcomes for the city. The intent of governance should not be around bureaucracy, but more around adequate checks and controls that have a positive impact on driving innovation and collaboration.
- "Start Small and Learn Fast" It is important for the program leadership to understand if a particular Initiative will work (i.e. deliver benefits) for the city. For example, this may be due to cutting/bleeding edge technology or limited confidence on adoption of Initiative by citizens etc. These initiatives should be started as small pilots (finite duration that does not exceed a year at the most) with defined outcomes that can be measured for benefits. Based on the learning, a full blown implementation can be planned or the idea dropped.
- "Keep it Open" Develop solutions and technologies that support Open Standards. As much as possible refrain from "closed", "proprietary" solutions which would typically act as a barrier for collaboration and innovation. Apply considerable due-diligence before deciding to adopt a solution that doesn't support open standards.
- "Does it Pass the Pub Test?" Human centred design should be followed in developing solutions for initiatives. It is not about the cool technology or the complex algorithm that makes an Initiative successful. It is the ease with which citizens can embrace a new idea which will drive adoption and success of an Initiative.
- "Show me the Money" Funding for Smart City Program typically are a combination of local government, State and Federal investment/grants, private investments and in some cases crowd funding. While working through an idea for implementation, the starting premise should be to find the most creative funding option. With a collaborative mindset, funding will come from a source that has the most to gain. The challenge is to find the source and getting them to be part of the journey.
- "Dream Big, Think Creative, Deliver Results" Developing the right culture is critical in creating a sustainable Smart City team within the Council. The Program should allow people to think outside the box and identify innovative ways of solving civic issues. This needs to be backed with strong delivery that focusses on results to its citizens. Appropriate trainings, exposure to wider Smart City fraternity through conferences etc. are examples of ways to foster people development.

2. SMART CITY INITIATIVES

2.1. OVERVIEW OF PRIORITISED INITIATIVES

The Ipswich's Smart City Vision translates into action through 16 initiatives to be implemented over the next 5 years. These Initiatives fall under the Themes described in the strategy section. The following table contains a short description introducing each Initiative:

THEME	INITIATIVE	OVERVIEW
CORE DRIVER 1: JOBS		
EDUCATION	01 Innovation Lab	Extend Fire Station 101 to research civic challenges in partnership with universities and industry.
	02 Digital Skills	Digital literacy program for Ipswich residents, from schools to the elderly.
	03 Build and Learn Fair	Major event that gets residents and visitors to be hands-on, build and showcase creations like robotics and wood works.
CORE DRIVER 2: GROWTH		
ENERGY	04 Eco-Village	Micro-grid program with solar energy, batteries and energy trading technologies in a greenfield development.
	05 Smart Buildings	Implement smart and connected technologies across Council buildings starting with the new CBD Council office.
	06 Smart Lighting	A smart lighting program with LEDs, sensors and data analytics.
	07 Sports Facilities	Sports facility that is utilizes solar energy, smart lighting and other technologies.
TRANSPORT	08 Electric Vehicle Ecosystem	Convert Council's fleet to electric vehicles and trial autonomous public transport.
WORKFORCE MANAGEMENT	09 5D Model and Open Data	Implemented an extended 3D modelling and virtual reality platform for planning and development, asset management and other city use cases.
	10 Drones Program	Drones program for monitoring of key non-residential areas of the city, such as our nature reserves.
	11 Smart Park	Smart park with sensors and other technologies to allow predictive maintenance and improve safety and usability.
CORE DRIVER 3: LIVABILITY		
SAFETY	12 Safe Precinct	Leverage safe city network and platform to create a safe precinct with elements like video analytics, smart lighting and noise detection.
	13 Social Media	Social media strategy that highlights positive things about Ipswich to change safety perceptions of the city.
HEALTH	14 Health Living Lab	Develop health living Lab with wearables and other technologies to capture real-time data of health and activity of residents.
CITIZEN ENGAGEMENT	15 Application Studio	Internal Council ideas studio that develops digital solutions to city issues.
	16 Digital Platform	Provide new platforms for delivering Council services online, extend current social media capability and potentially extend to other city services.

Table 5. Overview of Smart City Initiatives



Figure 6. Representative Iconography for the 16 Smart City Initiatives

2.2. INITIATIVE 01: INNOVATION LAB

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Jobs
THEME	Education
INITIATIVE NAME	Initiative 01: Innovation Lab



2.2.1. OVERVIEW

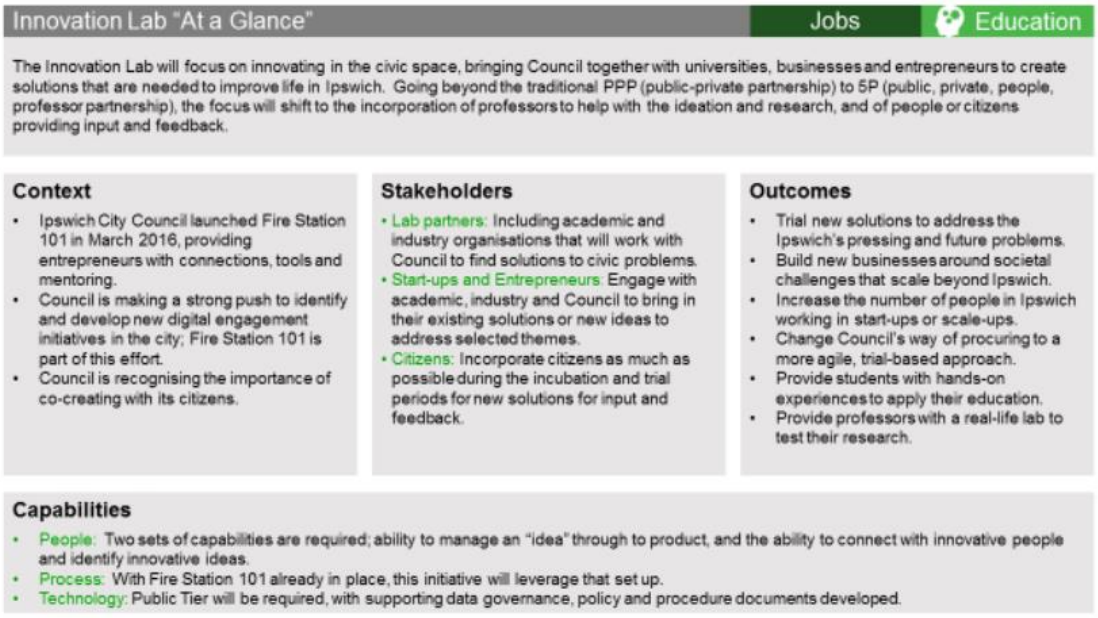


Figure 7. "At a Glance" View of Initiative 01

2.2.1.1. DESCRIPTION

This innovation Lab focuses on innovating in the civic space. The Lab brings Council together with University of Southern Queensland, TAFE and entrepreneurs to create solutions that are needed to improve life in Ipswich. The private sector, including larger companies like General Electric, TNT Express or Bombardier as well as small and medium sized businesses, and other levels of government, including Economic Development Queensland, West Moreton Hospital and Health Service or Education Queensland are also welcome to be part of the Lab to co-create solutions that will benefit their organisations in providing additional or better services to the citizens of Ipswich. The innovation Lab goes beyond the traditional PPP, or public-private partnership, to the new 5P, or public, private, people, professor partnership. The focus is shifted to the incorporation of professors, to help with ideation and research, and of people, or citizens providing input and feedback.

2.2.1.2. CONTEXT

The idea behind Innovation Lab was developed for Ipswich Smart City's Blueprint based on the convergence of 3 drivers:

- Launch of an innovation hub: Ipswich City Council launched Fire Station 101, an innovation hub, in March of 2016. The hub is providing entrepreneurs with connections, tools and mentoring to help build the technology startup community in the regional area.
- Moving to a digital economy: Fire Station 101 is part of Ipswich City Council's broader efforts to develop a digital economy in the city, based on broadband, digital inclusion, knowledge workforce, innovation and marketing. Council is making a strong push to identify and develop new digital engagement initiatives in the city.
- Co-creating with the community: As identified by Boyd Cohen, recognised thought leader in the Smart Cities space, in his article "The 3 Generations of Smart Cities" (Fast Co), the 3rd generation of cities are recognizing the importance of co-creating with their citizens. For example, "Barcelona recently completed an innovation project (called BCN Open Challenge), where the city posted 6 challenges and leveraged a private platform, Citymart, to solicit ideas from local and global citizens and innovators." Likewise, Medellin, who was named winner of the Urban Land Institute's Innovative City of the Year in 2015, "has recently expanded its commitment to citizen innovators by supporting the development of an impressive innovation district (Ruta N) to attract and retain entrepreneurial talent."

The Innovation Lab Initiative will build on the success of Fire Station 101, and jump on the wagon of co-created smart cities, further spurring innovation in Ipswich.

Most importantly, the Innovation Lab will further entrench the city's ambitions to develop digital literacy, by involving citizens in the development of digital solutions for the city and by providing citizens with the opportunity to build their careers on a digital opportunity.

2.2.1.3. SCOPE

The Innovation Lab will serve as a prototyping center for individuals and companies to build concepts or test hypotheses, it will bring together skillsets relevant to the ecosystem, it will provide the right environment to innovate, learn, and expand on new ideas with like-minded individuals, and it will enable research and development of tangible real world analytics.

2.2.1.3.1. INNOVATION LAB CORE COMPETENCIES

COMPETENCY	DESCRIPTION
1. RESEARCH	Establish a strong research society in each of the Smart City Themes (safety, education, health, energy, transport, citizen engagement and workforce management) by connecting to academic and research centres (both locally and globally) to bring together the brightest minds that can research, publish papers and patent new technologies that can help Ipswich and other smart cities resolve their challenges. (Examples: USQ, UQ, QUT, CSIRO)
2. PARTNERSHIP NETWORK	Create a partnership program that targets value add strategic partners and investors that shall contribute to the growth and sustainability of the Lab, as well as promote the technologies and smart solutions that are produced at the Lab to seek monetisation opportunities outside of Ipswich. (Ex: Fire Station 101, The Capital or Rivercity Labs in Brisbane, or similar innovation hubs in small and medium sized cities around the world)
3. PROTOTYPING LABS & PROJECTS LAUNCHPAD	Invite interested partners to develop and stimulate ideas, prototype concepts and test them prior to launching new technologies and innovative solutions. (Examples: GE, TNT Express, Bombardier, RAAF, HHS)
4. INNOVATION INCUBATION	Launch hackathons to call for solutions to address city problems, and provide a space for entrepreneurs to meet like-minded people that can help complement capabilities, and/or get necessary mentorship in relevant business and technology concepts that allows them to turn ideas into smart services that can be monetised
5. OPEN PLATFORM & DATA	Access to Council's open data and Smart City technology platform for developing and launching use cases and monetisation opportunities

6. BUILD CAPABILITY	Attract talents and provide development and training programs to enhance the local capabilities and become experts in domains related to Smart Cities technologies and contribute to solving challenges
7. PROVIDE EXPERTISE & CONSULTANCY	Bring best-in-class data scientists and subject matter experts in Smart City solutions and urban digital transformation, to run the Lab, help Ipswich realise its strategic objectives and make Ipswich a live, work and play environment

Table 6: Innovation Lab Core Competencies

2.2.1.3.2. INNOVATION LAB CHARACTERISTICS

The partners involved in this Initiative include:

- Academic: USQ, TAFE (+ others overtime)
- State Government: TMR, Energex, West Moreton Hospital and Health Service, Education Queensland, EDQ
- Corporate: GE, SLC, Microsoft, Data#3, Cisco and etc.
- Foundational: Hornery Institute, Fjord or similar (to instate design thinking and help with innovation processes)
- The Lab will likely be based in Fire Station 101 (other potential locations could include TAFE or USQ)
- The Lab will be focused on 7 Themes: education, energy, transport, workforce management, health, safety and citizen engagement, to complement and build on Council's Smart City program

2.2.1.3.3. INNOVATION LAB DEVELOPMENT PROCESS

- Council will bring in founding partners: reaching out to all the ones indicated above and signing on at least 1 in each area
- Partners will collaboratively decide on a governance structure with roles and responsibilities of partners (see example below)
- Partners will collaboratively decide on a starting theme (of the 7 indicated above)
- Partners will collaboratively decide on an initial program structure (see example below)
- Council has the role of establishing, documenting and finalising structures and kicking off the initial program

2.2.1.3.4. INNOVATION LAB EXAMPLE GOVERNANCE STRUCTURE

The following diagram illustrates an example governance structure of an Innovation Lab:



Figure 8. Innovation Lab Example Governance Structure

These are the roles of each tier of governance:

- The Executive Board: has decision-making authority for the Innovation Lab. The Executive Board's 3 core responsibilities are to 1) provide oversight to the Strategic Advisory Committee and Technical Advisory Committees; 2) ensure projects align with these bodies' recommended strategic and technical vision; and 3) curate a robust consortium through the evaluation and approval of new Lab members.
- The Strategic Advisory Committee (SAC): has responsibility for defining and updating the Lab's strategic and technical vision. The SAC shall comprise key decision-makers from participating organisations.
- The Technical Advisory Committees (TACs): have the responsibility to prioritize specific topics and problem statements. The TACs shall evaluate project proposals and recommend the projects to be funded, which in turn makes final recommendations to the Executive Board.
- The Centre of Excellence Members: working members in the Lab, including professors, students, Council employees, employees from participating industry partners, entrepreneurs and citizens.

2.2.1.3.5. INNOVATION LAB EXAMPLE PROGRAM STRUCTURE

- Every 6 months identify 1 new challenge to pursue, in collaboration with all partners
- Call for startups to apply with solutions to this challenge and supplement this with hackathons around the new challenge
- Select the 2 best startups and 2 best hackathon teams
- Work with the selected startups and teams to improve and tailor their solutions over a period of 3 months
- Launch a pitch night/shark tank to select 1 final winner that will trial their solution in a pilot with Council
- After the pilot, decide whether to scale the solution in Ipswich and whether to support the startup in scaling beyond Ipswich

2.2.1.3.6. VEHICLE OF CONTINUOUS INNOVATION

Once the Innovation Lab has successfully incubated and trialled 1 start-up idea, this Smart City Initiative will transition to BAU (Business As Usual). Before transitioning, Council will need to establish, along with the Lab partners, the linchpin that will continue to drive the Lab. This linchpin could be a separate non-profit, could be combination of seconded resources from each or some of the partners, or could continue to be full or part-time employees from Council.

This Initiative constitutes a Vehicle of Continuous Innovation as it creates a structure and environment for innovation in the civic space. The Lab fosters continued generation of solutions across the identified Themes of safety, education, health, energy, transport, citizen engagement and workforce management. Building on the success of the first startups to spin out of the Lab, more partners and more funding will undoubtedly be attracted to launch successive startups.

2.2.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this Initiative:

- Lab Partners: Potential partners include academic and industry organisations that will work with Council to find solutions to civic problems.
- Startups and Entrepreneurs: They will engage with the academic and industry partners, as well as Council, to bring in their existing solutions or new ideas to address the selected theme. They will work to trial these solutions in Ipswich and scale them beyond.
- Citizens: The Lab will incorporate citizens as much as possible in the incubation and trial periods for new solutions. Citizens can provide both input and feedback in the design process.

2.2.1.5. POTENTIAL OUTCOMES

The primary intended outcomes of the Lab are to:

- Trial new solutions to address Ipswich's pressing and future problems
- Build new businesses around societal challenges that scale beyond Ipswich
- Increase the number of people in Ipswich working in startups or scale-ups
- Change Council's way of procuring to a more agile, trial-based approach
- Provide students with hands-on experiences to apply their education
- Provide professors with a real-life Lab to test their research

2.2.1.6. RANGE OF BENEFITS

2.2.1.6.1. COUNCIL

Council would benefit in the following ways:

- Outsource innovation and the associated risk
- Guide the Lab towards creating solutions that would be valuable to Council and to the city
- No direct investment of time, resources or funds to find solutions for Council and the city
- Trial new solutions to many of its problems
- Faster procurement

2.2.1.6.2. CITY

The city benefits in 4 primary ways:

- Solutions created to address issues in the city
- Council developing and trialling new solutions without spending public funds
- Citizens (including residents, students and professors) having the opportunity to be involved in the creation and development of solutions for the city
- Citizens having the opportunity to develop digital, entrepreneurial and business skills

2.2.1.7. INDICATIVE KPIS

The main indicators of success of the Innovation Lab in achieving what it set out to do are:

- The number of products or companies it has successfully launched
- The number of products or companies that have successfully expanded beyond Ipswich (whether this be through trials or fully scaled launches in another city, region or country)

Other indicators that demonstrate the health and sustainability of the Innovation Lab would be:

- Number of entrepreneurs and students involved
- Number of partners involved (including research organisations, educational institutions, state and federal agencies, SMBs, MNCs, etc.)
- Number of mentors involved (professors, successful entrepreneurs, attorneys, consultants, etc.)
- Number of proof of concepts created
- Number of pilots launched in Ipswich

- Balance across public, private, people and professors (percentage split between public sector employees, private sector employees, entrepreneurs/citizens/students and professors involved)

2.2.2. IMPLICATIONS

LEVEL OF EFFORT	For this particular Initiative, Council will play a brokering role. As such, the level of effort behind this Initiative will be "low". Council will: • Play the role of facilitator and support driving the Initiative • Bring parties together to work through approach, partnership models and identification of the right people to liaise with in local/federal/state government • Support in breaking down potential barriers, constraints and dependencies impacting implementation of Initiative • Provide the research institutions and startups access to the necessary data and relationships within Council • Market the Innovation Lab across SEQ, Australia and internationally • Help define the areas of focus and challenges to be tackled by the Lab (around the identified Smart City Themes described) • Help bring together the right mentors and supporting services to support the research and startups • Help find the space for the Lab to come together • Help attract investment into the research and entrepreneurial activities ongoing within the Lab Furthermore, Ipswich City Council will be responsible for the ongoing support of the Innovation Lab – continuing to bring together additional stakeholders, approaching the Lab to help solve Council -identified issues or opportunities (such as flood monitoring or adventure-based sports), develop partnerships with similar innovation labs regionally, nationally and internationally, continuing to attract talent to the Lab and continuing to bring in advisors, mentors and other ancillary services.
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Willingness for Council involvement – one major barrier to the success of the Innovation Lab is ensuring the ability as well as willingness for Council to get involved in order for the Lab to identify the right civic issues to tackle and in order to find the right solutions for these problems. Council needs to lend time, resources and data to the Innovation Lab and Council employees need be open-minded to see the Innovation Lab as an opportunity to improve the way their departments operate, the way they deliver services and even change or innovate on the services they deliver. • Barrier 2: Procurement from new startups – Council needs to be able to procure the solutions that come out of the Innovation Lab. Council needs to find a way to be able to procure the technology/company for purposes of the trial and, if successful, its scale out. The following key risks are relevant for this Initiative: • Risk 1: Folding into Fire Station 101 – one risk of this Initiative is that it ends up folding into the existing efforts of Fire Station 101 without any differentiation. While many of the entrepreneurial aspects of the Innovation Lab are highly similar to those of Fire Station 101, a fact that is not intended to be hidden – the Innovation Lab is based on 3 primary differences: – The Innovation Lab will focus only on addressing civic issues and creating civic solutions – The Innovation Lab is premised on the involvement of students and professors from USQ, TAFE and other educational institutions – The Innovation Lab will involve Council employees and Council data
DEGREE OF CONTROL	The degree of control or influence by Council is "medium". While Council has the degree of control required to launch an innovation hub, as demonstrated by the launch of Fire Station 101, the degree of influence declines as the sphere increases to include other partners, such as research, education, state, federal or industry organisations.
DEPENDENCIES	• Dependency 1: Educational involvement – involvement of the local educational institutions (primarily TAFE and USQ) and other regional, national and even international ones • Dependency 2: Council's proactive involvement - proactive involvement of Council in approaching Innovation Lab with issues and opportunities, along with time, resources and data
OVERALL ASSUMPTIONS	• Assumption 1: Leverage Fire Station 101 – this Initiative will build on the success of Fire Station 101, extending into a partnership model and focusing on civic challenges, and will utilise space at Fire Station 101

	• Assumption 2: Council as a linchpin – this Initiative assumes Council will act as the linchpin for the Lab's original governance structure, likely handing over that role overtime
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: San Francisco SuperPublic – This Lab will provide a co-working space for federal, state and city government to work together with academia and the private industry. The Lab will focus on transportation, digital government services and performance-based procurement in government. • Example 2: Paris SuperPublic – This was the first-ever public innovation space. It is a co-working space for anyone involved in innovating in the public sector. The space is designed for workshops, prototyping, training, sharing and collaborating. • Example 3: Copenhagen Solutions Lab – This Lab is a new governance structure for Smart City projects in Copenhagen. It focuses on what they call "triple helix partnerships" or public-private partnerships. The Lab is intended to address Smart City development in collaboration with educational institutions, companies and citizens.

Table 7. Overview of Initiative Implications: Initiative 01

2.2.3. DETAIL

2.2.3.1. CAPABILITIES REQUIRED

2.2.3.1.1. PEOPLE

People capability will be critical in making this Initiative successful and ensuring it is sustained over a long period of time. While research has been done to determine the "process" of fostering innovation, it comes down to culture and people that will truly matter.

There are broadly two sets of capabilities required. The first set of capabilities is around the discipline of setting up, managing and importantly working diligently to move from an "idea" to a "commercial" product. The competencies required are

- Project/stakeholder/partnership management
- Knowledge and experience in data, analytics and standards
- Limited knowledge and experience in entrepreneurship

The second set of capabilities will revolve around the ability to develop an innovative culture and a creative mindset that will allow people to think outside of the proverbial and traditional "square". This capability will help connect with innovative people across the globe, identify "great" ideas from participants and make the experience of being a part of innovation Lab fruitful. Competencies required are

- Knowledge and experience in innovation and research and development
- Creative thinking, lateral thinking and problem solving skills
- Knowledge and experience in design thinking and other design processes

2.2.3.1.2. PROCESS

The process of set up of an innovation Lab is the 'relevant' process for this Initiative. Given that the city has already set up Fire Station 101 and has been successful in the short timeframe, minimal additional effort will be required. It is assumed this Initiative will leverage mostly from Fire Station 101 setup.

An additional process could be introduced once the Lab has been set up, to open a conduit for Council staff to raise issues/opportunities to this Lab to work out innovative solutions.

2.2.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
None identified	

Table 8. Technical Capabilities Required by Initiative 01

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
Public Tier	Participants in the Innovation Lab (government agencies, universities, industry) may leverage open data sets and business services provided by Council through the Public tier.

Table 9. Technical Platform Enablers Required by Initiative 01

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Data Governance/ Policies/ Procedures	The exposure of open data sets will be guided by Council's overarching data governance, policies, and procedures.
Open Data Policy	The establishment of an Open Data Policy will define the terms under which data can be shared and used.

Table 10. ICT Programs of Work Required by Initiative 01

2.2.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative does not have any additional specific requirements for Enablers.

2.2.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.2.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: IP or equity from startups – depending on the genesis of a particular start-up that is successful, especially if Council makes an investment, Council could benefit from equity in the start-up or from IP royalties from the start-up.
- Opportunity 2: Leverage data – Council will need to work out a shared revenue model with other partners in the Lab to understand and share the revenue streams built on the data generated by the startups' solutions.

2.2.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.2.3.6. CASE STUDY

UI LABS is a Chicago based research and commercialization collaborative, bringing industries, universities, and government together to apply real solutions to tomorrow's most important business, economic, and cultural challenges.

As described on City Digital's website, "City Digital at UI LABS in Chicago innovates at the physical-digital convergence to create smart cities present and future. City Digital uses Chicago as a testbed for technology and demonstration, focusing on 4 critical impact areas: energy management, physical infrastructure, transportation, and water and sanitation. Together with its public, private and academic partners, City Digital identifies programs and pilots that focus on value which can only be unlocked through collaboration and coordination of partners and data to improve the design, creation, use, interactivity and impact of urban infrastructure. City Digital enables experiments at scale to develop real solutions for the marketplace, so that, if successful, they can continue and be extended to have impact in other cities."

The founding private consortium partners of City Digital are: Accenture, Microsoft, Siemens, ComEd, Tyco and HBK Engineering. In addition, over 30 university partners are involved in City Digital, including University of Illinois, University of Chicago, ITT, University of Michigan, and Northwestern University. Multiple agencies within the City of Chicago as well as non-profits are engaged with the Lab as well.

Currently, there are 3 major projects underway:

- Digital Underground Mapping: Digitise underground infrastructure (water mains, gas pipes, cables) in a city and deploy underground infrastructure sensing, survey, and tagging technologies to enable accurate mapping and updating. (See more information on this Initiative in Section 2.11.5)
- Green Infrastructure Monitoring and Assessment: Deploy sensing and monitoring systems on urban drainage infrastructure to inform refinements in future designs and measurement tools, and assist Chicago and other cities in green versus grey infrastructure investment decisions.
- Smart Buildings Data Service: Use aggregate building management system output and big data analytics to deliver a service for active systems management and forecasting.

For complete information on City Digital, visit: www.citydigital.uilabs.org.

2.3. INITIATIVE 02: DIGITAL SKILLS

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Jobs
THEME	Education
INITIATIVE NAME	Initiative 02: Digital Skills



2.3.1. OVERVIEW

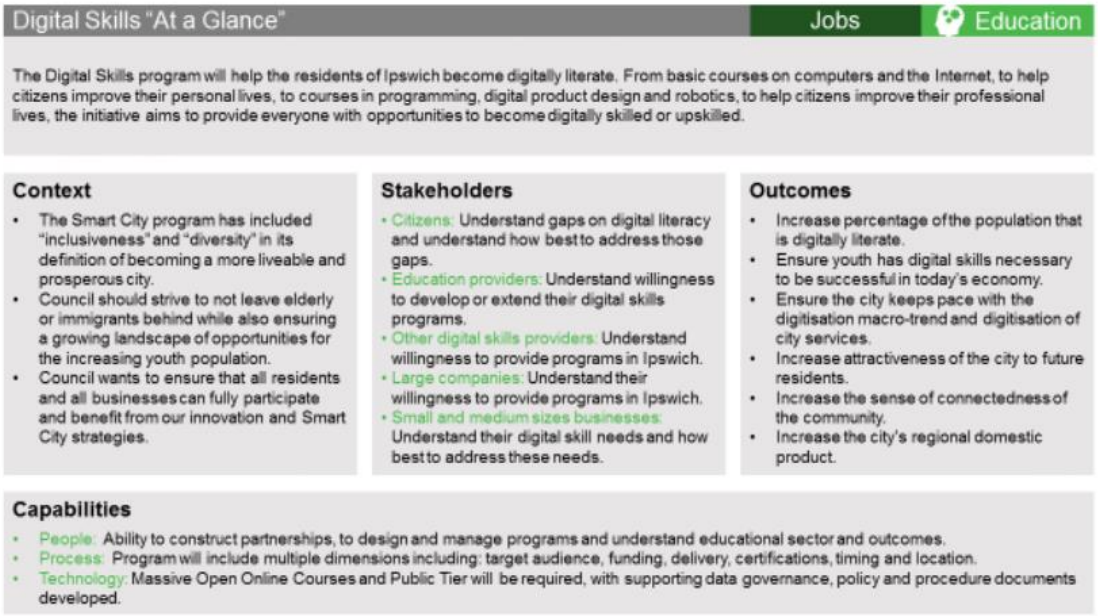


Figure 9. "At a Glance" View of Initiative 02

2.3.1.1. DESCRIPTION

The Digital Skills Program will help the residents of Ipswich become digitally literate. As Ipswich moves towards a digital economy, continues to build out its digital infrastructure (such as its broadband network) and becomes a Smart City, leveraging digital technologies in smarter ways, it is important to ensure that all residents are brought along on this journey.

From basic courses on computers and the Internet, to help citizens improve their personal lives, to courses in programming, digital product design and robotics, to help citizens improve their professional lives, the Initiative aims to provide everyone with opportunities to become digitally skilled or upskilled. An added intent of the Initiative is the aim to close Ipswich's digital divide and ensure all residents have access to the digital world.

2.3.1.2. CONTEXT

From the onset, the Smart City program has included "inclusiveness" and "diversity" in its definition of becoming a more livable and prosperous city. Ipswich has:

- 10% of residents over 65 years of age

- 19% of residents from overseas, 8% of which English is a second language
- 40% of residents under 25 years of age by the year 2031
- 17% of youth that is unemployed

The Council should strive to not leave elderly or immigrants behind, many of whom may be struggling with aging ailments or integration issues. Also, Council should ensure that a growing landscape of opportunities are provided for their increasing youth population, many of whom currently cannot secure steady jobs.

Furthermore, in 2015, Ipswich was named one of the world's Top 7 Most Intelligent Communities by the Intelligent Community Forum, which, among other things, stresses the importance of the Knowledge Workforce and Digital Inclusion. Along these lines, Advance Ipswich, the city's overall strategy, emphasizes the need to strengthen our local economy and build prosperity, among other things, by "providing a full spectrum of life-long learning opportunities, from early learning through schooling to vocational training and tertiary education that aligns skills and education with emerging employment opportunities".

As an inclusive city, we want to ensure that all residents and all businesses can fully participate and benefit from our innovation and Smart City strategies. The city is already doing very well in extending the reach of the broadband network, now it is time to give people the skills to leverage the network.

2.3.1.3. SCOPE

2.3.1.3.1. PROGRAM DIMENSIONS

- Target audience: open, high schools, underprivileged communities, elderly, other
- Funding: fee-based, subsidized by government or non-profit, scholarship-based
- Delivery: Council, schools, existing digital skilling company, online, other
- Certifications: existing, new, none
- Timing: all year around, extracurricular, weekends, summers/holidays, other
- Location: Fire Station 101, schools, libraries, TAFE, online, other Example Programs
- Fire Station 101 hosts structured classes that use an online digital skilling platform like Udacity through partnerships with tech giants like Google, AT&T, Facebook and Salesforce, they offer "nanodegree" programs and associated credentials to help students become web developers, mobile developers, data analysts and more)
- A non-profit, funded by Council, grants and corporate citizenship investments, gets set up at Fire Station 101 during the summer to offer classes to children from low-income families
- The DigiGirlz program runs High Tech Camps to get young girls in middle school to listen to Microsoft executives, go on tech tours, network and learn through hands-on workshops
- Work with Microsoft YouthSpark Hub to offer a TEALS (Technology Education and Literacy in Schools) program or DigiGirlz program in Ipswich
- The TEALS program brings Microsoft employees to volunteer to develop computer science programs at schools
- Bring General Assembly, or a similar company, to Ipswich
- General Assembly is currently located in Sydney and Melbourne

2.3.1.3.2. PROGRAM DEVELOPMENT PROCESS – DIGITAL INCLUSION

- Discover right audiences: Work with the Department of Arts, Social Development and Community Engagement to reach out to the community to understand areas with lowest digital access and the best channels to reach those audiences
- These areas can be geographic, demographic or both (such as underprivileged children from a certain neighbourhood, or the elderly across all of Ipswich)
- Define potential audiences: Depending on the results of this research, define the various potential target audiences for the program
- Quantify potential impact: Model and quantify the impact of addressing the various identified audience groups
- For example, addressing digital literacy of the elderly could help reduce the burden on Council to provide their services offline (what would the associated cost savings be?)
- Or, for example, addressing digital literacy of the unemployed youth could lead to increased regional domestic product (what would be the projected percentage increase be?)
- Engage with providers: Engage with educational and other potential program providers in the city to understand their willingness to commit to a Digital Skills Program and assess their available funding
- Start with schools and TAFE, but extend to other providers like Microsoft, Udacity, General Assembly and others
- Council could also be a potential provider
- Assess key parameters: Assess potential programs across potential combinations of target audiences and providers
- Combinations can include multiple providers working together
- Assessment criteria would include things like impact (based on impact to audience as quantified in step 3 and extent of reach) and sustainability (can the provider fund the program or does it require funding from other places?)
- Define key program parameters: Select program combination with highest score (i.e. audience and provider)
- Define program details: Further detail the characteristics of the program to include location, timing and certifications

2.3.1.3.3. PROGRAM DEVELOPMENT PROCESS – IMPROVING ECONOMIC OPPORTUNITY

The previous section explains the process of setting up a digital program that is geared towards digital inclusion. A similar approach needs to be adopted to provide advanced Digital Skills to high school, university and young graduates to allow them to enter into new job domains and potentially set up their own ventures.

- Understand needs for young adults: Conduct an independent assessment to determine the extent of Digital Skills gained by students and young adults at high schools and universities
- Work with industry partners (Chamber of Commerce, startups, SMBs, larger companies) to understand digital needs in the commercial sector
- Work with entrepreneurial industry experts to broadly understand the skills and capabilities required for innovation and starting new companies
- Define potential courses: Based on the analysis, determine the courses required at various levels including depth, duration of course, extent of integration with regular curriculum etc.
- Quantify potential impact: Model and quantify the impact of addressing the various identified potential courses (ex: how many students is it projected to help? How many projected jobs can students access after taking that course? What is the projected increase in salary for students after taking the course?)

- Engage with providers: Engage with educational and other potential program providers in the city to understand their willingness to commit to a Digital Skills Program and assess their available funding
- Assess key parameters: Assess potential programs across potential combinations of target courses and providers
- Combinations can include multiple providers working together
- Assessment criteria would include things like impact (based on impact to students and extent of reach) and sustainability (can the provider fund the program or does it require funding from other places?)
- Define key program parameters: Select program combination with highest score (i.e. course and provider)
- Define program details: Further detail the characteristics of the program to include location, timing and certifications

2.3.1.3.4. NOTE

The exact types of skills that will be taught through the program and the associated curricula can be defined at a later stage. The nature of the types of skills that will be taught in the program will be dictated in great part by the needs of the selected target audience.

When approaching potential providers for the program, it should suffice to define Digital Skills broadly as basic skills (such as typing, Internet surfing, use of word processors, etc.), professional skills (such as Excel, coding, web design, etc.) and advanced skills (such as robotics, virtual reality or digital manufacturing).

2.3.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Educational providers: Council will engage with educational providers in the city, such as schools or TAFE, to understand their willingness to develop or extend their Digital Skills programs
- Other Digital Skills providers: Council will engage with other Digital Skills providers, such as Udacity or General Assembly, to understand their willingness to provide their programs in Ipswich. This also includes local Digital Skills providers that are already having an impact in the community and who could benefit from engagement with Council to drastically expand their reach
- Large companies: Council will engage with larger companies like GE, Cisco or Microsoft, that already offer many digital literacy programs as part of their Corporate Citizenship Responsibility agendas, to understand their willingness to provide their programs in Ipswich
- Citizens: Council will engage with the community to understand where the greatest gaps in digital literacy are and understand how to best address these gaps
- Small and medium sized businesses: Council will engage with SMBs to understand the needs that they have with regards to Digital Skills and capabilities, helping craft a program that could lead into jobs and higher economic activity

2.3.1.5. POTENTIAL OUTCOMES

The Digital Skills Program will help:

- Help an increasing percentage of the population become digitally literate
- Ensure youth has the levels of Digital Skills necessary to be successful in today's economy
- Ensure the city keeps pace with the digitisation macro-trend and digitisation of city services
- Increase attractiveness of the city to future residents
- Increase the sense of connectedness of the community

- Increase the city's regional domestic product

2.3.1.6. RANGE OF BENEFITS

2.3.1.6.1. COUNCIL

This Initiative has a stronger impact on the city at large, but there are a few collateral benefits for Council as well:

- Greater uptake of Council's digital services
- Increased resident and business rates

2.3.1.6.2. CITY

- Decreased unemployment (esp. youth)
- Increased salaries of population (esp. youth)
- Increased number of entrepreneurs
- Increased small and medium sized businesses
- Increased economic opportunities for all

2.3.1.7. INDICATIVE KPIS

2.3.1.7.1. COUNCIL

- Number of unique visitors to Council's mylpswich digital platform
- Number of unique visitors to Council apps
- Number of calls to Council's contact centre

2.3.1.7.2. CITY

- General unemployment and youth unemployment rates
- Average of median salary for general population and for youth
- Number of new startups in Ipswich
- Number of people that report taxes as self-employed
- Number of start-up employees
- Number of small and medium sized business as compared to previous year
- Number of citizens that have changed to a job with a better salary
- Number of citizens that have changed industries to an industry with higher projected growth

2.3.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort for Council for this Initiative is "medium". Council will help select, design and launch the Digital Skills program. Once the program is set up, running the program will become a Business as Usual activity. The effort involves: • Identifying potential programs (including identifying potential target audiences, courses, providers, etc.) • Engaging with the multiple city providers that could run the Digital Skills program • Designing the program • Identifying and working on obtaining the required funding the program

CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Regulations in education – Council will likely need to work with Education Queensland to be able to set up a Digital Skills program. • Barrier 2: Lack of funding – Council and its partner educational providers may find difficulties in getting the required funding to launch the Digital Skills program. The following key risks are relevant for this Initiative: • Risk 1: Sustainability of the program – due to limited educational funding, the program may have trouble sustaining itself economically over time. Fees for courses may help balance budgets. • Risk 2: Limited research in program design – for the program to have the desired impact on the Ipswich community, the design of the program must be well researched and analysed. • Risk 3: Confusing focuses – Council and the city's educational providers need to come together to decide on the right focus to work towards (digital inclusion, increased economic opportunities, etc.) as that will help ensure the program is designed to meet the intended outcomes.
DEGREE OF CONTROL	Council degree of control over this Initiative is "medium". While Council will help drive this effort, bringing together the right partners to launch and run the Digital Skills program, the design of the program will be a shared responsibility across these partners.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: Council's broader community engagement initiatives – Council is already making great strides in digital inclusion through its libraries and other initiatives put forward by the Department of Arts, Social Development and Community Engagement.
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Two primary focuses – it is assumed that the Digital Skills Program should serve to both increase digital inclusion and promote economic opportunities in Ipswich. • Assumption 2: Council can be a provider – it is assumed Council could run the Digital Skills Program as an educational provider. For example, a program could be based from Fire Station 101 run by Council employees.
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Chicago Youth-Led Tech – this technology program teaches underprivileged youth in Chicago Digital Skills in a 6-week summer program. The students are taught to use web tools to make websites and use social media. They also learn about strategy, design, project management and other useful professional skills. Finally, they are taught how to find customers for their digital businesses or companies that could benefit from their Digital Skills. • Example 2: San Jose Opportunity Youth Academy – this charter schools offers youth aged 16-24 a high school diploma complemented with Digital Skills, for free. The students get trained in manufacturing, digital media and computer programming. The students get paid internships with Silicon Valley companies. The academy gives underprivileged youth career pathways to Silicon Valley's thriving digital economy. These two examples are offered in partnership with Chicago's and San Jose's city governments. There are many other examples of Digital Skills programs that are both private and public.

Table 11. Overview of Initiative Implications: Initiative 02

2.3.3. DETAIL

2.3.3.1. CAPABILITIES REQUIRED

2.3.3.1.1. PEOPLE

People capability will be critical in making this Initiative successful, ensuring it has the impact desired on the citizens of Ipswich, whether for purposes of inclusion or increasing economic opportunities. Council will be required to bring together the right partners and design the right program, this will involve the following capabilities:

- Ability to construct partnerships: Experience in bringing multiple parties together to achieve a common outcome and working out the most beneficial model that will help achieve the outcome.

- Ability to design and manage programs: Experience in launching and running programs, especially educational programs.
- Broad understanding of educational sector: Experience in education, understanding who the players in the space are, what the regulations are, where funding can be accessed and how to access it, etc.
- Broad understanding of educational outcomes: Experience in designing and delivering educational outcomes, particularly around digital education.

2.3.3.1.2. PROCESS

The process required to implement this Initiative is outlined under "Program Development Process" in Section 2.4.1.3.1 and 2.4.1.3.2.

2.3.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
Massive Open Online Courses (MOOCs)	In addition to running local initiatives to foster Digital Skills growth such as Hackathons, this Initiative may consider leveraging Digital Skills courses hosted by one or more Massive Open Online Courses (MOOCs) (e.g. Udacity).

Table 12. Technical Capabilities Required by Initiative 02

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
Public Tier	Locally run activities such as Hackathons may be based around open data sets and business services provided by Council through the Public tier.

Table 13. Technical Platform Enablers Required by Initiative 02

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Data Governance/ Policies/ Procedures	The exposure of open data sets will be guided by Council's overarching Data Governance, policies, and procedures.
Open Data Policy	The establishment of an Open Data Policy will define the terms under which data can be shared and used.

Table 14. ICT Programs of Work Required by Initiative 02

2.3.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program.

This Initiative has the following specific requirements for Enablers:

- Skills and Capabilities: Please refer to section 2.4.1 (People) for further reference.

2.3.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.3.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Program fees – offer the Digital Skills courses at a cost.
- Opportunity 2: Content IP – resell or offer content to other Council s, cities and educational providers.
- Opportunity 3: Turn into MOOC – offer the course through a massive online open course for students beyond Ipswich (with little additional effort). Potentially through an existing platform like Udemy.

2.3.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.3.3.6. CASE STUDY

Chicago Youth-Led Tech

2.4. INITIATIVE 03: BUILD AND LEARN FAIR

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Jobs
THEME	Education
INITIATIVE NAME	Initiative 03: Build and Learn Fair

2.4.1. OVERVIEW

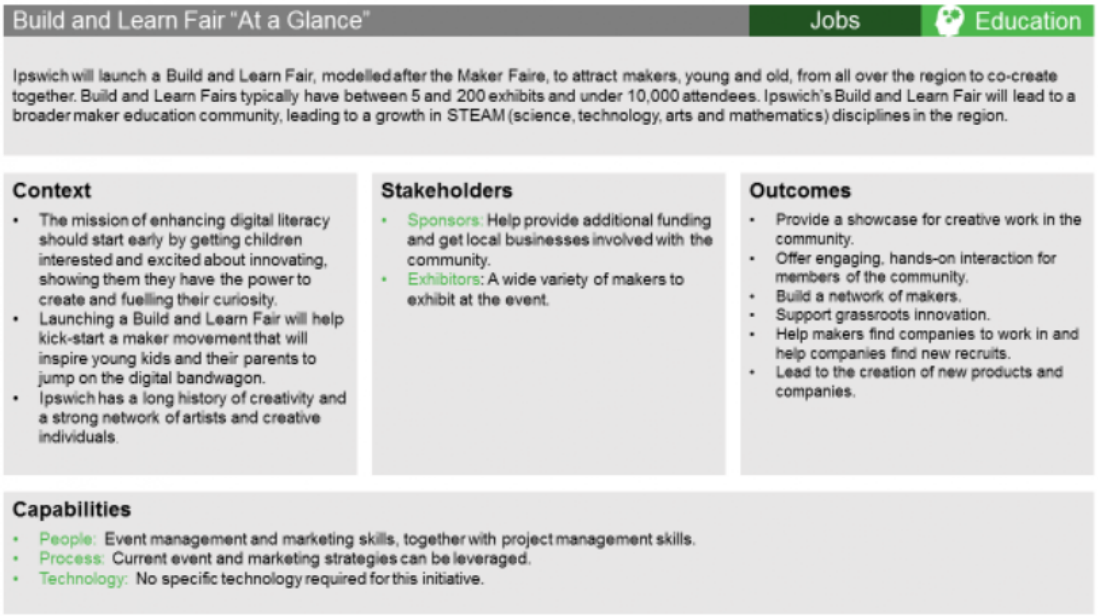


Figure 10. "At a Glance" View of Initiative 03

2.4.1.1. DESCRIPTION

A Maker Faire is "a family-friendly festival of invention, creativity and resourcefulness, and a celebration of the Maker movement." Ipswich will launch a Build and Learn Fair, modelled after the Maker Faire, to attract makers, young and old, from all over the region to co-create together. Build and Learn Fairs typically have between 5 and 200 exhibits and under 10,000 attendees. Ipswich's Build and Learn Fair will lead to a broader maker education community, leading to a growth in STEAM (science, technology, arts and mathematics) disciplines in the region.

2.4.1.2. CONTEXT

While Ipswich has various areas of opportunity related to education, spanning the learning lifecycle from early child hood development through to re-skilling and life-long learning, the Smart City program will focus on the digital literacy of Ipswich residents. Enhancing digital literacy across the citizenry of Ipswich will also contribute to the acceleration of a digital economy by helping to develop knowledge workers.

This mission starts very early on, getting children interested and excited about innovating, showing them they have the power to create and fuelling their curiosity. Launching a Build and Learn Fair will help kick-start a maker movement

that will inspire young kids and their parents to jump on the digital bandwagon. Our youth, beyond the early years, will also find common ground to share their creative aspirations and be able to connect with others with similar interests.

Ipswich has a long history of creativity and a strong network of artists and creative individuals. This Initiative will capitalise on the strength and vitality of that community, giving them a stage to showcase their work and allowing them to contribute to the broader Ipswich community in new ways.

Maker Faire is an event created by Maker Media (which publishes Make magazine) to celebrate arts, crafts, engineering, science projects and the Do-It-Yourself (DIY) mindset. The first Maker Faire was held in the Bay Area in 2006, and given its huge success, has since expanded to hundreds of other cities. In 2014, Maker Faire celebrated 131 Faires around the world: including the 2 flagship events in the Bay Area and New York City, 20 larger-scale Maker Faires and a large number of Mini Maker Faires all around the world. Maker Faires have the objective of delighting and surprising visitors, ensuring they try something new, have fun and leave inspired. These events are diverse in content, interactive for both adults and kids, and are inclusive and open to anyone and everyone.

2.4.1.3. SCOPE

The scope of the Initiative is defined around the successful launch and implementation of the inaugural Build and Learn Fair in 2017.

In this first event, Ipswich City Council will be the responsible party for launching and running the Build and Learn Fair. This includes everything from bringing together the community, applying for a license from the Maker Faire organisation, attracting local sponsors like GE (who has sponsored many other similar events around the world), selecting and preparing the venue, getting makers/exhibitors signed up, marketing the event in Ipswich and beyond (Brisbane, Sunshine Coast, Gold Coast), creating an online event site and more.

If successful, Build and Learn Fairs will continue to be held in Ipswich every subsequent year. Beyond the first year, a different organisation, like a group of volunteers, could take over responsibility for running the event.

2.4.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Sponsors: Sponsors help provide additional funding and gets local businesses involved with the community.
    - Becoming a sponsor is a great way for local businesses, trade associates and non-profits to get involved in an enriching and family-oriented community event and can help promote their work, cause or organisation.
    - In Ipswich, this could mean businesses like General Electric or R.T. Edwards. Local engineering, architecture, building and landscaping firms as well as local community-based non-profits are prime candidates for sponsorship.
    - As an example, sponsors for Adelaide's 2013 Mini Maker Faire included Google, Intel, the Australian Network for Art and Technology, Government of South Australia's Department of Further Education, Employment, Science and Technology, Adelaide College of the Arts, Institute of Backyard Studies, Fab Lab Adelaide and Hackerspace Adelaide, among a few others.
    - Sponsors could also include businesses and organisations in Brisbane and other regional Council s.
- Exhibitors: Makers from across the region will be asked to exhibit at the event.
    - There needs to be wide variety in the types of makers, including nationally organized groups, schools, community art centres, master gardening programs and hacker meetups, for example, that span across craft, engineering, robotics, arts, education, ecology, gaming and more.
    - In Ipswich, this could mean including people from the Art Gallery, Fire Station 101, USQ, TAFE, the Ipswich Art Society, the Workshops Rail Museum, the Cobb and Co Museum, Jamie's Ministry of Food, and others.

- The event should leverage Ipswich's strong arts community, finding ways to engage them through the Department of Arts, Social Development and Community Engagement.
- Exhibitors should also include makers from the broader SEQ region. This event will be the first in the region and will therefore become an outlet of expression for all makers in SEQ.

2.4.1.5. POTENTIAL OUTCOMES

The Build and Learn Fair will deliver the following outcomes:

- Direct impact:
  - Provide a showcase for creative work in the community
  - Offer engaging, hands-on interaction for members of the community
  - Build a network of makers
  - Support grassroots innovation
  - Help makers find companies to work in and help companies find new recruits
  - Lead to the creation of new products and companies
- Broader regional impact:
  - Bring together the southeast Queensland community by providing an outlet of creativity for everyone
  - Bring Ipswich to the limelight in the region
  - "Steal the thunder" from Brisbane to become the go-to destination for Build and Learn Fairs in Queensland, also putting Ipswich on the same level as Adelaide, Melbourne and Sydney – hosts of the Build and Learn Fair series in their respective states
  - Bring awareness to the entire region of Ipswich's innovation and boldness

2.4.1.6. RANGE OF BENEFITS

2.4.1.6.1. COUNCIL

The Build and Learn Fair will lead to the following benefits for Council:

- Economic benefits:
  - Attract visitors from the broader SEQ region
- Social benefits:
  - Shift the perception of Ipswich, increasing the attractiveness of Ipswich for families with young children or couples intending to settle down

2.4.1.6.2. CITY

The Build and Learn Fair will lead to the following benefits for the City:

- Economic benefits:
  - Lead to additional revenue for businesses in the city
  - Provide an opportunity and venue for businesses to recruit and for makers and entrepreneurs to find companies
  - Provide a space for makers and entrepreneurs to start new companies
  - Provide a channel for businesses to showcase/market their services and work

- Social benefits:
    - Provide an outlet of creativity and broader entertainment value
    - Provide an educational channel to teach citizens to make, collaborate, recycle, reinvent and more, foundational skills are helpful to any person throughout their lives, both personally and professionally
    - Ignite a broader maker movement and a maker education movement

2.4.1.7. INDICATIVE KPIS

Looking narrowly at the launch of the Build and Learn Fair in Ipswich, the success of the Build and Learn Fair event itself will directly be dependent on:

- Number of attendees to the event
- Level of satisfaction of attendees with the event (captured through a post-event survey)

However, there are a few other supporting performance indicators which help provide a fuller picture of the impact of the event:

2.4.1.7.1. COUNCIL

- Economic:
    - Number of attendees from outside Ipswich
    - Number of attendees from outside Queensland
- Social:
    - Percentage of attendance under the age of 18
    - Number of media references made to the event (before, during and after)

2.4.1.7.2. CITY

- Economic:
    - Lead to additional revenue for businesses in the city
    - Number of businesses that use the event for marketing, recruiting or hiring
    - Number of makers/entrepreneurs that get a hiring opportunity as a direct result of the event
    - Number of new companies created directly by the event
    - Number of local sponsors investing in the event
- Social:
    - Provide an outlet of creativity and broader entertainment value
    - Number of makers exhibiting at the event
    - Number of makerspaces that pop up in the community after the event
    - Number of smaller maker events that take place in the community after the event.

2.4.2. IMPLICATIONS

LEVEL OF EFFORT	For the first event, Ipswich City Council will take responsibility for running the event. However, compared to other initiatives, the implementation of the Build and Learn Fair is considered to be “low”.
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative:

	• Barrier 1: Stretched business case – the main barrier to the launch of the Build and Learn Fair is that Council will be making an investment in the event. It is hard to predict and measure the tangible return on investment. The following key risks are relevant for this Initiative: • Risk 1: Lack of community interest – the event does not garner the interest or have the impact on the community that it is expected to have. • Risk 2: Perception of misspending of funds – the event is perceived as a way of misspending public funds and resources, as it is not Council's role to host and organise community events. • Risk 3: Competition of similar events in the region – the success of the event is diluted if another city in the SEQ region to host a Build and Learn Fair before or around the time that Ipswich launches its own event.
DEGREE OF CONTROL	Ipswich City Council will have a "high" degree of control over this Initiative as Council is responsible for organizing the Build and Learn Fair.
DEPENDENCIES	This Initiative does not have any dependencies on other projects inside or outside the Smart City program. This Initiative can be started at any desired point in time. This Initiative will be kicked off as early as possible to ensure the Ipswich Build and Learn Fair is the first one in the region, thereby capturing the visibility and halo of the first mover advantage.
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Council will host – Council will lead the effort to host the event, dedicating resources to organizing the event. • Assumption 2: Council investment – Council is willing to invest in the creation of this Initiative to kick start a maker movement in the community.
LEARNING FROM OTHERS	There are many other cities around the world that organise similar events that Council can learn from. Specifically, in Australia, we can learn from Adelaide, Sydney and Melbourne. In particular, Adelaide has held this type of event successfully since 2013.

Table 15. Overview of Initiative Implications: Initiative 03

2.4.3. DETAIL

2.4.3.1. CAPABILITIES REQUIRED

2.4.3.1.1. PEOPLE

Build and Learn fair is very similar to conducting an event by the Council. The skillsets required to put together a successful event would be needed for this Initiative. The following competencies will be important for this Initiative

- Event Management – Experience in conducting events, the various "nitty-gritty" details in putting together an event and a good understanding of the process to followed to set up an event for city Council
- Marketing skills – Experience in identifying and attracting sponsors to event, experience in positioning adverts at right media/locations to attract participants, ability to connect with international fairs such as Maker Faire
- Additionally, project management experience and strong organisational skills will be required within the team to implement this Initiative

2.4.3.1.2. PROCESS

Current processes followed by Council to conduct an event and marketing strategies/processes can be leveraged for this Initiative.

Outside of these two areas, there are no tangible impacts on Council processes.

2.4.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
None identified	

Table 16. Technical Capabilities Required by Initiative 03

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
None identified	

Table 17. Technical Platform Enablers Required by Initiative 03

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
None identified	

Table 18. ICT Programs of Work Required by Initiative 03

2.4.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program.

This Initiative has the following specific requirements for Enablers:

- Strategic Communications: Within the communications around the Smart City program, including the published strategy, the dedicated portal and other related Council communications, Council will describe the Build and Learn Fair in the following broader context:
- The Build and Learn Fair is intended to position Ipswich as leader in innovation, pushing the boundaries of creativity in the region, leaping beyond larger surrounding Council s like Brisbane, the Gold Coast and Sunshine Coasts. This event will put Ipswich on par with other cities in Australia leading the way in their regions, like Adelaide in South Australia or Melbourne in Victoria.
- The Build and Learn Fair is intended to bring together the SEQ region and attract visitors to Ipswich from all over Queensland, showing them the great potential in this area, proving the changing currents in Ipswich and demonstrating the liveability of the city especially for children and youth.
- Most importantly, the Build and Learn Fair is part of a broader intent to support the maker community, get children and youth interested in STEAM disciplines and move the city towards a digital and innovation economy.
- All communications relating to the event should highlight these Themes of potential, positive change, investment in youth, and the digital and innovation economy.

2.4.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.4.3.4. POTENTIAL REVENUE OPPORTUNITIES

There are no additional potential revenue opportunities for Council. While Council could seek to make revenue from event ticket sales and sponsorships, this will not be a big or ongoing source of revenue. While some of the creations that are made for or during the event could spin out into products and startups, any revenue made through those companies would not come back to Council.

2.4.3.5. OUT OF SCOPE

This Initiative involves organizing the first Build and Learn Fair in Ipswich. While programs or projects may offshoot from the event, such as the creation of a non-profit for makers to organize future events, the creation of a makerspace, the creation of maker Meetups, or the creation of maker educational programs (such as the Young Makers Program), all of these remain outside the scope of this Initiative.

2.4.3.6. CASE STUDY

Emily Bick was so blown away by the first Build and Learn Fair she attended in the Bay Area in 2011, she decided she wanted to start her own Build and Learn Fair in Vancouver. She wanted to demonstrate to the world that Vancouver was not a lonely city, as it was portrayed in the media, and she wanted to show others how empowering it was to be part of the very accepting and open maker community, something she experienced first-hand. The first Build and Learn Fair was held at the hackspace that Emily was part of in Vancouver, VHS (Video Hackspace), which doubled in membership after the event.

Due to the success of the Build and Learn Fair, Emily went on to found Vancouver Maker Foundation with other makers in the community. As they describe themselves: "Vancouver Maker Foundation is a non-profit committed to building a strong and vibrant community of Makers in the city of Vancouver. Vancouver Maker Foundation brings together a broad range of Vancouver artists, hobbyists, creatives, collectives, and small businesses through events and projects including the Vancouver Build and Learn Fair, Maker Music, the Young Makers Program, the Vancouver Maker Education Meet-up Group. Our driving purpose is to continue on this mission of connecting like-minded tinkerers in order to cross-pollinate ideas, share resources, and inspire one another in exploring passion projects, hobbies, businesses, or achieving unique feats of wonder."

Vancouver Maker Foundation's vision is "that Vancouver Makers will be instrumental in solving regional problems, from environmental sustainability, to energy efficiency, to urban farming, or even to ways of making our city a more vibrant and connected place to live."

Through the Vancouver Maker Foundation, the annual Build and Learn Fair event has expanded into multiple smaller events that take place throughout the year, hosted by the Vancouver Maker Education Meetups. These Meetups "bring together enthusiastic makers, hackers, artists, educators, entrepreneurs, librarians, and parents who are bringing hands-on creative projects into education to share ideas and collaborate on projects."

Furthermore, the Foundation has established a local Young Makers Program. The program involves afterschool extracurricular activities that integrate "arts, crafts, science, engineering and electronics in order to develop a greater understanding of the subjects and how they are used in real life scenarios." This program is part of a larger network; started in 2010, Make, Pixar and the San Francisco Exploratorium came together to establish Maker Ed, a non-profit organisation with the vision of "Every Child a Maker" on a mission "to create more opportunities for all young people to develop confidence, creativity, and interest in science, technology, engineering, math, art, and learning as a whole through making." One of Maker Ed's pillars is the Young Makers program which embraces "an open culture that encourages cross-disciplinary efforts, peer-to-peer teaching and learning, and the importance of both hard and soft skills."

In conclusion, one inaugural Build and Learn Fair in Vancouver led to the growth of a healthy maker community and has launched a wider maker education stream that is pushing youth into STEAM.

2.5. INITIATIVE 04: ECO-VILLAGE

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Growth
THEME	Energy
INITIATIVE NAME	Initiative 04: Eco-Village



2.5.1. OVERVIEW



Figure 11. "At a Glance" View of Initiative 04

2.5.1.1. DESCRIPTION

An "Ecovillage" is defined as intentional communities whose goals is to become socially, economically, and ecologically sustainable. The intent of this Initiative is to create sustainable living habitats in greenfield developments across Ipswich City Council. This Initiative will support testing new technologies and capabilities that will support communities to use energy efficiently while fully leveraging the collective "power" of the community in sharing energy across residents.

2.5.1.2. CONTEXT

The Office of Economic and Statistical Research (OESR) projects there would be around 220,000 households (dwellings) from 62,000 households in 2011. This is a fourfold increase in housing estate within Ipswich. Clearly, there is an opportunity to develop smart and energy efficient infrastructure that supports both the community and the individual residents.

From a technological standpoint, considerable advancement in technologies is truly enabling distributed generation of electricity. The cost of solar panels and batteries (that can store power from solar or other renewable sources) have

been dropping quite quickly. The business case for an individual resident to adopt distributed generation technologies is not very far and is becoming a reality.

Additionally, Queensland has the highest solar penetration in the world and specifically Southeast Queensland has been in the forefront of this journey. As of mid-2015, Energex had more than 1 gigawatt of solar capacity connected the grid.

The combination of new housing developments with a well-established markets for renewable energy makes Ipswich greenfield sites a prime location for piloting cutting edge technology around energy sustainability.

2.5.1.3. SCOPE

There are stages of pilots that can be conducted in greenfield developments. It is completely dependent on the developers and utilities to what extent they can stretch in the initial years to trial cutting edge technology.

2.5.1.3.1. STAGE 1: GETTING THE BASICS – ROOFTOP SOLAR AND INTEGRATED BATTERY

The aim of this trial would be to understand consumer behaviour with integrated solar battery units and how utilities respond to this new form of distributed generation and storage.

While rooftop solar has been in place for quite some time, until recently any excess power generated had to be wheeled back into the grid. The price at which the utility bought power back is not in line with market demand and hence, doesn't provide additional incentive for residents. With the advancement of battery technologies like Tesla Powerwall, sonnonBattorio power generated from Solar can be stored in batteries and utilised at a later date/time. This breaks the "golden" link of instantaneous power generation and consumption.

As a first trial, greenfield households could be developed with Solar panels and integrated battery units. This will allow for reduction in carbon emission while increasing the use of renewable energy sources.

It would be highly beneficial if the battery units are co-located in a communal location for all the residents in the greenfield establishment. This will allow for future expansion into microgrids and power trading.

Indicative Stakeholders: master community developers, individual residents, solar and battery manufacturers, electricity distribution business, electricity retailers, energy regulator, universities

2.5.1.3.2. STAGE 2: MICRO-GRIDS – UNDERSTANDING THE BASICS

The aim of this trial will be to understand the consumption behaviour and extent of benefits to be derived through energy efficiency by implementing a microgrid.

The US Department of Energy Microgrid Exchange Group defines microgrids as group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode.

The intent behind microgrids is to develop self-sufficient energy efficient communities i.e. there is the ability to generate your own power, share excess power when not needed and borrow additional power from the community when needed. This is all done while all individual residents are still connected to the grid and can fall back to grid power if the collective distributed generation doesn't meet the demands of the community.

The trial should help understand the technical challenges of creating, maintaining and sustaining a microgrid. Additionally, helps understand the costs, benefits and risk sharing models required to scale up the model. Importantly, the trial will also help understand the nature of interconnect needed with the central grid (i.e. utility) and how they are commercially compensated for their service.

Indicative Stakeholders: master community developers, individual residents, solar and battery manufacturers, electricity distribution business, electricity retailers, energy regulator, universities

2.5.1.3.3. STAGE 3: MICRO-GRIDS – WITH FULL-FLEDGED TRADING ACROSS RETAIL CONSUMERS

The aim of this trail will be to understand the technical and commercial implications of setting up a trading platform on top of a microgrid to buy/sell power or utilise other complex financial instruments such as futures/options to generate, store and consume power.

The key concept in this trial, is the creation of a marketplace for all participants in a microgrid to buy/sell power amongst themselves and potentially with the grid. This allows for optimisation across the community not only from an energy usage perspective but also from a commercial standpoint.

The main element within the trial will be the setup of individual energy optimisation software such as Reposit Power which manage production, consumption, trading both individually and across the grid. In this case, it would be important to understand the data flows needed between parties to allow for trading, how does the equivalent of clearing house in a trading environment works. Additionally, test the regulatory and policy changes required for the utilities to provide adequate power backup capability without having to invest heavily on traditional network infrastructure.

Indicative Stakeholders: master community developers, individual residents, solar and battery manufacturers, electricity distribution business, electricity retailers, energy regulator, universities

2.5.1.3.4. STAGE 4: SMART HOMES – INTEGRATING DISTRIBUTED GENERATION WITH HOME AUTOMATION

The aim of this trial would be to integrate the distributed generation capability with in-house automation to efficiently consume energy within the home environment.

Home automation involves the control and automation of lighting, heating, ventilation, air condition, appliances and security.

The key element of this trial will be to integrate the usage of energy related appliances inside the residence with distributed generation (e.g. solar/battery unit) to allow for efficient consumption. These technologies will allow for remote operation of appliances to enable energy efficiency and shave peak load at a community level. This would enable substantial reduction in investment required in electricity networks to meet future demand while reducing carbon footprint.

This trial can be conducted in parallel with all of the 3 stages. This trial will act as a benefits multiplier to the other trials supporting distributed generation.

2.5.1.4. STAKEHOLDERS INVOLVED

Council will only play a small role in this Initiative, helping bring together the right partners and launching the Initiative. The following key stakeholders are relevant for this Initiative:

- Property Developer(s): At least 1 property developer for a greenfield development will need to sign on to this Initiative to bring the Eco-Village to life.
- Individual Residents: The residents of the Eco-Village will be buying into the Initiative and the technologies implemented as part of the Eco-Village Initiative will impact their homes and lifestyles.
- Energy Technology and Service Vendors: This Initiative will require the technology and services of companies such as solar and battery manufacturers, power trading product vendors (such as Reposit), smart appliance manufacturers and home automation vendors.
- Electricity Retailers: Retailers selling electricity to individual homes and to the Eco-Village community will be impacted by the Initiative and will need to sign on to either offer their existing services or create new ones that will adapt to the technologies implemented in the Eco-Village .

2.5.1.5. POTENTIAL OUTCOMES

The trials and the scale of this Initiative will drive 4 outcomes for the city:

- Deliver Energy efficiency benefits for the city
- Improve environment and sustainability outcomes for the city
- Provide an avenue for attracting new companies and startups to invest/setup business in Ipswich
- Create a platform for positioning Ipswich globally on energy efficiency and sustainability

2.5.1.6. RANGE OF BENEFITS

The range of benefits to be derived from the trial will predominantly be for the citizens of the city. There would be limited benefits directly to Council (it is assumed that Council benefits through energy efficiency initiatives are covered under Smart Buildings Initiative).

2.5.1.6.1. ENERGY BENEFITS:

These trials will deliver energy efficiency and potentially reduction in consumption of energy as residents are made more aware of their consumption patterns and have the ability to control appliances remotely.

- Reduction in operating costs for heating and cooling of homes
- Reduction on energy costs for domestic hot water consumption
- Reduction in capital spend and operating expenditure by utility (with benefits passed on to end consumers)

2.5.1.6.2. ENVIRONMENT AND SUSTAINABILITY BENEFITS:

The following environmental and sustainability outcomes can be delivered when these trials successful and scaled up to a city level.

- Increased renewable energy generation
- Reduction in carbon reduction
- Maximize use of renewable source such as Solar power

2.5.1.6.3. ECONOMIC BENEFITS:

With the trial of cutting edge technology, companies and startups would like to participate either to access the data or trial their particular software/products. This would allow for creation of local jobs and investment locally by companies.

2.5.1.6.4. WORLDWIDE RECOGNITION:

Conducting extensive trials in a greenfield location to mature technical capability and commercial models will place Ipswich city on the global map. Many countries across the western world are keen to understand the impacts of these technologies but don't have the right test bed (both in terms of adoption of renewable technologies, mature consumer base and a reasonable sample size).

2.5.1.7. INDICATIVE KPIS

2.5.1.7.1. ENERGY

- Cost of energy consumption/month – Before and after trial (includes both electricity, hot water and any other heating requirements residentially)
- Overall return on investment – Based on 6 months to a year data post implementing trial
- Increased renewable energy usage – percentage increase in renewable power at individual residence and subsequently collectively across the community

2.5.1.7.2. ENVIRONMENT:

- Carbon dioxide reduction – Reduction in carbon dioxide reduction due to renewable energy sources and efficient energy consumption
- Overall return on investment – Based on 6 months to a year data post implementing trial

2.5.1.7.3. ECONOMIC:

- New investment in City – dollar value of new investment attracted to city that can be directly/indirectly associated to the ecovillage trials

2.5.2. IMPLICATIONS

LEVEL OF EFFORT	From a Council perspective, there would be limited direct effort associated with this Initiative; as such, the effort level will be "low". The maximum quantum of effort required to achieve this Initiative will lie between the master development companies, utilities, solar/battery providers and individual residents. The specific effort from the Council would be: • Act as a facilitator to bring all participants together to develop the hypothesis for each trial, support with creating the overall plan. • Make appropriate changes to Policy and Regulation (where Council has control) to support with ecovillage trials • Act as facilitator and lobby to make appropriate regulatory/policy exemptions to run trials (e.g. Australian Energy Regulator) • Support in measuring the benefits for citizens (i.e. outcomes) through the Smart City program • Use Council marketing and communication channels to advertise the trials, raise profile and attention to city
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Utility Involvement – the incumbent utility Energex may not be keen to be involved in a trail. The trials could be conducted without involving the utility, but will have only a limited impact and will miss out on testing the grid level issues, regulatory challenges and commercial implications for the utility. • Barrier 2: Fast paced technology development – battery technology and energy optimization software are being developed at a rapid pace. The technology and eventually the cost of batteries will come down in the next 3-5 year timeframe. This could mean Master Development Agencies and Residential homes may not be keen to invest in "bleeding edge" technologies The following key risks are relevant for this Initiative: • Risk 1: Delay in policy and regulation – for setting up microgrids and trading platforms for power would require policy, regulation and standards from regulatory agencies at the Federal and state level including involvement of incumbent utility. The timescales for building greenfield developments are quite aggressive and delays in developing regulation, procedures and standards could prove to be a missed opportunity. • Risk 2: Technology obsolescence - adequate attention needs to be placed to choose the right technologies for trials. It is entirely plausible for the technologies adopted during the trials may be obsolete or "old" in a 3-5 year timeframe. The trials should be structured taking into consideration this risk and how residents are not impacted.
DEGREE OF CONTROL	Ipswich City Council will have a "low" influence in framing and delivering the trial. The trail needs to be driven through a Consortium/Partnership play between Master Development Agencies, Residents, Utility Companies and Energy product manufacturers. The role of Council will be to facilitate the formulation of the partnerships to support the trials and facilitate in the regulatory/policy space.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: greenfield development roadmap – the timeline for developing greenfield sites will be a key dependency for conducting trials. It would be most beneficial to construct the hypothesis and scope of trials before commencement of greenfield site build, which will allow for minimal cost impacts. Conducting a trial with retrofits post infrastructure build may make costs prohibitive to conduct trials • Dependency 2: Energex projects – the trials may also have dependencies with similar initiatives the incumbent Utility (i.e. Energex) may be planning to conduct in other regions outside of Ipswich City. These need to be considered in framing the hypothesis and scope of the project

	• Dependency 3: Smart Buildings Initiative – the Eco-Village should meet the policies and targets set out by the smart buildings Initiative for greenfield developments.
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Technology maturity – renewable technologies and battery technologies are reasonably mature to conduct trials on microgrids. • Assumption 2: Willingness from service and technology providers – incumbent utility and energy product manufacturers will be keen to conduct trials in Ipswich City • Assumption 3: Willingness from property developers – master development agencies will be interested in developing an ecovillage and conduct trials as part of their estate • Assumption 4: Market interest – renewable energy and battery technologies will evoke adequate interest from property owners buying into these master developed communities • Assumption 5: Partnership model – partnership model/consortium model can be developed with appropriate levels of risk-reward sharing across all parties
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Currumbin Ecovillage – this Eco-Village, with 147 homes, situated in Southeast Queensland in the Gold Coast, is a great regional example to follow. The Eco-Village arose from grassroots movement and its members are very committed to the Eco-Village's mission. The ecovillage is entirely self-sufficient in energy and has autonomy in water and wastewater recycling. It goes even further to provide self-sufficiency in food and materials. • Example 2: Fujisawa Sustainable Smart Town – the Fujisawa energy track has the goal of "self-creation and self-consumption of energy". Each of the town's 600 homes came with solar power generation systems and storage battery units. In addition, each house is equipped with a home energy management system for citizens to adapt their lifestyles to improve the stability and optimal utilisation of the town's renewable energy sources. • Example 3: Illinois Institute of Technology – a $14 million microgrid project at IIT's Galvin Centre is a reliable distributed energy system of about 9 MW across 50 buildings that includes roof top solar, wind generation, natural gas, batteries, charging stations for electric vehicles and smart buildings technology to enhance the energy efficiency of the building and demand response. This microgrid was one of the first built in the world, with the project starting in 2008 and completed in 2013. It now saves the university about $1 million per annum and helps the university reduce its carbon emissions by 7%. • Example 4: Commonwealth Edison in Chicago – IIT's microgrid will work with ComEd's new microgrid project in Bronzeville Chicago. The project recently received a federal grant, to create an approximately $14 million microgrid project that encompasses 800 customers, including police headquarters and medical facilities. The project will leverage ComEd's existing smart meters in the area, have advanced analytics that incorporate real-time weather patterns and will play off IIT's microgrid depending on energy needs. There are many other examples of advanced microgrid projects, with a list provided by Berkeley Lab that includes University of California San Diego, Fort Collins, Lana'i and many others (see References).

Table 19. Overview of Initiative Implications: Initiative 04

2.5.3. DETAIL

2.5.3.1. CAPABILITIES REQUIRED

2.5.3.1.1. PEOPLE

This Initiative will primarily be driven by master developers and the incumbent utility. But certain competencies are required within the Council to ensure the Initiative gains momentum and can navigate roadblocks effectively.

- Regulation, Policies and Standards: Experience and understanding to navigate through regulation, policies and standards both in energy and planning. The essential skillset is not to understand the actual regulation in energy or in planning but the ability to interpret current regulation, understand the shortcoming and finding the easiest way to circumvent the issue.
- A working knowledge of the "new age" energy solutions such as microgrids, battery technology will be a "nice to have" not a "must have"

- Ability to construct partnerships/MoU or similar models: Experience in bringing multiple parties together to achieve a common outcome and working out the most beneficial model that will help achieve the outcome. Combination of commercial and strategy skills.
- Additionally, understanding of procurement and Vendor engagement will be beneficial. Please refer to Section V Part C for more information on Procurement and Vendor Engagement.

2.5.3.1.2. PROCESS

This Initiative has no tangible impacts on Council processes.

2.5.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
None identified	

Table 20. Technical Capabilities Required by Initiative 04

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
None identified	

Table 21. Technical Platform Enablers Required by Initiative 04

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
None identified	

Table 22. ICT Programs of Work Required by Initiative 04

2.5.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative does not have any additional specific requirements for Enablers.

2.5.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.5.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Council could explore monetizing the electricity data obtained from the Eco-Village trials.

2.5.3.5. OUT OF SCOPE

Projects relating to other resources, such as water and waste, have not been taken into consideration into the scope of this Initiative. The Eco-Village property developer might want to explore those areas.

2.6. INITIATIVE 05: SMART BUILDINGS

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Growth
THEME	Energy
INITIATIVE NAME	Initiative 05: Smart Buildings



2.6.1. OVERVIEW

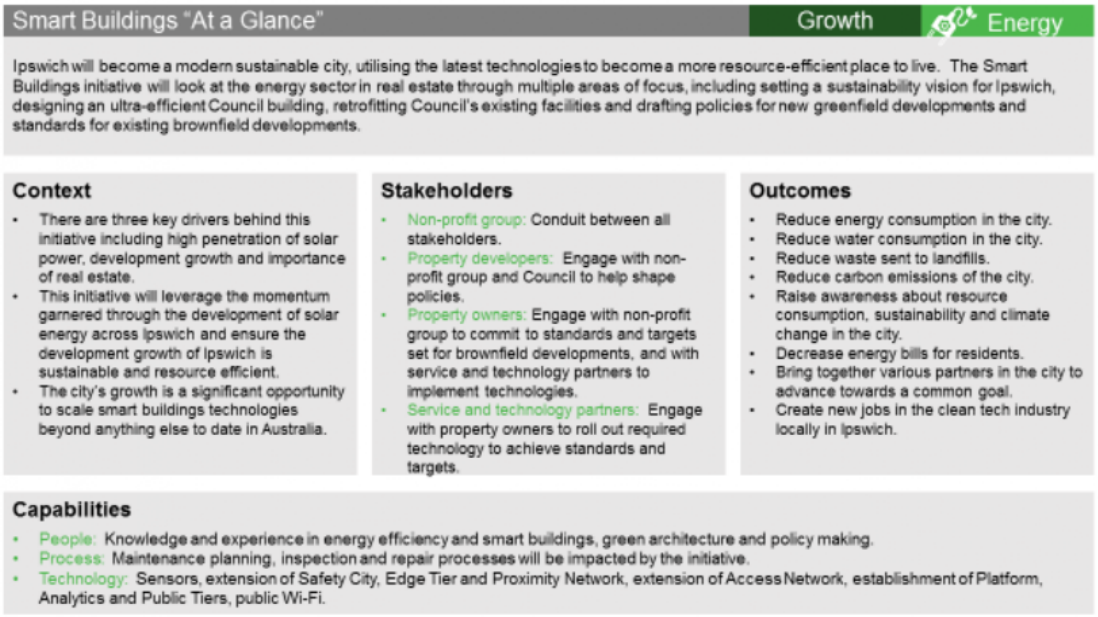


Figure 12. "At a Glance" View of Initiative 05

2.6.1.1. DESCRIPTION

Ipswich will become a modern sustainable city, utilising the latest technologies to become a more resource-efficient place to live. The Smart Buildings Initiative looks at the energy sector in real estate through multiple areas of focus:

- Setting a sustainability vision for Ipswich with energy efficiency and renewable energy targets;
- Designing an ultra-efficient office building for Council in the redeveloped CBD;
- Retrofitting Council's existing facilities to make them more energy efficient; and
- Drafting policies for new greenfield developments and standards for existing brownfield developments.

2.6.1.2. CONTEXT

There are 3 key drivers behind this Initiative:

- High penetration of solar power: Queensland is one of the locations around the world with the highest penetration of solar power. Queensland currently already has approximately 1.5 GW of solar energy through rooftop solar, making rooftop solar generation the second largest power station in the state (after only the

Gladstone coal power plant). The adoption of solar photovoltaic panels has been extremely high with optimal climate conditions and decreasing technology costs.

- Development growth: Ipswich is one of the locations in Australia with the highest population growth rate and associated development growth. Alongside two of the largest master planned communities in Australia, based in Springfield and Ripley Valley, there are a wide range of smaller A developments and infill developments throughout the city.
- Importance of real estate: According to the Australian Renewable Energy Agency, "the combined residential and commercial sector accounted for 17% of final energy consumption in 2014-15." The trend towards smarter, more efficient buildings will happen naturally but Ipswich can capitalise on this trend to push the city ahead of the curve, in its vision to be the smartest city in Australia.

The objective of this Initiative is to leverage the momentum garnered through the deployment of solar energy across Ipswich and ensure the development growth of the city is sustainable and resource efficient, being smart about the environmental footprint it will have. Furthermore, given that Ipswich deals with water issues around flooding and droughts, thinking holistically about the resource efficiency of a building will contribute to higher resilience for the city.

The city's growth is a significant opportunity to scale smart buildings technologies beyond anything else to date in Australia.

2.6.1.3. SCOPE

The scope for this Initiative covers a number of actions, across 2 main strategies:

2.6.1.3.1. STRATEGY 1: ESTABLISHING A NON-PROFIT TO SET STANDARDS AND ENGAGE PROPERTY OWNERS

First and foremost, Council will help establish a non-profit (similar to Seattle 2030) that will be responsible for pushing the energy efficiency agenda of the city. The non-profit will be responsible for:

- Define a Sustainability Vision for the City
- Vision will encompass Energy, Water, Waste, Carbon Footprint
- Set targets which Ipswich will aim to achieve over the next 10 to 20 years
- Setting new policies in resource efficiency for A developments
- Policies will distinguish 2 categories: residential and commercial
- Policies will define targets and guidelines across 4 dimensions: energy, water, waste and carbon footprint
- Work with master developers, real estate agents and renewable energy and technology vendors to understand what the market is asking for, what is feasible from a technology standpoint, what price points are reasonable in the marketplace, etc.
- The definition of these policies will tie into the Eco-Village Initiative, impacting the targets that the Eco-Village will need to meet and therefore the technologies that are implemented.
- Implementing smart buildings technologies across brownfield and infill developments
- Define standards in resource efficiency for brownfield developments, again, distinguishing between residential and commercial and defining targets and guidelines across energy, water, waste and carbon footprint
- Establish a partnership with various services and technology companies to roll out smart buildings technology across brownfield sites (starting with commercial real estate)
- The non-profit group is responsible only for getting property managers to commit to the energy efficiency standards, leaving the responsibility of technology implementation to the property managers
- One of the first property managers to commit to these standards will be Council for all Council -owned facilities (see point 2 below for further detail)

- The non-profit group will provide education around resource efficiency and sustainability and help perform energy audits in collaboration with the selected vendor(s) to help convince property managers of the value of smart buildings
- Establish a rating system for resource efficiency in buildings across Ipswich
- The rating system may be a new one or will likely leverage an existing rating system (such as the Green Building Council of Australia's Green Star)
- The non-profit will also be charged with rating properties across Ipswich and providing that information for public consumption

Note: The non-profit will likely only need to be 1-2 people (part or full time). As a comparative, Seattle, which is at least 3 times more populous than Ipswich (if you consider only the downtown area), has 4 people working part time and full time as part of the Seattle 2030 non-profit organisation. The non-profit will need to find its own funding, but will be partly funded, especially in its first-year, by Council.

2.6.1.3.2. STRATEGY 2: IMPLEMENTING SMART BUILDINGS IN COUNCIL FACILITIES

Secondly, Council will implement Smart Buildings in its own buildings, including its new Council headquarters in the redeveloped area of the CBD and across all existing facilities:

- Council will retrofit its own facilities
- Council will commit to the standards and targets defined by the non-profit group for all existing brownfield facilities where there is a business case to implement smart buildings technologies and will work with the selected vendor(s) to roll it out
- Council will design a resource efficient new office building
- Council will work with an architecture or design firm and/or additional vendors to implement smart buildings technology from the ground-up in its new office building in the redeveloped CBD
- In addition to committing to the policies and targets defined by the non-profit group for Council's new greenfield development in the CBD, Council will take this one step further to set an example for the rest of Ipswich to design and build a net positive building in energy, net zero in water and net zero in waste

2.6.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Non-profit group: This group (likely composed of 1-2 people) will work as the linchpin between all stakeholders involved, including providing a channel for communication between real estate developers and operators, identifying opportunities to improve building design and operations, brokering relationships between stakeholders that prove to be mutually beneficial, advocating for public policies (at local, state and federal levels) that will accelerate the trend towards more resource efficient cities and bring advances in the marketplace at scale for its committed partners.
- Property developers: They will work with the non-profit group as well as Council to help shape the policies that will define the resource efficiency standards and targets for greenfield developments, providing input on what is financially and technologically feasible. This includes property developers for both commercial and residential real estate. Property developers include Springfield Land Corporation, Lend Lease, Amex Corporation, Sekisui House and others.
- Property owners: They will work with the non-profit group, choosing to commit to the standards and targets set for brownfield developments and working with the service and technology providers to implement the required technologies to achieve those standards and targets. This includes property owners for both commercial and residential real estate. Property owners include Oaks Hotels and Resorts, Ipswich City Council, Ray White, PRDnationwide and others.

- Service and technology providers: They will work with the property owners that have committed to achieving the standards and targets set by the non-profit group for brownfield developments, rolling out the required technologies across the committed real estate. Service and technology providers include Accenture, General Electric, Philips, Microsoft, Iconics, Ezenics, Living Future Institute Australia, the Green Building Council of Australia, and others.

2.6.1.5. POTENTIAL OUTCOMES

The Smart Buildings Initiative will:

- Reduce energy consumption in the city
- Reduce water consumption in the city
- Reduce waste sent to landfills
- Reduce carbon emissions of the city
- Raise awareness about resource consumption, sustainability and climate change in the city
- Decrease energy bills for residents
- Bring together various partners in the city to advance towards a common goal
- Create new jobs in the clean tech industry locally in Ipswich

2.6.1.6. RANGE OF BENEFITS

2.6.1.6.1. COUNCIL

Council will achieve the following benefits through the Smart Buildings Initiative:

- Reduced energy and water consumption in the new office building
- Reduced energy and water spend across all facilities
- Increased employee wellness and productivity through a high performing new office building
- Increased base of rate payers by creating a city more attractive to its residents through lower energy bills and sustainable goals

2.6.1.6.2. CITY

The city will reap multiple benefits from the Smart Buildings Initiative:

- Improved environmental sustainability and resilience (with associated benefits such as cleaner air, cleaner water, etc.)
- Reduced energy and water bills for residents
- Increased attractiveness and halo for Ipswich
- Increased wellness and healthy environments of offices and homes
- Increased purchasing of local goods and products for buildings (construction, furniture, etc.)
- Increased number of jobs in the clean technology sector in Ipswich

2.6.1.7. INDICATIVE KPIS

2.6.1.7.1. COUNCIL

- Spend on energy and water for the new office building as compared to current office buildings

- Spend on energy and water for all facilities as compared to baseline
- Self-reported satisfaction levels with office environment and productivity levels of employees as compared to baseline (i.e. current office buildings)
- Percentage of new residents in Ipswich each year that claim sustainability-related initiatives in the city as one of the primary reasons for moving to Ipswich
- Number of mentions and related trends of Ipswich's sustainability-related initiatives in social media
- Number of articles in traditional media referencing or covering Ipswich's sustainability-related initiatives

2.6.1.8. CITY

- Percent reduction in energy consumption in the city as compared to baseline
- Percent reduction in water consumption in the city as compared to baseline
- Percent reduction in generated waste overall in the city as compared to baseline
- Percent reduction in generated landfill waste in the city as compared to baseline
- Percent reduction in carbon emissions from the city as compared to baseline
- Percent reduction in energy and water bills on average across Ipswich residents
- Percent reduction in energy and water bills of smart building homes and offices as compared to non-smart building homes and offices
- Self-reported satisfaction levels of residents in Ipswich smart building homes as compared to non-smart building homes
- Self-reported satisfaction levels of workers in Ipswich smart building offices as compared to non-smart building offices
- Revenue of local businesses that sell products for the real estate industry (construction, furniture, etc.)
- Number of newly created local jobs in the clean technology industry

2.6.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort to implement Smart Buildings is "medium", as some of the components of this Initiative will be delivered by Council where others will be delivered by the non-profit group that Council helps set up. In particular, Council will be responsible for: • Setting up the non-profit group • Working with the non-profit group on enacting sustainability policies for greenfield and standards for brownfield developments (through Planning and Development) • Implementing smart buildings retrofits across Council's existing facilities • Implementing smart buildings designs in Council's new office building • Helping the non-profit group market its resource efficiency-based rating system for buildings in Ipswich
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Inability to set policy locally – Council may not be able to enact policies and standards around building design at the local level; Council may need to work with state government to do so or can choose to publish non-mandatory guidelines instead • Barrier 2: Developer backlash – there may be backlash from property developers against resource efficiency policies for greenfield developments based on an impact to the cost of construction • Barrier 3: Council's small facilities – due to the small size of many of Council's existing facilities, it may not be financially or technically feasible to implement smart buildings technologies at several or many of these sites The following key risks are relevant for this Initiative:

	• Risk 1: Unsustainable non-profit group – the non-profit group created to lead the efforts in sustainability for Ipswich could find itself out of funding • Risk 2: Disinterest from the public – the current and future residents of Ipswich may not care about these sustainability initiatives so it is important to tie the benefits of the policies, standards and rating system directly to the resident (particularly around their energy bill)
DEGREE OF CONTROL	Ipswich City Council will have a "medium" influence in this Initiative. • While Council will not directly be enacting the sustainability goals for Ipswich and the resource efficiency standards for brownfield developments, Council will have a say in that. • Council will be enacting policies for resource efficiency in greenfield developments (or at least working with the governing bodies responsible). • Council will directly be controlling the implementation of smart buildings in their own facilities. • Council will not have influence over which property developers commit to the resource efficiency standards for brownfield developments.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: New Council building development -the only dependency in this Initiative is the development of the new Council office building. The non-profit group, working with the Planning and Development department in Council will work to publish policies for greenfield developments. Like all new developments, Council's new office building will need to adhere to this policy. Furthermore, Council will need to work with the architects and designers of the building to take the performance of the building a step further to become net positive in energy and net zero in water and waste.
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Ability to set policy – this Initiative assumes that Council has the legislative power to develop new policies for resource efficiency requirements of real estate. If this is not the case, Council will need to work directly with the governing bodies that have this responsibility.
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Seattle 2030 – this non-profit group, one of the many 2030 Districts in the US, is changing the energy efficiency landscape in Seattle. The group has defined resource efficiency targets for brownfield and greenfield developments and works with property owners to implement smart buildings technologies for their properties. • Example 2: Bullitt Center – considered one of the greenest commercial buildings in the future, this building, designed by the International Living Future Institute, follows the Living Building Challenge guidelines. This building can be a model for Council's new CBD office building. • Example 3: Green Building Council Australia – this organisation puts forward guidelines for smart and green building development in Australia. Council will leverage their expertise and work as much as possible for this Initiative. Furthermore, meeting their ratings and standards will help provide credibility to our work in Ipswich.

Table 23. Overview of Initiative Implications: Initiative 05

2.6.3. DETAIL

2.6.3.1. CAPABILITIES REQUIRED

2.6.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- For the non-profit group:
- Project and stakeholder management
- Deep knowledge and experience in energy efficiency and smart buildings
- Deep knowledge and experience in green building standards
- Proficient knowledge and experience in real estate development

- Knowledge and experience in policy-making
- For Council:
- Knowledge and experience in energy efficiency and smart buildings
- Knowledge and experience in green architecture
- Knowledge and experience in policy-making

2.6.3.1.2. PROCESS

This Initiative will have an impact on longer term internal processes for the Facilities Management team in the City Maintenance branch within the Department of Works, Parks and Recreation. The nature of processes impacted would range from Maintenance Planning, Inspection and Repairs.

The Initiative will help the team operate and maintain Council facilities in a more efficient manner.

2.6.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
Sensors	Sensors that may be deployed within the Smart Building/Precinct to assist in for identifying security risks/incidents (e.g. noise sensors, motion sensors) and asset maintenance items.
Extend Safe City	Deployment of additional cameras connected to Council's Safe City framework.

Table 24. Technical Capabilities Required by Initiative 05

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
Edge Tier and Proximity Network	Sensors will exist in the Edge Tier and will need a Proximity network to be established to enable the flow of data between devices and from the devices to the Access Network.
Extend the Access Network	An Access Network link must be established to connect sensors in the Edge tier to Council's enterprise landscape and enable the flow of data to and from the sensors.
Establish Platform Tier	The Platform tier will provide the ability to ingest raw sensor data and process that data (potentially along with other data sources) to trigger upstream events (e.g. raising an alert with Safe City operators).
Establish Analytics Tier	The Analytics tier allows relevant data to be stored and used for analytical modelling and visualisation.
Establish the Public Tier	The Public tier contains an API gateway that allows Council to interact with sensor solutions via APIs e.g. controlling the sensors, or accepting regular updates of curated data from sensors.

Table 25. Technical Platform Enablers Required by Initiative 05

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Public Wi-Fi	Council may wish to extend its deployment of Public Wi-Fi to include Smart Building installations.

Table 26. ICT Programs of Work Required by Initiative 05

2.6.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative has the following specific requirements for Enablers:

- Policies and Regulations: The smart buildings non-profit group will work with Council to set policies for resource efficiency in greenfield developments. This will make Ipswich more sustainable going forward. Many of these types of policies may have already been defined or are being defined by regional, state, national or international governing bodies.
- Standards and Interoperability:
    - The smart buildings non-profit group will work with Council to set standards for resource efficiency in brownfield developments. This will help retrofit the city to make it more sustainable.
    - The smart buildings non-profit group will also set standards and protocols in terms of the smart buildings technology (connectivity and networks, devices, data, etc.) to ensure faster uptake across the city, leverage lessons learned across property owners, extensions from one property to another and collection of data. In the future, smart buildings can work together in decentralized micro-grids, for example, so the systems will need to communicate with each other.
    - Council will also work with the non-profit group to define standards for resource-efficiency across residential and commercial buildings in the city (i.e. leveraging an existing certification or creating a certification) to inform residents of the resource-efficiency levels of those buildings.
    - Many of these types of standards have already been defined or are being defined by national and international governing bodies.
- Strategic Communications:
    - The smart buildings non-profit group will work with Council and other community stakeholders to establish energy efficiency and renewable targets for Ipswich. Council can then work with the non-profit group to communicate those targets as part of the broader story to make Ipswich more sustainable and to improve the lives of Ipswich residents.
    - Council will also work with the non-profit to communicate the rating system for residential and commercial buildings in Ipswich. The intent is to influence purchasing decisions, pushing citizens to favour more resource-efficient buildings and therefore move the city more quickly towards sustainable outcomes.

2.6.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.6.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Council could explore monetizing the data obtained from the smart building trial.
- Opportunity 2: There might be an opportunities to be partner with smart buildings solution providers to pilot new products
- Opportunity 3: The data obtained from the smart buildings can be used to find common patterns of security threats (e.g., break in) and other emergency cases (e.g., fire). This data can be very valuable for security companies and emergency services to learn from the past to predict the future.

2.6.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.7. INITIATIVE 06: SMART LIGHTING

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Growth
THEME	Energy
INITIATIVE NAME	Initiative 06: Smart Lighting

2.7.1. OVERVIEW

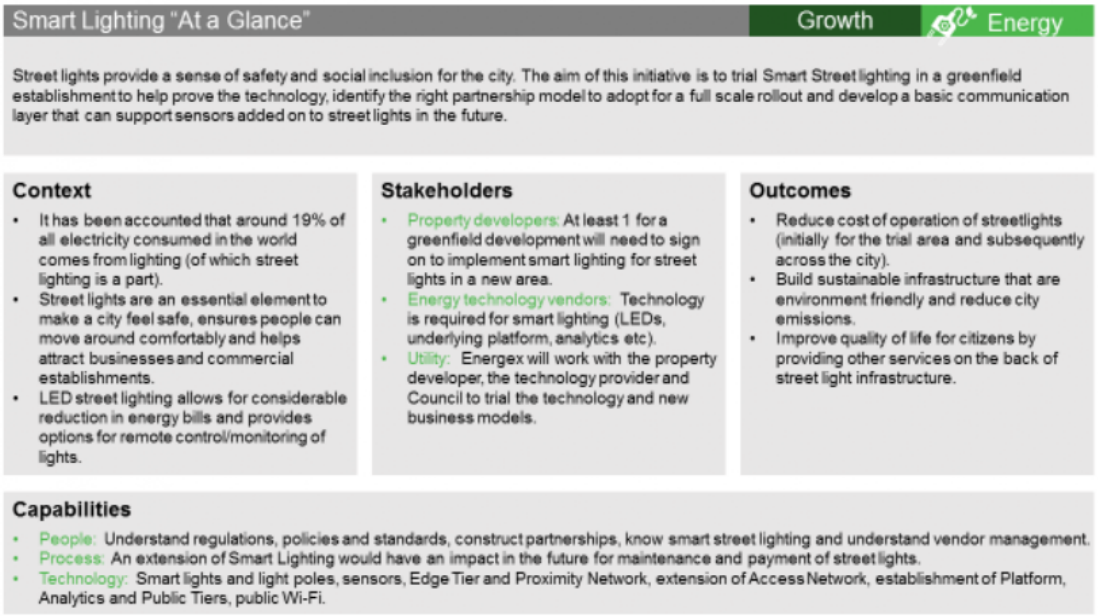


Figure 13. "At a Glance" View of Initiative 06

2.7.1.1. DESCRIPTION

Street lighting is one of the fundamental public service provided to citizens of any city in the world. Street lights provide a sense of safety and social inclusion for the city. The aim of this Initiative is to trial Smart Street lighting in a greenfield establishment to help prove the technology, identify the right partnership model to adopt for a full scale rollout and develop basic communication layer that can support sensors added on to street lights in the future.

2.7.1.2. CONTEXT

Street lighting and specifically electric street lighting came into existence in the 1880s. From then on they have progressed technologically to become a standard part of every city. It has been accounted that around 19% of all electricity consumed in the world comes from lighting (of which street lighting is a part).

Street lights are an essential element to make a city feel safe, ensures people can move around comfortably. Additionally, they help attract businesses and commercial establishments to set shop in city and town centres.

But interestingly, new street lights installed today follow the technology set out in the 1960s. There has been limited changes to the street lighting technology since then. This has obviously meant a potential higher cost paid by citizens across the globe for street lighting.

Although been there for a long time, Light Emitted Diode (LED) has been the new technology that has been adopted by cities across the world. LED street lighting allows for considerable reduction in energy bills and provides options for remote control/monitoring of lights.

With the emergence of Internet of Things (IoT) and prevalence of internet communication, street lighting infrastructure has been undergoing a digital transformation

2.7.1.2.1. WHAT IS SMART STREET LIGHTING?

A "Smart" Street light has many definitions and nuances, with no standard applied across the globe. Broadly, when the following elements are present in a street light it is considered "Smart"

- Energy efficient lighting (e.g. LED, High Intensity Discharge (HID) etc.) – Change existing monochromatic lighting to LED lighting which would provide energy efficiency
- Remote control/monitoring of LED lighting – As a next step, these lights could be remotely controlled, luminosity adjusted based on ambient lighting, faulty light alarms sent directly to maintenance teams etc.
- Additionally, streetlights act as an interconnected communication network that could be used to provide additional services to the community. Some examples of services that ride on the back of smart street lights are mentioned below –
- Wi-Fi or other internet services
- Vehicle-to-Infrastructure connections
- Motion or noise sensing;
- Cameras – video, photography
- Transportation metrics - vehicle/pedestrian/bicycle counting
- Parking space monitoring
- Climate monitoring: temp, snow, ice, rain, flood, humidity, air quality etc.
- Navigation systems: open, public, or subscription

2.7.1.2.2. WHO IS RESPONSIBLE FOR INNOVATING?

The key challenge with street lights has been the lack of "one owner" with ownership shared across multiple agencies. In Ipswich context, there are 3 categories of streetlights –

- Category 1 – Owned and maintained by Energex: These are street lights that are owned by electricity utility and maintained by them. The Council pays for energy consumed and maintenance in a fixed fee basis (as most street lights are not metered)
- Category 2 – Owned by Council, but maintained by Energex: These are streetlights that are owned by the Council but maintained by the Energex. The Council pays for maintenance and energy consumed to electricity utility
- Category 3 – Owned and Maintained by Council: These are streetlights that are owned and maintained by the Council. The Council pays only the energy charges to the electricity utility.

Given this complex structure, the degree of influence Council has in rolling out a full-fledged LED lighting changeover is not feasible. From a utility perspective, street lights have relatively less of a focus and doesn't present as the biggest area for them to innovate.

With no changes to regulation and standards, a true burning platform has not emerged for the utilities to actively participate with the Council to undertake large scale rollouts in Australia.

Hence, the scope of this Initiative will be to prove the concept both technically and commercially to work out a workable model for scaling up across the city.

2.7.1.3. SCOPE

2.7.1.3.1. STAGE 1: BUILD THE BASE – "JUST LIGHTING AND CONTROL"

The aim of this trial would be to prove the technology and commercial model in which street lights can be replaced to "smart" LED lighting. This will be trial conducted potentially in a greenfield location which will allow for reduction in spend on replacing brownfield lights (If the partnership of Council, Utility and LED provider prefer, a brownfield site could be selected).

The following capability will be trialled as part of this Initiative:

- Installation of LED lighting that adjust luminosity based on defined business rules
- Ability to remotely control and maintain lighting
- Ability to switch on and off individual lights
- Provide alarms and diagnostics when light fails
- Potential ability for community to increase lighting of a bulb through SMS or similar technology (Dial4light implementation in Germany)
- Motion sensor based lighting which increase luminosity when movement is detected
- Consider solar power lighting to make them more sustainable
- Individual streetlight connected through communication cable to "Edge" devices in the street end
- Ability to transmit data from "Edge" devices to IT systems to process data

There are two key aspects to be understood through these trials. Firstly, the technological element and subsequently the commercial aspect

- Technical: The trial should provide conclusive evidence for the utility to have enough information to develop a mass rollout plan across the city. This should include the light themselves, the fitment supporting the lighting, the pole and any other electrical component. Also, communication aspects around the sensor, edge devices and information flow back to IT systems specifically the standards and specifications.
- Commercial: This is the second part of the trial which needs to be clearly understand. There is an upfront investment required in installing LED lighting and ongoing maintenance costs apart from the energy costs. For a utility, if they have to invest heavily on changing infrastructure which would lead to reduced operations costs and energy costs doesn't present a fully viable business case. Hence, building the right commercial model that supports all parties involved is critical to scale this trial across the city.

2.7.1.3.2. STAGE 2: LEVERAGE THE EXISTING – "SENSORS AND INTELLIGENT STREET LIGHTS"

The next stage of the trial would be to attach sensors and/or other monitoring devices on street lights to provide additional services on top of standard street lighting. There are a range of monitoring devices that could be attached to street lights which could aid with improving quality of life of citizens.

The layers that form this trial are as follows:

- Data measuring devices: Sensors and metering systems that allow the Council and other parties to collect and analyse condition of their infrastructure
- Network: The network from the sensor all the way up to the IT system. Developing the right standards and procedures
- Analyse: Once data is collected, develop the capability to process the data and decide on appropriate intervention actions

Examples of initiatives could be:

- Wi-Fi access to community – the anonymized data could be utilized by Council for internal purposes or find opportunities to sell
- Safe City Cameras and Video Analytics – Place video cameras on street lights that can provide data which can be analysed for various purposes – safety, grass h8, vandalism etc.
- Pollution Sensors – Place air, noise, temperature monitoring devices. This information could be passed back to citizens to take appropriate action within their individual communities

The type of application to be trialled will be highly dependent on the location of the trial and the key issues faced by the relevant community. The project team should identify the key outcomes first and conduct citizen engagement to determine which trial would be of maximum benefit to them. Based on this the trial can be scoped.

The key intent of this trial will be to understand the ability to leverage on an existing Smart Street light capability and add additional sensor capability on top. This should mean a marginal increase in cost for fitting up new sensors while delivering the requisite benefits to citizens. This will allow the Council to prove that a Street light infrastructure can effectively be used as an integrated mesh network in the future that can hold multiple sensor devices in the future and hence, adds to the benefits side for installing Smart street lights.

2.7.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Property developer(s): At least 1 property developer for a greenfield development will need to sign on to this Initiative to implement smart lighting for streetlights in a new area.
- Energy Technology Vendors: This Initiative will require the technology for smart lighting (LEDs, underlying platform, analytics, etc.).
- Utility: The incumbent utility, Energex, will work with the property develop, the technology provider and Council to trial the technology and new business models.

2.7.1.5. POTENTIAL OUTCOMES

These are the key outcomes of this Initiative:

- Reduce cost of operation of streetlights (initially for the trial area and subsequently across the city)
- Build sustainable infrastructure that are environment friendly and reduce city emissions
- Improve quality of life for citizens by providing other services on the back of street light infrastructure

2.7.1.6. RANGE OF BENEFITS

These are the key benefits of this Initiative:

- Reduction in maintenance and energy costs – By changing over to LED lights from ordinary lighting will reduce energy costs from anywhere between 50-70%. These can be clearly measured and tracked. Maintenance costs will also considerably reduce with studies mentioning a potential reduction of around 80-90% truck rolls
- Reduced emissions – Carbon emissions will be reduced due to reduced energy usage from LED lighting
- Placemaking – Provides opportunity for place making especially in Central Business District, recreational areas, stadiums etc. LED lighting can be used creatively in parks, buildings etc. to enhance activity and interaction within the city
- Wayfinding – LED lighting can be used for wayfinding which will support improved safety and reduced chances of crime.

2.7.1.7. INDICATIVE KPIS

The following KPIs will aid in measuring the performance of this Initiative –

- Energy Bill (from street lighting) – Reduction in monthly electricity bill from street lights before and after LED installation
- Maintenance Cost – Reduction in non-energy costs before and after installation of LED lighting/month
- Emission Reduction – Extent of reduction in emission from LED lighting. Reduction in CO2 emissions
- Reduction in crime rate (safety) – Reduction in crime rate in a specific area and/or increased people (foot) traffic in specific area

2.7.2. IMPLICATIONS

LEVEL OF EFFORT	A relatively moderate effort will be required from the Council in implementing this Initiative. Council will have to broker deal with utilities and real estate developers in greenfield establishments for setting up the trial and refining the commercial model. Post greenfield trials, the same model can be extended to existing street lights. Limited involvement will be required from Council in the assumption that utility will be responsible for implementation.
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Potential high upfront investment – the cost of installing/replacing street lights with LED lighting and making them "smart" with communication technology would require considerable upfront investment. Utilities who are the predominant owners of street lights may not be keen to make these investments. This is why trials should be conducted to determine the right risk sharing model which would reduce the barrier for investment. • Barrier 2: Relatively early technology – LED lighting has been in use for outdoor application for less than 10 years. There hasn't been enough duration to benchmark performance of lights to provide adequate evidence of performance The following key risks are relevant for this Initiative: • Risk 1: Creating partnership models – The ownership and maintenance of street lights are segregated between utilities and Council s. Additionally, in greenfield establishments developers see this as an added benefit to buyers that provides a sense of safety and community. Hence, understanding and creating the right model that will work is crucial. If that doesn't happen then the opportunity to change normal lighting to street lights will have to wait until they are made mandatory through regulation • Risk 2: Regulatory Uncertainties - Without a well-designed regulatory environment and a well-understood commercial arrangement, developing an integrated street light network may be delayed. It is critical that policies and regulations are formed at pace to allow street light changeover can be done at speed
DEGREE OF CONTROL	Ipswich City Council will have "medium" influence in implementing Smart street lighting trial. The Council have will play the role of an influencer/broker to ensure utilities are able to deliver smart street lighting capability.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: Utility merger – the incumbent utility is currently undergoing a merger. The timing for establishing and conducting a trial will be dependent on the new merged entity being ready to take on a new Initiative
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Willingness from property developers – it is assumed that builders of master developed communities will be interested in participating in smart street lighting trials
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Ipswich City Council pilots – Council itself has successfully trialled smart lighting in the past in several parks through the Department of Works, Parks and Recreation.

	• Example 2: Lighting the Regions, Victoria, Australia – a partnership across multiple Council s in Victoria has overseen the conversion of 22,600 lights across 45% of Victoria for residential and street lighting, generating an estimated $57 million in savings over the life of the assets. • Example 3: Los Angeles – between 2009 and 2013, Los Angeles launched the largest LED conversion program, changing 140,000 streetlights. The results have been better than expected and there is extensive documentation on benefits and lessons learned. • Example 4: San Francisco – San Francisco city government is currently in the upgrading 18,500 lights to LEDs that will be monitored remotely. • Example 5: San Diego – San Diego is improving its Downtown District by implementing remotely monitored LED technology for 3,000 lights. • Example 6: GE Lighting – the company has invaluable knowledge of smart lighting and experience in implementations from the projects they have done around the world.

Table 27. Overview of Initiative Implications: Initiative 06

2.7.3. DETAIL

2.7.3.1. CAPABILITIES REQUIRED

2.7.3.1.1. PEOPLE

This Initiative will primarily be driven by Master Developers and incumbent utility. But certain competencies are required within the Council to ensure the Initiative gains momentum and is able to navigate through any roadblocks effectively.

- Regulation, Policies and Standards: Experience and understanding to navigate through regulation, policies and standards both in Energy and planning. The essential skillset is not to understand the actual regulation in energy or in planning but the ability to interpret current regulation, understand the shortcoming and finding the easiest way to circumvent the issue.
- Ability to construct partnerships/MoU or similar models: Experience in bringing multiple parties together to achieve a common outcome and working out the most beneficial model that will help achieve the outcome. Combination of commercial and strategy skills.
- A working knowledge of Smart Street lighting and "smart" capability that can leveraged through street lights
- Additionally, understanding of procurement and Vendor engagement will be beneficial. Please refer to Section V Part C for more information on Procurement and Vendor Engagement.

The following key competencies are relevant for this Initiative:

- Project and stakeholder management
- Knowledge and experience in the energy industry, particularly in the utilities sector
- Understanding of smart lighting technologies

2.7.3.1.2. PROCESS

This Initiative has no tangible impacts on Council processes.

In the future, an extension of Smart Lighting would have an impact on the City Maintenance branch within the Department of Works, Parks and Recreation and the way they maintain and pay for street lights.

2.7.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION

Smart Lights and Light-Poles	LED based lighting with poles that may provide other capabilities such as: - Digital signage - Ability to connect sensors/cameras, proximity network components, public WI-FI components - Help-phones
Sensors	Sensors that may be deployed as part of a Smart Lighting installation to assist in identifying security risks/incidents (e.g. noise sensors, motion sensors).

Table 28. Technical Capabilities Required by Initiative 06

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
Edge Tier and Proximity Network	Smart Lights and Sensors will exist in the Edge Tier and will need a Proximity network to be established to enable the flow of data between devices and from the devices to the Access Network.
Extend the Access Network	An Access Network link must be established to connect each particular Lighting installation to Council's enterprise landscape. This will enable the flow of data to and from the Lighting installation.
Establish Platform Tier	The Platform tier will provide the ability to ingest raw sensor data and process that data (potentially along with other data sources) to trigger upstream events (e.g. raising an alert with Safe City operators).
Establish Analytics Tier	The Analytics tier allows relevant data to be stored and used for analytical modelling and visualisation.
Establish the Public Tier	The Public tier contains an API gateway that allows Council to interact with sensors and Lighting solution/s via APIs e.g. controlling the smart lighting solution, or accepting regular updates of curated data from sensors.

Table 29. Technical Platform Enablers Required by Initiative 06

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Public Wi-Fi	Council may wish to extend its deployment of Public Wi-Fi to include Smart Lighting locations.

Table 30. ICT Programs of Work Required by Initiative 06

2.7.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program.

This Initiative has the following specific requirements for Enablers:

- Policies and Regulations: Depending on the outcomes of the trial, Council can work with Energex and with the property developer to establish any necessary policies regarding new tariff structures, LEDs and other components of smart lighting that would be required to push smart lighting more broadly across the city. Many of these types of policies may have already been defined or are being defined by regional, state, national or international governing bodies.
- Standards and Interoperability:
    - Depending on the outcomes of the trial, Council can work with Energex and with the property developer to establish the necessary standards in smart lighting technologies (devices, connectivity protocols, etc.) and data (protocols, etc.) that would be required before expanding smart lighting more

broadly across the city. This will ensure that in the future all the systems across the street lighting grid would be able to communicate with each other and be monitored and controlled as one unified system if desired.

- Many of these types of standards have already been defined or are being defined by national and international governing bodies. Energex may have also already established or is in the process of establishing its own standards and protocols.

2.7.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.7.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Council could explore monetizing the data obtained from the smart lighting trial.
- Opportunity 2: Council could partner with environmental agencies to assess the impact of smart lighting on the city's nature and its surrounding (less light pollution). Examples include Dark Sky Association (http://darksky.org/) or Loss of the Night (http://lossofthenight.blogspot.com.au/) that have assessed the ecological effects of outdoor lighting.

2.7.3.5. OUT OF SCOPE

This Initiative does not involve implementing smart lighting technologies in Council -owned and operated streetlights.

2.8. INITIATIVE 07: SPORTS FACILITIES

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Growth
THEME	Energy
INITIATIVE NAME	Initiative 07: Sports Facilities



2.8.1. OVERVIEW

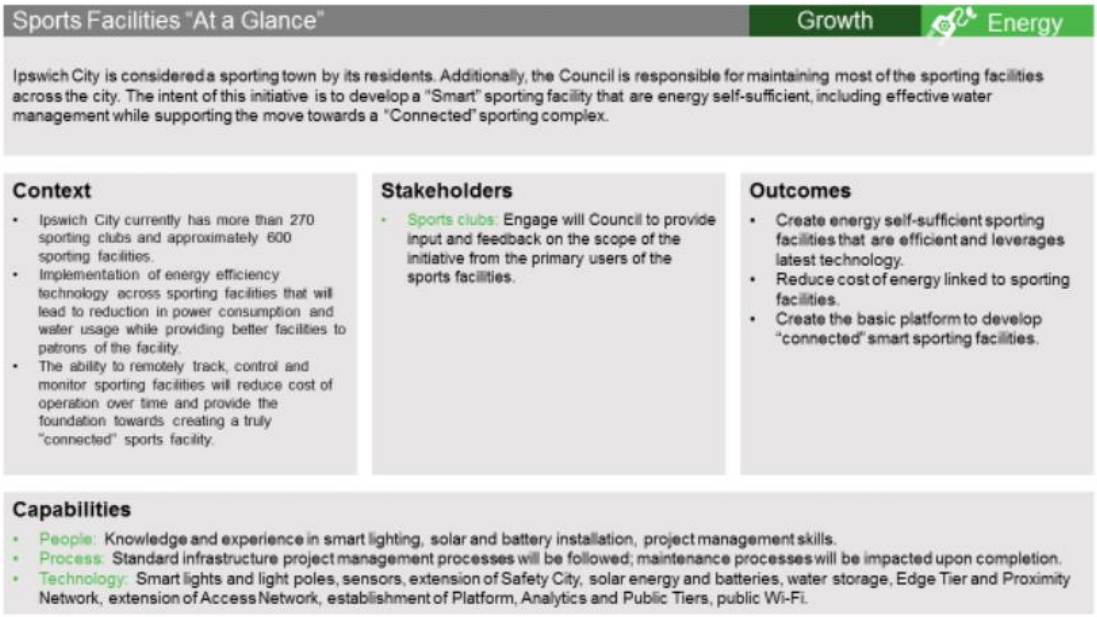


Figure 14. "At a Glance" View of Initiative 07

2.8.1.1. DESCRIPTION

Ipswich City is considered a sporting town by its residents. Additionally, the Council is responsible for maintaining most of the sporting facilities across the city. The intent of this Initiative is to develop a "Smart" sporting facility that are energy self-sufficient, including effective water management while supporting the move towards a "Connected" sporting complex.

2.8.1.2. CONTEXT

Ipswich City currently has more than 270 sporting clubs and approximately 600 sporting facilities. Most of these facilities are being maintained and operated by the Council. Also, some of the larger sporting facilities are utilised as recreation facilities for events/private functions.

Ipswich City Council charges a fee to hire sports facility for recreational purposes. But, there is limited tracking/control on the duration until which the lighting at the facility have been used leading to Council's inability to charge based on consumption.

To provide improved services and reduce cost of maintenance, sporting facilities need to be refurbished to enable Council to operate them efficiently. Typically, the cost of energy (i.e. power consumption) and water usage will be one of the top cost drivers in maintaining sport facilities.

The aim of this Initiative is to implement energy efficiency technology across sporting facilities that will lead to reduction in power consumption and water usage while providing better facilities to patrons of the facility. Additionally, the scope of this Initiative should include ability to enable remote track, control and monitor sporting facilities. This will allow for reduction in cost of operation over time and provide the backbone towards recreating a truly "connected" sports facility including capabilities such as online streaming of games, remote control of lights by patrons through app etc.

2.8.1.3. SCOPE

There are two elements in defining the scope of this Initiative. Firstly, the extent of new capability that needs to be implemented within each sporting facility. Secondly, the number of sporting facilities that are refurbished as part of the first Wave.

2.8.1.3.1. NEW CAPABILITY WITHIN EACH SPORTING FACILITY

The new capabilities proposed for each sporting facility are primarily aimed at making them more energy efficient and self-sustained.

- Lighting: Move towards LED lighting both inside and outside of the sporting facilities (including flood lights used to illuminate the oval)
- Solar Panels: Install solar panels to generate the requisite power for the sports facility
- Batteries: Installation of battery banks to store power generated during the day and utilise them at night. This capability will be required to make the sports facility self-sustaining from an energy perspective
- Remote Operations: Install basic capability for remote operation of lighting and storage facilities
- Water Management: Develop "smart" water management capability that allows for Storm water storage, integrated heating and cooling of water with solar/battery technology and leverage on existing pitch irrigation capability in place at certain sporting facilities
- Other Add-Ons:
    - Smart lighting app: enable sports facility users to control the smart lighting themselves
    - Video analytics: incorporate video analytics from the Smart Park Initiative to help maintain good condition of the facility (e.g. check for graffiti, vandalism, fallen trees, etc.) if the sports facility selected already has Safe City network coverage
    - Digital leader board: digital display, powered through the facility's power generation, that would enable users of the facility to compete (e.g. in terms of calories burnt, kilometres run or other metrics)
    - Fitness app: plug into an existing app like Strava or create a customized app that allows users to track their fitness metrics and workouts in the facility and compete with each other, to help foster increasing physical activity and health levels in the community
    - EV charging stations: incorporate electric vehicle charging stations that could be powered through the facility's solar generation
    - Bike stations: incorporate new biking stations (with charging stations for electric bikes) to foster physical activity and active modes of transportation. The charging packs for the electric bikes could be powered through the facility's solar generation
    - Charging benches: these benches allow for charging of small equipment such as smart phones and tablets

2.8.1.3.2. SCALE OF IMPLEMENTATION

The number of sporting facilities that can be refurbished will depend on the extent of funding that can be made available for this Initiative. This will be determined based on the comparative importance of this Initiative to other Smart City projects and the degree of benefit that can be derived.

The Council should start with implementing the full set of capability in one sporting complex, which is quite large in terms of size and usage. This will enable the city to measure the extent of benefit that can be achieved and truly test the benefits case. Post this analysis, the Smart City Program should decide on the wider implementation plan based on the results (and also make any necessary amendments to approach, scope, implementation plan etc. based on the initial learning).

Note: The scope of this Initiative may not cover all the sporting facilities across Ipswich City. Based on the size and scale, sporting facilities below a particular size may only require LED lighting and potentially solar panels. The minimal size of a sporting facility that will support a business case return will be determined through the first trial. This should set the overall scope of sporting facilities that need to be transformed.

2.8.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Sports clubs: Council will solicit input and feedback on the scope of this Initiative from the primary users of the sports facilities.

2.8.1.5. POTENTIAL OUTCOMES

The Initiative shall drive the following outcomes for the city:

- Create energy self-sufficient sporting facilities that are efficient and leverages latest technology
- Reduce cost of energy linked to sporting facilities
- Create the basic platform to develop “connected” smart sporting facilities

2.8.1.6. RANGE OF BENEFITS

The city and the Council can derive tangible benefits through this Initiative. The range of benefits are described below:

- Reduction in power consumption – The total cost of power consumed within each sporting facility will be reduced through the installation of LED lighting and solar panels
- Reduction in Water usage costs – By implementing better water management capability (such as storm water storage, drip irrigation etc.) cost of water usage will be reduced
- Increase use of Sports facilities - The use of LED technology that provides better illumination, connected sporting complexes attracts more locals to use these facilities and aids active community living

2.8.1.7. INDICATIVE KPIS

The following KPIs will aid in measuring the performance of this Initiative:

- Electricity costs/sporting facility – The electricity bill paid before and after the installation of new infrastructure (to measure reduction in cost)
- Water usage cost/sporting facility – The water bill paid before and after the installation of new infrastructure (to measure reduction in cost)
- Sports patronage/sporting facility – Measure the utilization of sporting facilities before and after changes to infrastructure

2.8.2. IMPLICATIONS

LEVEL OF EFFORT	A "high" degree of effort will be required from the Council to implement this Initiative. Since sporting facilities are managed by the Council, it will be upon the Council teams to upgrade the infrastructure. But, in order to implement this Initiative the Council need not embark all by itself. Appropriate partners can be solicited and a team formed to implement the initiatives. The specific effort from the Council would be: • Identify the most appropriate sporting facility to trial the Initiative first • Develop a detailed design to retrofit the sporting complex i.e. LED refitting, solar panel installation, battery installation, water storage tanks etc. • Solicit and identify partners who can collaborate to deliver the Initiative • Manage and deliver the first sporting facility retrofit (with appropriate vendors) • Track and measure commercial changes to energy costs to validate business case
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Brownfield Retrofit costs – the costs for retrofitting existing sporting facilities may turn out to be very expensive in comparison to greenfield complexes. This could mean a barrier to refurbish/retrofit. In this case, it may be better to start with a greenfield project first to test the new technology and utilise the learning to innovatively retrofit existing sport complexes The following key risks are relevant for this Initiative: • Risk 1: Battery technology maturity – the maturity of battery technology to support a sporting facility lighting could be at its infancy. This could been a degree of higher cost paid to implement "bleeding edge" technology. But, we reckon when the trial is completed for one sporting facility a much clearer understanding would emerge for the Council on how these technologies work and also understand the new advancement in the market. This will allow for choosing the right technology for scaling this up, hence reducing the risk of stranded costs
DEGREE OF CONTROL	Ipswich City Council will have "high" influence in framing and delivering the Initiative. The Council can choose the most appropriate sporting facility to retrofit or decide to trial this in a greenfield complex first. Additionally, the Council will have the influence to decide the right technology and partners to support with implementing the Initiative.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: Existing roadmap for sports facilities - the key dependency will be the Business Plan that Council will have in place for the next two years and integrating the retrofit of the Sports complex. Given that this project will be heavily driven by the Council, it is critical to get this dependency right to ensure the project is executed • Dependency 2: New Briggs criterium biking track – Council will consider trialling the sports facility Initiative in the new criterium track given the project is already funded and underway • Dependency 3: Smart Park Initiative – while not explicitly a dependency that will affect the timeline of implementation of this Initiative, incorporation of the video analytics development for the Smart Park Initiative will depend on the timeline of that Initiative • Dependency 4: Smart Lighting Initiative – the smart lighting part of this Initiative may depend on the Smart Lighting Initiative for streetlights owned and operated by Energex
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Technology maturity – renewable technologies and battery technologies are reasonably mature to be installed in Sporting complex • Assumption 2: No current technology implemented – existing sporting facilities in Ipswich do not have LED lighting and/or solar and battery fit outs • Assumption 3: greenfield developments – in case of a greenfield implementation there is a new sporting facility planned in the next 1-2 years and the builders are ready to take on this implementation
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. There are many examples of sports facilities around the world that are becoming solar powered. In fact, in the United States, a study in 2014 by the Solar Energy Industries Association, which focused on pro-sports facilities, including 25 stadiums and 12 raceways, found 21.7 MW of solar energy across all of them. Indianapolis 500, with 9,000 kW of solar power, is the largest sports solar farm in the world, with enough energy to power 1,000 homes.

Table 31. Overview of Initiative Implications: Initiative 07

2.8.3. DETAIL

2.8.3.1. CAPABILITIES REQUIRED

2.8.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Energy – Experience in smart lighting, solar and battery installation. This experience will be vital in designing and implementing the smart solutions for the sports facility
- Water – Experience in smart water, smart irrigation, and rainwater capture and greywater infrastructure. This experience will be vital in designing the smart solutions for the sports facility
- Project Management Skills – Experience in managing projects with tight timelines and budgets. This capability will help with planning the pilot project and subsequently support the creation of a detailed rollout plan across all facilities

2.8.3.1.2. PROCESS

- Council's standard Infrastructure project management practices and processes will be followed for executing the project.
- Post implementation of smart facilities, internal processes for the City Maintenance branch within the Department of Works, Parks and Recreation will undergo a change. The maintenance plans, inspection regimes will undergo considerable change. The Initiative will help the team operate and maintain Council's sports facilities in a more efficient manner.

2.8.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
Smart Lights and Light-Poles	LED based lighting with poles that may provide other capabilities such as: • Digital signage • Ability to connect sensors/cameras, proximity network components, public WI-FI components • Help-phones
Sensors	Sensors that may be deployed across the Sports Facility to assist in for identifying security risks/incidents (e.g. noise sensors, motion sensors).
Extend Safe City	Deployment of additional cameras connected to Council's Safe City framework.
Solar Energy and Batteries	Solar Panels and batteries to generate and store energy for use by the facility.
Water Storage	Physical capture and storage of rainwater for use future irrigation use.

Table 32. Technical Capabilities Required by Initiative 07

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
Edge Tier and Proximity Network	Smart Lights and Sensors will exist in the Edge Tier and will need a Proximity network to be established to enable the flow of data between devices and from the devices to the Access Network.

Extend the Access Network	An Access Network link must be established to connect the Sports Facility deployment to Council's enterprise landscape. This will enable the flow of data to and from the Sports Facility.
Establish Platform Tier	The Platform tier will provide the ability to ingest raw sensor data and process that data (potentially along with other data sources) to trigger upstream events (e.g. raising an alert with Safe City operators).
Establish Analytics Tier	The Analytics tier allows relevant data to be stored and used for analytical modelling and visualisation.
Establish the Public Tier	The Public tier contains an API gateway that allows Council to interact with sensors and Smart Lighting solution/s via APIs e.g. controlling the smart lighting solution, or accepting regular updates of curated data from sensors.

Table 33. Technical Platform Enablers Required by Initiative 07

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Public Wi-Fi	Council may wish to extend its deployment of Public Wi-Fi to include Sports Facility locations.

Table 34. ICT Programs of Work Required by Initiative 07

2.8.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative has the following specific requirements for Enablers:

- Policies and regulations: Council may want to establish policies for self-sufficient, resource-efficient sports facilities so all new sports facilities being developed meet these targets.
- Standards and Interoperability: Council will need to establish standards for the technology implemented in the sports facility to ensure forward-compatibility with new sports facilities and future retrofitted sports facilities. Ideally, all the systems could communicate with each other and work together under a unified system for Council to easily maintain all sports facilities and all the data could be collated and analysed together. Many of these types of standards have already been defined or are being defined by national and international governing bodies.
- Strategic Communications: Council will need to communicate the changes in the sports facilities that impact users to the public. For example, they will need to communicate changes in smart lighting (and any accompanying app) to sports clubs that are charged for the use of lighting. While the nature of this type of communication is operational in nature, these communications will be tied to more strategic messaging around the importance of these changes and how they work within the broader Smart City program. Council will leverage this opportunity that is so close to users to demonstrate the tangible benefits the Smart City program is bringing to the citizens of Ipswich.

2.8.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.8.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Council could explore monetizing the data obtained from the sports facilities (around the smart lighting, the solar generation, the smart water, the associated fitness apps, the digital leaderboard and more).

2.8.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.9. INITIATIVE 08: ELECTRIC VEHICLE ECOSYSTEM

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Growth
THEME	Transport
INITIATIVE NAME	Initiative 08: Electric Vehicle Ecosystem



2.9.1. OVERVIEW

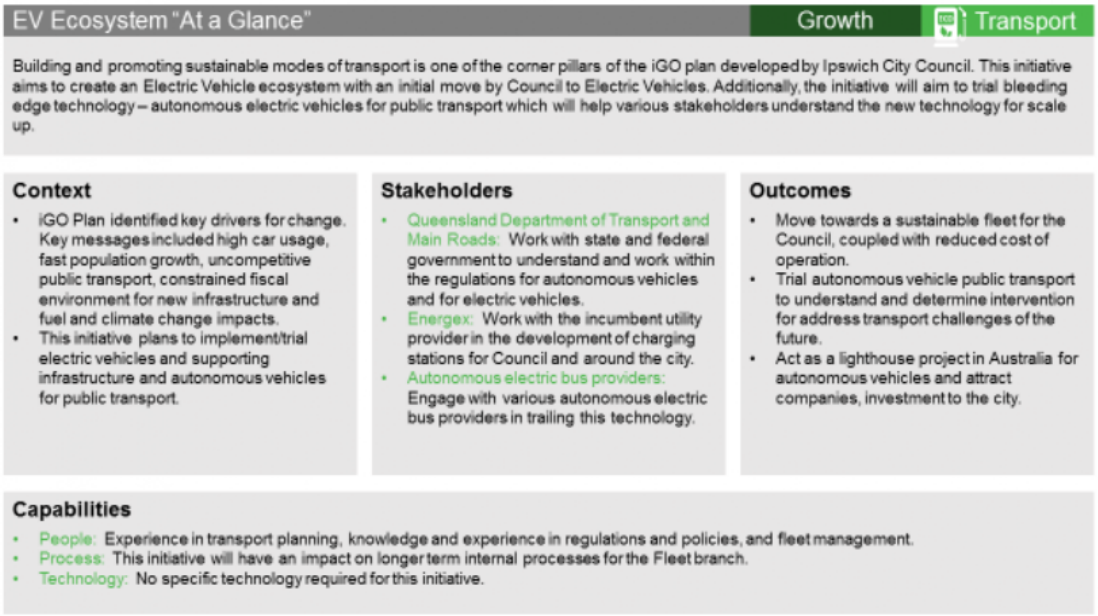


Figure 15. "At a Glance" View of Initiative 08

2.9.1.1. DESCRIPTION

Building and promoting sustainable modes of transport is one of the corner pillars of iGO plan developed by Ipswich City Council. This Initiative aims to create an Electric Vehicle ecosystem with an initial move by Council to Electric Vehicles where possibly. Additionally, the Initiative will aim to trial bleeding edge technology – autonomous electric vehicles for public transport which will help various stakeholders understand the new technology for scale up.

2.9.1.2. CONTEXT

Ipswich has developed an iGO plan to address the future challenges of the City. The plan identified the following key drivers for change:

- High degree of car usage amongst residents of Ipswich
- Fast population growth across the region with population expected to reach 435,000 by 2031
- Uncompetitive Public Transport system coupled with low density form

- Constrained Fiscal Environment that places considerable demand on limited financial resources for new infrastructure
- Fuel and Climate change impacting the way we live and work in a community

A set of key messages were identified as part of iGO, which have formed the basis in defining the scope and outcomes for this Initiative. The following 4 ley messages are highly relevant for the Smart City Initiative and form the basis for the trials

- Proper Investment and Clever thinking
- Cars will continue to play an essential role
- Make public transport more competitive
- Improve Land Use/Transport Integration

Based on the above context, the Smart City Initiative plans to implement/trial the following aspects as part of the Initiative.

2.9.1.2.1. ELECTRIC VEHICLES AND SUPPORT INFRASTRUCTURE (E.G. CHARGING STATIONS)

Adoption of widespread adoption of Electric Vehicles is expected to deliver benefits in terms of carbon reduction, cost savings and reliability improvements by allowing citizens to charge their cars using cleaner sources of energy (e.g. solar panels) rather than an internal combustion engine, reducing maintenance costs and also provide the opportunity to drawn back power into the grid from the vehicle as a source of distributed storage.

Electric Vehicle Support provides the public infrastructure required for citizens to operate electric vehicles safely and reliably. It also allows utilities to control the rate of charge into the vehicle or draw power back into the grid as required by network conditions. As such it requires a large change in customer behaviour and investment in infrastructure. This Initiative will help understand the infrastructure requirements, behavioural levers and grid impacts of higher penetration of electric vehicles. This includes electric vehicles of types and sizes and could also include electric bicycles (or e-bikes).

Additionally, broader societal benefit will be delivered by EV support as a result of urban air quality improvements, noise reductions and assisting in the integration of intermittent renewable energy.

2.9.1.2.2. AUTONOMOUS VEHICLES FOR PUBLIC TRANSPORT

Autonomous Vehicles are automobiles that are self – driven and do not have to be manually driven by a driver. Considerable research has been occurring in this domain and is not considered the inevitable future. Literature on this topic mentions autonomous vehicles as not a question of "IF" but "WHEN?"

A number of studies have been conducted on autonomous vehicles and the following potential benefits have been identified as the reason to move in this direction – Increased safety as it potentially reduces manual error, increased road capacity (reduced congestion), reduced need for parking facilities, reduction in pollution and fuel efficiency, provides more options to develop shared transport models.

Another study conducted by Morgan Stanley Research in the US estimated a saving of around $1.3 Trillion from autonomous vehicles – 37% from accident avoidance, 39% from productivity gains, 12% through fuel savings, and 11% through reduced congestion.

While the benefits have been the basis on which a number of trials are underway across the globe, there is also a school of thought that autonomous vehicles will not deliver the suggested benefits. The main point of contention is the possibility that autonomous vehicles on roads may actually increase congestion and more cars on roads. Also, another OpEd in CleanTechnica website mentions that around 40% of the traffic issues in USA are related to bottlenecks and these may not necessarily be addressed by autonomous vehicles.

Hence, cities have been focussing their attention on trialling autonomous vehicles for public modes of transport. This will allow for developing competitive public transport modes which can truly compete with owning and driving individual cars. For example, the Dutch city of Wageningen has been designing a trial of electric driverless shuttle from station to University, a 6 km distance with a maximum speed of 50 km/hr. More importantly these shuttles are on

normal roads and not on specials roads or tracks. At this stage, they have been able to move the vehicles to around 200 metres on normal roads and controlled remotely.

The intention is to conduct a similar trial in Ipswich to understand the technology, consumer behaviour and policy, regulatory challenges in developing this technology.

2.9.1.3. SCOPE

There are two elements in defining the scope of this Initiative. Firstly, the changeover of Council vehicles to electric vehicles and supporting infrastructure to allow for electric vehicles to be operated across the city. Secondly, trialling an autonomous electric public transport system between two fixed locations.

2.9.1.3.1. ELECTRIC VEHICLES FOR COUNCIL AND SUPPORT SYSTEM

Ipswich City Council spends around $11 Million towards buying and maintaining the fleet required for Council Operations. The aim of this Initiative to identify a select set of vehicles and move them to electric vehicles. These could be all vehicles that are purely utilised for people mobility and does not serve special purpose (such as Waste collection trucks)

The Council has option of choosing from a range of electric vehicle technology. While the Council could choose from any of the 3 vehicle types, the most preferred would be to move towards full-fledged Electric Vehicles.

- Hybrid Electric Vehicles (HEV) combine conventional internal combustion engines (ICEs) with rechargeable energy storage systems and run in a charge-sustaining mode, whereby the internal combustion engine is used to supplement the electric motor. The HEV switches between the two depending on road conditions to maximise efficiency.
- Plug-in Hybrid Electric Vehicles (PHEV) are a type of plug-in vehicle (PEV) built on HEV technology. They allow the owner to re-charge their vehicle off the grid. This capability enables PHEVs to operate in 3 modes: the HEV charge-sustaining mode as described above, and two charge-depleting modes – a blended mode whereby the battery (the grid electricity) provides a portion of the power with the internal combustion engine providing the rest, and an all-electric mode, running purely off of grid power, without the ICE turning on. Conversion kits are available to modify HEVs to be PHEVs (e.g. the Toyota Prius).
- Electric Vehicles (EVs) replace ICEs with rechargeable electricity storage systems, allowing the vehicles to run off electricity alone. The batteries are then recharged by plugging them into the grid, either at home or at a public charging station.

2.9.1.3.2. SUPPORTING SYSTEM FOR ELECTRIC VEHICLES

The following support infrastructure would be required to enable a seamless transition to electric vehicles without impacting business operation or driver comfort.

- Charging Stations: These are the equivalent of fuel stations for traditional Internal Combustion Engine (ICE) cars. Charging stations will have to be set up at appropriate locations to ensure cars can get charged and do not get stranded during movement. The number and location of charging stations will be dependent on the geographical spread and the expected kilometres they will cover on an average. For example, charging stations can be set up in all Council premises that allows all fleet vehicles to be charged overnight and ready for day's work. Alternatively, stations could be set up at specific points in the city which could not be used by Council but also by citizens. There are different types of charging technologies today ranging from lighting charge stations that support quick charge to utilising charge points in residences (which may take a longer duration to charge).
- Systems to Support Charging Station: Depending on the nature of charging stations adopted appropriate supporting software and hardware infrastructure will have to be installed. For example, in the case of installing fast charging stations will require changes to electrical connections and potentially a remote operating point to control power flow

- Two way flow of Power: It would be highly beneficial for the Council to setup charging stations with the capability to either charge or push power back to the grid. To enable this capability will require additional infrastructure (e.g. metering point) from the utility to allow for two way power flow

2.9.1.3.3. SCALE OF IMPLEMENTATION

The scale of implementation (i.e. number of cars and charging stations) will depend on the extent of investment Council can make each year. The preferred option could be for the Council to plan a multi-year investment plan to rollover the current stock of vehicles based on their age, maintenance cost, performance etc.

2.9.1.3.4. AUTONOMOUS VEHICLES FOR PUBLIC TRANSPORT

The autonomous vehicle Initiative will have to be conducted as trial. The intent of this trial will be to understand the technology that enables autonomous vehicles and the behavioural changes of citizens in moving away from private modes of transport.

The scope will have to consider a clearly defined start and end point between where the autonomous vehicle could operate. We have described 3 possible options as a starter for the Council to consider:

- Connect a suburb to CBD – Determine suburbs around Ipswich CBD which have high level of traffic inflow into the city. Strategically choose the suburb to the city as the test bed to implement and trial autonomous vehicles
- Travel within Master Developed Community – Within Master developed community, even with public transport in place there wouldn't be 100% connectivity to interior areas of Master developed community. A feeder transport option could be set up that services a set of residents and connects them to prime public transport
- Travel within revitalized CBD – The core CBD region (potentially one or two streets) could be made exclusive for autonomous vehicles. This service could move citizens across different parts of the CBD and reduce traffic congestion in the main central business district
- The other element of scope will be around the nature of road network on which the autonomous vehicle is trialled. There are two options –
- Dedicated Road – Build or make an existing road dedicated for autonomous vehicle. This will be the easiest option to adopt as it reduces the risk of integrating with normal traffic
- Integrating with existing Road – Develop a trial that can be tested on a normal road with existing traffic. This potentially will have to be done in a low frequency road(s) to reduce impact to normal operations. The advantage of this trial would be the fact that the trial is on a real life scenario and provides more reliable understanding of autonomous vehicle technology

Note: Through external stakeholder engagement, the Smart City Blueprint project understands Transport and Main Roads are in the process of finalising the business case for an autonomous vehicle trial. Ipswich should make best endeavours to get the trial located at Ipswich. This would be the best outcome from an autonomous vehicle trial perspective, as it would have full backing of state government and attract new businesses to the city.

2.9.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Queensland Department of Transport and Main Roads: Council will need to work with state and potentially federal government to understand and work within the regulations for autonomous vehicles and for electric vehicles. Council will also need to collaborate with these government agencies to develop any new policies and regulations.
- Energex: Council will need to work with the incumbent utility provider in the development of charging stations for Council and around the city.
- Autonomous electric bus providers: Council will need to engage with various autonomous electric bus providers in trailing this technology as it is very nascent and needs to therefore be designed in conjunction with these subject matter experts.

2.9.1.5. POTENTIAL OUTCOMES

The Initiative shall drive the following outcomes for the city

- Move towards a sustainable fleet for the Council, coupled with reduced cost of operation
- Trial autonomous vehicle public transport to understand and determine intervention for address transport challenges of the future
- Act as a lighthouse project in Australia for autonomous vehicles and attract companies, investment to the city

2.9.1.6. RANGE OF BENEFITS

The city and the Council can derive tangible benefits through this Initiative. The range of benefits are described below:

- Reduction in Fleet Operations – the cost of maintaining an electric vehicle is considered to be cheaper than the traditional Internal Combustion Engines. Industry estimates around a 35% reduction in maintenance costs. The maintenance costs for electric vehicles will start dropping further with advancement of battery technology.
- Sustainable Fleet – electric vehicles will technically have zero emissions from tail pipes (if they have one!). But it is important to measure the "well-to-wheel" emissions as the source of electricity needs to be accounted for. In the case of this Initiative, the intent is to have charging stations powered through solar or renewable energy. This will allow for considerably reduced emissions.
- Potential Distributed Generation – With varied levels of vehicle usage, the Council may be in a position to feed power back to the grid during peak times and gain financial benefit.
- Increased take up of EVs – With EV infrastructure in place, residents within Ipswich may be prompted to changeover to electric vehicles
- Local and International recognition – Autonomous vehicle implementation will attract local and global attention to the city
- Potential Investment – On the back of implementing EV charging stations and autonomous vehicle trials, companies and startups may be interested in setting up shop in Ipswich to develop their products/services

2.9.1.7. INDICATIVE KPIS

The following KPIs will aid in measuring the performance of this Initiative –

- Fleet Maintenance Cost – Cost for maintaining Council fleet that have changed over from ICE to Electric Vehicles
- Emission Reduction – Extent of reduction in emission from electric vehicles. Reduction in CO2 emissions
- International/National Recognition – No of hits/reference to autonomous trials in a month (locally and internationally)

2.9.2. IMPLICATIONS

LEVEL OF EFFORT	A relatively "medium" effort will be required from the Council in implementing this Initiative. There are two areas where the effort will have to be focussed. • EV Fleet: The Works, Parks and Recreation division manages all the fleet for Council today. They will have to expend effort in deciding the most appropriate set of vehicles that can be changed over the Electric Vehicles. Also, analysis needs to be done on the potential route and distance to be travelled by these vehicles to decide on most appropriate locations for charging stations. • Partnerships: For building the electric charging stations and testing of autonomous vehicle will require considerable partnerships across multiple agencies. For example, Transport and Main Roads (TMR) department needs to be driving this trial, vehicle manufacturers to test their latest vehicle(s), relevant federal agencies, tech companies that provide video analytics, companies that develop global positioning solutions to support automated navigation, and not to forget electricity utility etc.

	Council leadership need to act as the glue to bring all parties together and implement the trial in Ipswich city. The Council will also have to work as a facilitator to find ways/means to remove/reduce barriers, risks etc.
CHALLENGES AND RISKS	There are no significant barriers to changing over to electric vehicles within the Council fleet. With autonomous vehicles, the following key barriers are relevant: • Barrier 1: Approval to conduct trial – with no city in Australia yet trialling an autonomous vehicle there could be significant effort and lobbying required to implement a trial in Ipswich. Efforts to establish a trial in the city needs to be established immediately to ensure this opportunity is not lost. • Barrier 2: Public interest in autonomous vehicles – Ipswich is embarking on a significant transformation in the next 3-5 years. With the CBD revitalization and economic development focus, citizens of Ipswich may not identify this Initiative as a priority. Council will have to navigate effectively to ensure there is no misconception that bleeding edge projects take priority over projects with immediate benefits. The following key risks are relevant for this Initiative: • Risk 1: Technology maturity – there is a risk that the infrastructure being deployed is rendered obsolete or is incompatible with a future technology that is deployed. That is a potential risk that needs to be managed through an appropriate risk sharing model and the right selection of partners. There needs to be a recognition that technology trialled for autonomous vehicles will definitely advance and this Initiative acts a flagbearer to attract further investment into the city • Risk 2: Regulatory uncertainties - without a well-designed regulatory environment and a well-understood commercial arrangement, it is possible that undesired monopolies formed or suboptimal customer experiences created which may impact their perception of autonomous vehicles. Also, regulation may not necessarily be restricted to roads and may extend to vehicle insurance, geo-mapping etc.
DEGREE OF CONTROL	Ipswich City Council will have "high" influence in implementing the electric vehicle support infrastructure and changeover to electric vehicles. The Council have "Low" influence in setting up an autonomous vehicle trial in Ipswich city. It would primarily depend on Transport and Main Roads who would have to be the prime partner to conduct the trial.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: Council's fleet management roadmap – Business Plan and age of vehicles in Council fleet will drive implementing EV and supporting infrastructure. If the vehicles are very new and recently replaced the business case to move to an electric vehicle may not stack up. • Dependency 2: TMR's related initiatives – Transport and Main Roads have developed a detailed Business case for trialling autonomous/connected vehicles. The project needs to align with the timelines of when TMR wants to start the Initiative
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Leveraging TMR's trial – TMR are keen to trial autonomous/connected vehicles in the near future. In case this does not go ahead then it may be harder to establish a trial (given that TMR involvement will still be needed for setting standards for regulation) • Assumption 2: No barriers for Council's fleet conversion – there are no identified major barriers for Council to changeover to electric vehicles.
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Perth Driverless Bus Trial – RAC is trialling a 15 passenger electric autonomous bus, made by a French manufacturer, in Western Australia. They are working with state government and the Department of Transportation. They are establishing legal frameworks around this new type of public transport that Council can leverage in Ipswich. The autonomous electric bus is relatively nascent technology – the first trial took place earlier this year in the Netherlands, with WePod. Examples of autonomous cars or electric buses are much more common, including several trials in Adelaide for both types of technologies.

Table 35. Overview of Initiative Implications: Initiative 08

2.9.3. DETAIL

2.9.3.1. CAPABILITIES REQUIRED

2.9.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Experience in Transport Planning: Considerable experience and understanding in transport planning. Preferably deeper understanding of Ipswich transport issues and iGO plan will be an advantage. This competency should be leveraged from the transport function with Council
- Regulation and Policies: Knowledge and experience in dealing with complex regulatory environments and how these need to be managed to achieve the desired outcome. Regulation and Policies here do not necessarily refer to transport regulation which may be covered by Transport & Main Roads (TMR), but all the policy and regulatory aspects around transport such as roads, parking etc. which would be under Council influence.
- Fleet Management: Deep understanding of fleet management and prior experience of moving fleet from ICE to EVs. Ability to decide on the right vehicle type and product that will work best for the Council. Ability to create a transition plan from current stock to EVs.

2.9.3.1.2. PROCESS

This Initiative will have an impact on longer term internal processes for the Fleet branch within the Department of Works, Parks and Recreation. The branch will need to work on converting Council's executive fleet to electric vehicles, install electric charging stations at Council's depots and parking areas and potentially implement an associated integrated vehicle management system.

2.9.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
None identified	

Table 36. Technical Capabilities Required by Initiative 08

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
None identified	

Table 37. Technical Platform Enablers Required by Initiative 08

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
None identified	

Table 38. ICT Programs of Work Required by Initiative 08

2.9.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative has the following specific requirements for Enablers:

- Policies and Regulations: Council will need to set policies around charging stations. For example, one such policy would define the number of electric vehicle parking spot ratio to overall number of parking spots in a given development, or placing the charging stations in premium parking spots.
    - Council will need to set policies around autonomous vehicles.
    - Council may need to set policies as well for electric vehicle usage in the city.
- Standards and Interoperability:
    - Council will need to define standards for the charging stations, to enable users to charge at stations throughout the city.
    - Council will need to set standards for autonomous vehicles, to ensure connected vehicles can communicate with each other.
    - Many of these types of standards have already been defined or are being defined by national and international governing bodies.

2.9.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.9.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Council could explore monetizing the data obtained from the charging stations implemented across the city and from the autonomous electric vehicle for public transport (usage and other metrics).

2.9.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.10. INITIATIVE 09: 5D MODEL AND OPEN DATA

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Growth
THEME	Workforce Management
INITIATIVE NAME	Initiative 09: 5D Model and Open Data



2.10.1. OVERVIEW

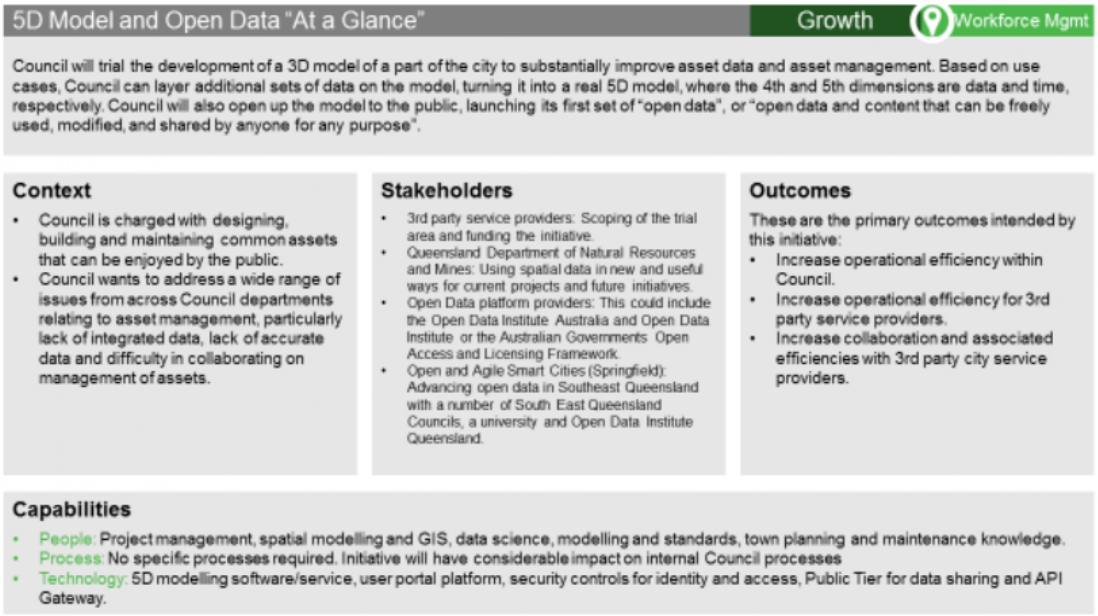


Figure 16. "At a Glance" View of Initiative 09

2.10.1.1. DESCRIPTION

For this Initiative, Council will trial the development of a 3D model of a part of the city. This Initiative will substantially improve asset data and asset management. Once Council defines the exact use cases it wants to use the model for, we will be able to layer additional sets of data on the model, turning it into a real 5D model, where the 4th and 5th dimensions are data and time, respectively. Depending on the defined use cases, Could will provide 3rd party city providers with access to the model; Council may choose to base this access on a fee. Council will also open up the model to the public, launching its first set of "open data", which is defined by Open Knowledge International as "open data and content [that] can be freely used, modified, and shared by anyone for any purpose" (http://opendefinition.org/).

2.10.1.2. CONTEXT

Much of the work that Council does is around the management and maintenance of infrastructure assets that benefit the wider community. Council is charged with designing, building and maintaining common assets that can be enjoyed by the public. This Initiative was created because it would address a wide range of issues from across Council departments relating to asset management, primarily for Planning and Development, Infrastructure Services, Health,

Safety and Regulatory Services and Works, Parks and Recreation. With a single Initiative – intended to bring together data from across Council, provide 1 source of truth for the data and provide a platform for collaboration – we would address the following issues around lack of integrated data, lack of accurate data and difficulty in collaborating on management of assets.

- Lack of integrated asset data
- Discrepancies between designed and as built data for purposes of planning assessments, compliance and city maintenance
- Need for stable data – data that remains highly unchanged so no issues or discrepancies arise during planning assessments and city maintenance
- Need for 1 source of truth between all Council departments for
- Collaboration on planning assessments and other Council operations
- To avoid confusion in duplication of data
- To ensure accurate and up-to-date correlation between properties, citizens and pets
- Ensuring everyone understands what all the data represents and in what context it should be used (currently there is some data that individual departments do not know what it is for)
- Need to facilitate easier storage of data for later use (which can be easily found and easily searched)
- Reduce time spent on asset management and increase accuracy of asset data
- Easier ways to understand and calculate demand planning and population modelling for planning assessments (which is currently done in a manual fashion)
- Understand the economic impact of new developments for planning assessments (and to verify the cases already established by the developers in their applications)
- Provide support for in-field recording of asset data to increase efficiencies in planning assessments, compliance and city maintenance
- Increase ability to monitor asset condition and maintain accurate and up-to-date asset data
- Reduce time spent on exchange of data with other organisations
- Reduce high level of avoided costs surrounding Dial Before You Dig
- No collaboration currently between city service providers on infrastructure plans (so, for example, the same section of road is dug up several times a year)
- Inability for Council to access data from 3rd party provides (telecommunications, utilities) for purposes of road maintenance
- Reduce time spent on sharing data with state government
- State government individual departments currently interact with individual Council departments separately to obtain the data they need
- State government property data is currently hard to work with
- Siloed operations between Council and state government in planning (especially around transport planning)

The scope of the trial will impact which of the above issues will directly be addressed first, but, overtime, as the model is brought to life, extended and built upon, it will bring about resolutions to all the issues outlined above. The 5D model will completely transform the way Council deals with asset data, leading to new forms of collaboration and integration across Council and beyond, and redefining the services built on those assets.

For further context, it is valuable to highlight key summary points on the current state of asset data at Ipswich City Council:

- The majority of infrastructure asset classes are held and managed within Oracle Spatial RDBMS

- The current asset data is logically controlled by database function and rules, full audit control and history exist, available in Oracle Spatial
- Significant attribution exists including accuracy, currency etc. for all such asset classes
- Asset classes include: Drainage Mains (51,000), Footpaths (17,000), Sewer Mains (40,000), Water Fittings (63,000), Survey Points (2,430,000)
- All assets have system generated unique ID across all asset classes
- Relevant data is processed to Oracle EAM for asset management and operational use
- All asset data is currently readily available to all ICC staff through various spatial and asset systems

Finally, the Department of Planning and Development has recently acquired Graphicsoft's ArciCad 3D modelling software. This software could potentially be leveraged for purposes of this Initiative if deemed to be the right fit.

2.10.1.3. SCOPE

The definition and exact boundaries of the trial area for the 3D model, and the data that will sit on top of it, requires proper evaluation and will take time to decide.

For example, Council could begin in a greenfield development, as collection of both digital blueprints and as constructed data for that area would be easy to collect. However, it is unlikely that benefits relating to maintenance of the assets will be reaped early, as it will take several years for those assets to require substantial forms of maintenance. On the other hand, collecting data for brownfield developments requires more time and resources.

As another example, Council could begin with modelling underground assets, as those have a high degree of associated costs (to dig up, etc.) and require a high degree of collaboration between service providers (telecommunications, utilities, etc.). Obtaining underground asset data, though, is more time-consuming and generally less accurate than above ground data.

As the first step in this Initiative, Council will need to define the scope of the 3D modelling trial. To do so, Council will need to bring together the primary affected departments (IS, P&D, WPR and HSRS). Council will need to:

- Qualitatively document all the benefits of the 3D model for each department
- Quantify the benefits of the 3D model for each department (every benefit will have an associated quantitative benefit)
- Document all the possible types of trials for the 3D model and associated geographic areas in Ipswich (ex: greenfieldvs. brownfield, above ground vs. underground). It may be beneficial to consult with external 3rd party providers for proposed areas (ex: state government, Energex, QUU and others)
- Qualitatively document the process to create a 3D model for each of those areas (ex: collection of digital blueprint, deploying resources or drones to verify as constructed and any modifications, etc.) This will be very tailored to each area; for example, a given brownfield areas may be on the plan to be opened up so secondary verification of "as constructed" would be possible
- Quantify the costs of each process and area (every process/area should have an associated quantitative cost)
- Consolidate a business case for each area comparing quantitative benefits with quantitative costs (one particular area may have multiple associated benefits and multiple associated costs)
- Select the area with the strongest business case for the 3D modelling trial

Once the area is selected, Council will need to:

- Decide on a strategy for collaborating with external agencies; the primary decision to be made is:
- Choose between sole or shared investment: Council can fully fund the upfront investment in building the 3D model. Then allowing others to access the model free of cost, then allowing others to access the model at a fee (fixed fee or ongoing fee). Council can work with others in a partnership model to share the upfront investment, share the risk and share the benefits

- Council will need to create a business case of each of these options
- Bring together all departments and external agencies that will benefit from the trial
- Select a vendor or set of vendors to develop the 3D model

For the open data platform: once the 5D model platform is created, Council has the choice to give external stakeholders access to the platform, converting it into open data. External stakeholders include utilities, telecommunications companies, developers and other city service providers, as well as the general public. The open data platform must consider licensing of the data, which could go through Creative Commons licensing.

2.10.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Other 3rd party service providers: other providers are set to gain from access to the 5D model platform and should be involved in the scoping of the trial area. Depending on Council's choice to develop this Initiative independently or collaboratively, these other providers may be involved in funding the Initiative. These other providers may include: federal and state government, LGAQ, other neighbouring Council s, Queensland Urban Utilities and Energex.
- Queensland Department of Natural Resources and Mines: Queensland government is looking into new and useful ways to work with spatial data and has a variety of ongoing projects. Council will engage with the Department to understand their current projects and how we might work collaboratively with them to push this Initiative forward.
- Open Data platform providers: This could include the Open Data Institute Australia and Open Data Institute or the Australian Governments Open Access and Licensing Framework.
- Open and Agile Smart Cities (Springfield): As part of this global Initiative, Brisbane, the Gold Coast, Toowoomba and Springfield, together with the Queensland University of Technology's Urban Informatics Research Lab, and the Open Data Institute Queensland. Are committing to advancing open data in Southeast Queensland. Council will engage with Springfield to better understand their involvement in this effort and how it can be leveraged for this Initiative. Starting a 3D trial in a greenfield development in Springfield, for example, could be one way to leverage the resources provided through the Open and Agile Smart Cities network and could therefore be a win-win situation for all those involved.

2.10.1.5. POTENTIAL OUTCOMES

These are the primary outcomes intended by this Initiative:

- Increase operational efficiency within Council
- Increase operational efficiency for 3rd party city service providers
- Increase collaboration and associated efficiencies with 3rd party city service providers

2.10.1.6. RANGE OF BENEFITS

2.10.1.6.1. COUNCIL

Council will realise the following benefits in implementing this Initiative:

- Increased speed of planning approvals
- Decreased time spent in coordinating with state government
- Decreased time spent updating asset data
- Decreased duplication in asset data
- Decreased friction in collaborating on management of assets (for example, for planning approvals)

- Decreased re-digging of the same areas
- Decreased avoided costs associated to Dial Before You Dig concerns for Council

2.10.1.6.2. CITY

- Improved maintenance and management of assets for both the public and service providers
- More transparency into new planning applications for the public
- Greater understanding of impact of planning developments for the public
- Decreased traffic delays and re-routing due to construction
- Reduced carbon emissions due to traffic congestion stemming from construction
- Decreased avoided costs associated to Dial Before You Dig concerns for service providers/utilities
- Increased operational efficiencies for service providers/utilities

2.10.1.7. INDICATIVE KPIS

2.10.1.7.1. COUNCIL

- Average processing time for a planning application compared to current baseline
- Self-reported average time spent on coordinating with state government compared to current baseline
- Self-reported average time spent on updating asset data compared to current baseline
- Amount of duplication data (per data audit) compared to current baseline
- Self-reported number of conflicts per month related to coordination around management of assets between Council departments
- Number of areas dug up more than once in the same fiscal year compared to current baseline
- Costs related to Dial Before You Dig concerns for Council compared to current baseline

2.10.1.7.2. CITY

- Number of citizen complaints relating to hard assets and infrastructure compared to current baseline
- Number of visits and users accessing the open data platform
- Average time spent by users on the open data platform
- Number of construction delays per month or per year compared to current baseline
- Predicted carbon emissions associated to traffic congestion compared to current baseline
- Costs related to Dial Before You Dig concerns for service providers/utilities compared to current baseline
- Number of service providers/utilities accessing the 5D model platform

2.10.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort required to trial a 3D model in Ipswich for Council will be "high". Council will need to: • Work with partners to understand the use cases and benefits of the trial • Work with partners to understand the potential areas for the trial • Develop business cases for the various use cases and areas for the trial • If choosing to create a partnership to develop this Initiative, Council will need to bring together the partners and lead the efforts to create a working business model

	• Select and work with the vendor(s) to develop the 3D model • Work with the vendor(s) to open up the 3D model to external parties/partners • Work with the vendor(s) to open up the 3D model to the public, meeting open data standards • Work with partners to document the realized benefits of the trial • Work with partners to decide on a scale up of the initial trial or potentially scope a new trial
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Breaking down Council silos – for this Initiative to be successful so Council can understand and reap the full set of benefits intended behind the 3D model, Council will need to bring together multiple departments to work collaboratively • Barrier 2: Deciding on a trial area – it will take time, potentially up to a year, to decide on the right trial area as many parties need to be brought together, a full suite of proposed areas need to assessed and Council needs to pull together a business case for each The following key risks are relevant for this Initiative: • Risk 1: Limited benefits realization – as with any trial, the outcome may be that the project does not realise the projected benefits or not to the extent that an extension of the trial is worth the investment • Risk 2: Limited collaboration from state and other external services providers – while highly unlikely, this may happen and Council will need to evaluate the business case for a trial based entirely on the benefits to be realized by Council • Risk 3: Poor selected vendor(s) – this technology is relatively new and so the usability, accuracy and robustness of the vendor's selected platform may be limited
DEGREE OF CONTROL	Council will have a "high" degree of control over this Initiative as we will be implementing it. However, if we decide to trial an already existing project with the Queensland government, our degree of influence and control would be diminished, as the parameters and scope of the project would be dictated by the state.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: Council P&D or WPR projects – Council will need to work out internally where this Initiative fits best per other ongoing projects in the Department of Planning and Development (per transition to online applications and other similar projects) and in the Department of Works, Parks and Recreation particularly in the Asset Management branch. • Dependency 2: 2017 Oracle upgrade – Council will need to work out how much this Initiative depends on the spatial data in Oracle and how much this will be impacted by the upcoming upgrade.
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Starting with a trial – this Initiative will start with a trial, as Council will need to understand the associated processes, costs and benefits of a 3D model. • Assumption 2: Opening up the data – the 3D model will be opened up to both external service providers and the public.
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Chicago – Accenture is working with the city of Chicago, ComEd (the local utility) and ESRI (a GIS mapping software company) to digitize Chicago's underground assets. • Example 2: San Francisco – through CityZenith, San Francisco has established a 5D modelling platform for the city to help the city achieve its greenhouse gas emissions reduction goals. • Example 3: Barcelona – through CityZenith, Barcelona has established a 5D modelling platform for the city to help with disaster management and public safety.

Table 39. Overview of Initiative Implications: Initiative 09

2.10.3. DETAIL

2.10.3.1. CAPABILITIES REQUIRED

2.10.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Project management – Experience in standard project management with the additional ability to manage multiple stakeholders (internal and external). Projects of this nature generally get delayed due to lack of data or additional effort required in collecting data etc. Hence, a strong focus on project management needs to be in place to track cost, effort and outcomes.
- Spatial modelling and GIS – Experience and understanding of spatial and GIS concepts essential. A strong understanding of ICC's current GIS mapping will be an advantage to ensure this knowledge is brought into the project.
- Data science, modelling and standards – Experience and understanding of data science, handling big data, modelling etc. This competency will be required to help define the data standards, policies etc. which will become the under bed on which the 5D modelling platform will be built
- Town planning and Maintenance capability: Experience from Planning & Development and Maintenance function to provide contextual information in developing the 5D models

2.10.3.1.2. PROCESS

There are no specific processes that will be required as part of the project. But, the Initiative will have considerable impact on internal Council processes, likely affecting the Departments of Planning and Development, Works, Parks and Recreation and Health, Safety and Regulatory Services mostly. The nature and extent of this impact will depend on the exact scope of the 3D modelling trial.

2.10.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
5D Modelling	The Software/service to model the city assets and infrastructure.
Portal	The platform to host and access the modelled content.
Identity and Access	Security controls for who can access content such as 5D models from both within and outside the organisation.

Table 40. Technical Capabilities Required by Initiative 09

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
Public Tier	The public tier serves two main functions: • Data Sharing – service to enable data sets to be shared with the public and other organisations. • API Gateway - for the exposure and consumption of business services via APIs.

Table 41. Technical Platform Enablers Required by Initiative 09

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Data Governance	The exposure of data sets to the public will be guided by Council's overarching Data Governance framework, policies, and procedures.
Open Data Policy	The establishment of an Open Data Policy will define the terms under which data can be shared and used.

Oracle Spatial/Weave Rollout	Activities related to the rollout of the new Spatial tools Oracle Spatial and Weave may need to be considered as potential dependencies for the exposure of spatial open data sets.
Common Data Model	Activities related to the establishment of a Common Data Model may need to be considered as potential dependencies for the exposure of open data sets.

Table 42. ICT Programs of Work Required by Initiative 09

2.10.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative has the following specific requirements for Enablers:

- Policies and regulations: Taking the lessons learned from the initial trial, Council will need to work with state government to establish policies that benefit the 5D model moving forward. For example, all new developments may need to provide their digital blueprints to Council to feed into and add to the 5D model of the city.
- Standards and interoperability: Council will need to work with spatial modelling experts and the relevant technology providers, as well as state government, to establish standards in the spatial modelling space so that in the future the 3D modelling becomes commonplace and the 3D model can be completed across Ipswich with ease, housed and viewable in a unified platform.
- Skills and capabilities: Please refer to section 9.4.1 (People) for further reference.

2.10.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.10.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Leveraging data – Council could explore monetizing the data obtained from the 5D model platform across the city:

2.10.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.10.3.6. CASE STUDY

In Chicago, the City has helped develop UI LABS. A non-for-profit organisation that brings together universities and industries, along with national labs, civic and government partners, to solve complex challenges no one sector or player could address on their own.

On of UI Labs' main programs, is City Digital, a global hub for urban infrastructure innovation, setting the standard for the future of cities everywhere. The Lab will bring organisations together to facilitate cross-sector collaboration among companies and build on the expertise and advances from Illinois universities and national labs, with deep input and involvement from the City of Chicago.

As part of City Digital, Accenture is developing a project to map Chicago's underground, called "Digital Underground Mapping". Accenture has partnered with the City of Chicago, Commonwealth Edison (the local utility), Microsoft, HBK Engineering and the Illinois Institute of Technology for this project.

Accurate locations of buried underground infrastructure (such as water pipes, gas lines, power systems) are important for utilities, engineers, and city departments. However, existing data are often incomplete or inaccurate and result in

negative consequences including property damages, construction delays, design changes, claims, injuries, traffic delays, etc. The goals of the Underground Mapping project are to:

- improve accuracy of underground utility information
- overcome inefficiencies and reduce costs created by incomplete and/or paper-based systems for the city, utilities, and construction crew.

Accenture and the project partners are developing an engineering grade, common, secure data platform with open standards that can consume, consolidate, organize, and store 3D infrastructure data. The data is collected from 1) existing engineering design files, and 2) dense point cloud models created by scanning an open construction site with a lasers cameras. The platform will provide a graphical web interface that allows end users to view the infrastructure in the geographic area in 3D format, confirm data accuracy, and upload/download data for a selected geographic region. Data is protected based on City of Chicago Department of Innovation and Tech Information Security policy. The data in the system will follow global, open standards for GIS/spatial data. The proposed underground mapping solution will produce significant and lasting benefits to the various asset owners, the city (economic impact), and the citizens.

The projected annual steady state savings for all stakeholders are >$158 million (USD), attributed to construction savings (labor and non-labor), design savings (labor and non-labor), safety liability savings, economic impact to retail, City of Chicago's information retrieval process savings, project approval process savings, and more.

Accenture expects the benefits will reach steady state in 5 years.

2.11. INITIATIVE 10: DRONES PROGRAM

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Growth
THEME	Workforce Management
INITIATIVE NAME	Initiative 10: Drones Program



2.11.1. OVERVIEW



Figure 17. "At a Glance" View of Initiative 10

2.11.1.1. DESCRIPTION

The drones program is all about using drones to help Council operate more efficiently. From using drones to do regular monitoring of remote assets to using them on an ad hoc basis to do aerial surveys of new planning development sites, drones will both enable Council to reduce costs and time spent on labour-intensive monitoring activities and enable Council to perform new activities it was not able to do before (at a reasonable cost).

2.11.1.2. CONTEXT

From Australia's federal government announcement on the purchase of drones to monitor coastal areas to the increasing use of drones by commercial organisations like Amazon, drones are becoming a sweepingly large trend globally. The uptake of drones is being spearheaded by organisations that need to cover large and remote amounts of land and infrastructure, including large agricultural companies, border control units within federal governments, and gas and utility companies, among others.

Ipswich City Council needs to oversee and maintain over 1,000 square kilometres in area, of which 28% is natural estates. As such, the use of drones will be highly beneficial for Council.

2.11.1.3. SCOPE

This Initiative covers the launch and establishment of a drones program at Ipswich City Council. Overtime, this drones program may grow and develop more sophisticated use cases and analytics, but, for initial kick-off, it will cover: starting with a small number of drones, setting up the activities for the drones and setting up the right technology underpinning the drones.

Before purchasing or establishing a leasing program for drones, the designated responsible party for the drones program will need to work with all departments across Council to:

- Establish a list of all the activities the drones will perform
- Understand the duration of these activities
- Create a schedule of ongoing activities and projected ad hoc activities
- Ongoing schedule will include activities such as: Tracking of koala populations and other species; Monitoring of vegetation growth and fuel loads in the natural estate areas; and proactive inspecting of hard-to-access infrastructure (large road networks, bridges and more).
- Outside of the regular schedule of activities, any employee across Council would be able to reserve the drone on as needed basis, for activities such as: New planning site aerial surveys; Checks for Illegal dumping and other complaints; Flood or other disaster mapping; Remote bushfire management; Search and rescue missions; Other environmental exploration and protection; Event monitoring for large public events such as CMC.
- Using this information, Council can then decide:
- How many drones it will need to purchase or lease, as well as establish a cost/benefits comparison between both scenarios (ownership vs. lease)
- What types of data it will need to collect, such as video footage, infrared, laser, etc.
- Council will need to set up the right technology for using the drones, primarily considering how the data from the drones will be collected and how it should be stored. Council will want to set this up in such a way that it could allow for analysis of this data in the future and could allow for this data to be published openly or sold to 3rd parties.

2.11.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Technology or service provider: Council will need to purchase or lease the relevant drone hardware and software from a particular vendor or set of vendors. Based on a more detailed business case and further investigation, Council may deem it more cost-efficient to lease the drones from a drone services company rather than directly acquire drones.
- Federal and state government: The drones program will need to meet the stipulations of the Civil Aviation Safety Authority, a federal government agency, as well as the regulations of the Queensland Office of the Information Commissioner, in addition to any other relevant governing bodies.

2.11.1.5. POTENTIAL OUTCOMES

The drones program is primarily intended to:

- Increase operational efficiencies for Council, especially around planning assessments, city maintenance and law enforcement
- Allow Council to find out about issues sooner and faster (fuel loads building up, potholes on the road network, etc.)

- Allow Council to react to issues in a more targeted way (surveying and assessing the issue remotely through the drone first, and figuring out the best intervention based on that)

2.11.1.6. RANGE OF BENEFITS

2.11.1.6.1. COUNCIL

- Reduce material costs for Council
- Reduce amount of time spent on monitoring and inspections
- Faster planning approvals
- Identify more issues with hard and soft infrastructure (ex: more potholes)
- Identify issues with infrastructure more quickly (ex: pothole when it just starts forming)
- Avoid more problems (ex: bushfires, larger flood impacts)
- Resolve problems more quickly (ex: find a lost person, curb bushfire)
- Ensure greater safety for citizens (ex: building safety in new planning developments)

2.11.1.6.2. CITY

- Greater resolution of issues and problems across the city
- Faster resolution of issues and problems across the city
- Increase in citizen safety
- Increase in citizen satisfaction with condition of infrastructure and public spaces

2.11.1.7. INDICATIVE KPIS

2.11.1.7.1. COUNCIL

- Material expenses per year compared to baseline
- Time spent by City Maintenance team on inspections compared to baseline
- Average time to approve planning application compared to baseline
- Number of identified and resolved issues with infrastructure (like potholes) compared to baseline
- Number of problems in Ipswich related to Council services that made the news or received negative press compared to baseline
- Number of infrastructure safety-related issues compared to baseline

2.11.1.7.2. CITY

- Number of citizen complaints related to infrastructure and public spaces compared to baseline
- Time to resolution of citizen complaints related to infrastructure and public spaces compared to baseline
- Number of infrastructure safety-related issues compared to baseline
- Self-reported satisfaction levels of citizens with infrastructure and public spaces compared to baseline

2.11.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort related to this Initiative is "medium". While this Initiative requires full implementation responsibility from Council, the program is narrower in scope as compared to other initiatives. The effort required to launch a drones program within Council is: • Define the owner responsible for the drones program and structure the program as a shared service across all departments • Compile all the use cases or activities that the drone would perform by discussing with every department across Council • Based on the list of activities (both recurring and ad hoc), predict initial number of drones needed, type of data collection required (video, infrared, etc.) and put together business cases of ownership and leasing models • Find the drones vendor for purchase or lease • Work with the vendor and ICT department to set up the right platform for collection and storage of drone data • Ensure the drones and drone program (including all activities to be performed by the drones) meet all regulatory standards • Set up the drones through the fleet management booking reservation system to allow anyone across Council to book the drones on an as needed basis • Educate the departments (especially those that will be most involved in utilizing the drones) on program (scheduling, proper handling, etc.) • Begin usage of drones across recurring and ad hoc activities
CHALLENGES AND RISKS	Given that the Works, Parks and Recreation department has already started trialling the use of drones, there are no barriers to the launch of a drones program. The following key risks are relevant for this Initiative: • Risk 1: Use across Council – while the ownership and responsibility for the drones program may sit under one department in Council, this will be a shared service across Council, given that multiple departments will benefit from the program. In order to fully realise the business case for drones, it is imperative that all departments across Council have access to and utilise the drones in a broad set of activities and use cases. The responsible Council department must understand this and ensure collaboration across Council. • Risk 2: Meeting regulation – like with all initiatives, it is imperative that all regulations set by state, federal and international governing bodies related to drones or unmanned aerial vehicles, are met. This includes regulation related to handling of the drones, activities performed by the drones, type of data collected and form of collection, citizen privacy, interactions with other aerial regulations and more. For example, under the Queensland Office of the Information Commissioner, it is not legal for government to collect data on private homes, even if these homes are violating laws (such as not having an appropriately fenced swimming pool). • Risk 3: Bias to ownership – the mentality for Council should not be to assume ownership of the actual physical drones. Council should be open towards various business models in the creation of the drones program. A leasing program, for example, would give Council flexibility in the use of drones without having to pay for idle time. Furthermore, vendors provide increasingly sophisticated capabilities across the types of drones, type of data that can be collected, analytics performed by the drones and more.
DEGREE OF CONTROL	Council will have a "high" degree of control over this Initiative, as it is being implemented for internal Council use.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: Availability of technology platform – the launch of a drones program will depend on the readiness of the technology platform to collect the data from the drones, store it and analyse it at a later stage. See capabilities and Enablers .required in the Detail section of this profile.
OVERALL ASSUMPTIONS	The following are the basic assumptions made for this Initiative: • Assumption 1: No analytics – it is assumed for the launch of the drones program that analytics will not be implemented in the use of the drones. Overtime, Council will develop the analytics capabilities (in house or outsourced) to automate processing of data collected by the drones • Assumption 2: Fleet management – it is assumed that the drones will be part of Council's "fleet" and as such, will be part of the current fleet booking system. Council may choose to operate the drones separately from the rest of Council's fleet and have a separate form for scheduling and reserving the drones.

LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Fugro Roames – this Dutch company acquired Ergon's Energy business and it trialling a drones program to manage its assets, which are spread across 600 cities and towns in Queensland over 160,000 kilometres. The drones are equipped with cameras that capture 3D footage of the company's 1.1 million overhead power poles. • Example 2: Sunshine Coast – the University of Sunshine Coast is working with Sunshine Coast Council to use drones to measure water depth. This is part of the university's research to understand and predict coastal behaviour. In addition, other local examples to consider engaging with include Gold Coast Council, who is considering the use of drones as surf lifeguards, and the federal government, who is using drones to monitor coastal areas.

Table 43. Overview of Initiative Implications: Initiative 10

2.11.3. DETAIL

2.11.3.1. CAPABILITIES REQUIRED

2.11.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Project management
- Stakeholder management
- Business process re-design
- Data, analytics and standards
- Knowledge and experience in policy-making
- Knowledge and experience with unmanned aerial vehicles and associated technologies

2.11.3.1.2. PROCESS

This Initiative will have an impact on internal Council processes, likely affecting the Departments of Planning and Development, Works, Parks and Recreation and Health, Safety and Regulatory Services most highly. The nature and extent of this impact will depend on the exact scope of the drones program.

2.11.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
None identified	

Table 44. Technical Capabilities Required by Initiative 10

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
None identified	

Table 45. Technical Platform Enablers Required by Initiative 10

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
None identified	

Table 46. ICT Programs of Work Required by Initiative 10

2.11.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program.

This Initiative has the following specific requirements for Enablers:

- Policies and Regulations: Council will need to work within national and state government regulations regarding the use of drones. Council may choose to develop further specifications for Ipswich.
- Standards and interoperability: Council will need to develop standards around the vehicles, technology and data to ensure that the drones and data collected from them are always usable together. Council may want to extend these standards to other drones users in the city so they can be flown in the same airfields safely, they all communicate with each other and all the data can be collated and analysed together.

2.11.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.11.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: If Council acquires the drones, depending on the number of purchased drones and their level of utilization, Council could consider leasing their drones to other surrounding Council s, Ipswich utility providers like Queensland, Urban Utilities or Energex, or Queensland Police for purposes of monitoring crime in Ipswich.
- Opportunity 2: Council could sell the collected data from the drones to interested 3rd parties, such as Google, the Australian Farmers Federation, Energex or startups.
- Opportunity 3: Use the drones for live coverage of significate city events, transport hotspots and emergency services situations.

2.11.3.5. OUT OF SCOPE

The drones program does not include any analytics components to do processing and analysis of the video and image feed being captured by the drones. It is assumed that for the initial launch of the program, all data collected from the drones will be “eyeballed”. Overtime, we expect to develop analytics capabilities for automated processing and triggering of alerts based on the data collected; for example, when monitoring for fuel loads in vegetation across Ipswich’s large expanses of open parks, the analytics program would trigger an alert that a certain area has a dangerously sized fuel load and needs be cut down.

2.12. INITIATIVE 11: SMART PARK

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Growth
THEME	Workforce Management
INITIATIVE NAME	Initiative 11: Smart Park



2.12.1. OVERVIEW

Smart Park "At a Glance" — Growth — Workforce Mgmt

The Smart Park initiative intends to revolutionize the way government designs and maintains public areas. Through the use of advanced technologies like analytics and the Internet of Things, this park will require minimal maintenance while still being in optimal condition. The Smart Park, trialled in one selected park in Ipswich, will build on the Safe City camera network adding video analytics that will monitor the park on behalf of Council employees, it will include smart lighting, Wi-Fi, smart urban furniture, smart green infrastructure, smart interactive kiosks, electric vehicle charging stations, bike sharing stations, smart vending machines and more.

Context

- Council has over 28% of land area available for recreation.
- The costs of maintaining these vast areas of land is quite high, with extensive monitoring and caretaking required.
- Council wants to attract more citizens to the outdoors, by creating accessible spaces that are more entertaining and attractive.

Stakeholders

- Energex: Operates Ipswich streets and will be involved in the Smart Lighting grid component.
- Queensland Urban Utilities: Operates the water network in Ipswich and will be involved in the Smart Water component.
- State government: Relevant governing bodies e.g. DSITI and EDQ or others to ensure operation within legal frameworks etc.

Outcomes

- Improved park services at a lower cost of maintenance for Council.
- Reduced costs of utilities (energy and water) for Council to maintain the park.
- Safer and more attractive park for citizens of Ipswich.

Capabilities

- People: Experience in developing video analytics solutions, smart lighting, solar and battery installation and in project management.
- Process: Internal Council processes, including Safe City branch of HSRS and City Maintenance branch of WPR.
- Technology: Smart lights and light poles, sensors and Safe City, Edge Tier and Proximity network, extension of Access Network, establishment of Platform, Analytics and Public Tiers and public Wi-Fi.

Figure 18. "At a Glance" View of Initiative 11

2.12.1.1. DESCRIPTION

The Smart Park Initiative intends to revolutionize the way government designs and maintains public areas. Through the use of advanced technologies like analytics and the Internet of Things, we intend to create a park that requires minimal maintenance while still keeping the park at an optimal condition. Furthermore, the park will provide a very safe and highly interactive environment. Our Smart Park, trialled in one selected park in Ipswich, will build on the Safe City camera network adding video analytics that will monitor the park on behalf of Council employees, it will include smart lighting, Wi-Fi, smart urban furniture, smart green infrastructure, smart interactive kiosks, electric vehicle charging stations, bike sharing stations, smart vending machines and more.

2.12.1.2. CONTEXT

Ipswich City Council prides itself on the amount of greenspace available to the public, with over 28% of land area available for recreation. However, the costs of maintaining these vast areas of land is quite high, with extensive monitoring and caretaking required. This Initiative aims to create a technology platform that will enable Council to reduce the costs and labour-intensive nature of operating the parks.

Furthermore, in an effort to attract more citizens to the outdoors, to exercise and to lead healthier lives, we want to make these spaces more accessible, more entertaining and overall, more attractive to our citizens.

2.12.1.3. SCOPE

The Smart Park Initiative revolves around two primary parameters: allowing for remote monitoring of the park and its assets, and enhancing the park and its assets for citizen use.

There are five elements within this Smart Park Initiative, defined as follows:

2.12.1.3.1. VIDEO ANALYTICS

- Identify suspicious behaviour, graffiti, dumping, vandalism on infrastructure, potholes, traffic signals down, fallen trees, h8 of grass
- Trigger alerts to right team, creates a job

2.12.1.3.2. SMART LIGHTING GRID (BASED IN LARGE PART ON THE DEVELOPMENT IN SAFE PRECINCT INITIATIVE)

- Smart Lighting
- Transition all lights to LEDs
- All lights will be solar powered
- All lights will operate below full brightness and light up as people walk by (based on appropriate business rules)
- Analytics adjust when the lights turn on and off depending on amount of light in the environment (based on a lux meter sensor) – applying machine learning to learn weather patterns throughout the year over time
- All lights will be remotely monitored and trigger an alert when there is a failure
- Call Buttons: Light poles will have call buttons that will allow citizens to link directly with Safe City
- These call buttons will have signage to make them obvious to the public and easy to use
- Signage: Signage for Safe City video cameras will be made more prominent
- Wi-Fi: Light poles will provide Wi-Fi for public use
- Smart Bins: Add in fill level sensors to trash bins in the park that will trigger notifications to waste management on when they need to be emptied out
- Smart Roads: All areas of the park with limited coverage of smart lighting (i.e. few street light poles) will have smart road surfacing (roads that provide minimum amounts of lighting at night)

2.12.1.3.3. SMART WATER

- Green infrastructure: Areas of the park that are commonly flooded or that receive large amounts of rainfall, will have green infrastructure (such as bioswales, stormwater curb extensions, raingardens, wetlands, green walls and more)
- Smart green infrastructure monitoring sensors will be implemented to understand and monitor all green infrastructure (levels of storm water, alerts if flooding, etc.)
- Rainwater Capture: rainwater tanks will be installed throughout the park to capture rainwater that will be used to irrigate the park
- This will build on the current smart irrigation systems already in place

2.12.1.3.4. SMART URBAN FURNITURE

- Smart benches: install 5 benches around the park that allow for charging of personal devices (phones, tablets, computers, etc.)
- Smart kiosks: these kiosks will provide citizens utilising the park both essential information as well as fun activities (ex: book a part of the park, reserve the sports facility (netball courts in Limestone), look up events/tours, look up nearby public transit and arrival times, direct them to Visitor Information Centre, show biodiversity information in the park, look up different fitness exercises, map, call Safe City, allows download of magazines/newspapers)
- Electric vehicle charging spots: implement at least 2 charging stations for electric vehicles (as defined by the EV ecosystem Initiative)
- Street art: define 5 areas of the park for showcasing art made by local artists (solicit art submissions from the public and rotate every 6 months)
- Showcase heritage: define 5 areas of the park where it will be possible to trigger a hologram representing an iconic heritage building from Ipswich
- Bike system: provide easy to use bike stations and provide 5 bikes that can be checked out by the public (based on an app)
- Smart vending machines: vending machines that will only provide healthy snack options (which will be monitored remotely and alert Council when it needs to be refilled)
- Digital scavenger hunt: digital geo-cached challenges throughout the park where solving one mystery leads to the next (based on an app)
- Community garden: designate 1 area of the park for a community garden where the first 10 people to sign up will be responsible for growing inside the garden (this can be expanded overtime depending on citizen response)

2.12.1.3.5. EXTENSION OF SAFE PRECINCT

- Implement additional analytics that was developed for Safe Precinct (with social media listening, safety analytics and Wi-Fi analytics)
- Implement extension program that was developed for Safe Precinct (with sensors for noise, temperature, carbon dioxide, air quality, humidity, smoke, etc.)

2.12.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Energex: the utility operates the street lights in Ipswich so they will need to be involved primarily in the Smart Lighting Grid component
- Queensland Urban Utilities: the utility operates the water network in Ipswich so they will need to be involved primarily in the Smart Water component (particularly around stormwater management)
- State government: Council will need to work with state government (DSITI, EDQ or others) to ensure they are operating within legal frameworks in the collection and analysis of data from the video cameras and additional sensors (this will be defined for the Safe Precinct Initiative and then extended into Smart Park)

2.12.1.5. POTENTIAL OUTCOMES

The Smart Park will lead to the following outcomes:

- Improved park services at a lower cost of maintenance for Council
- Reduced costs of utilities (energy and water) for Council to maintain the park

- Safer and more attractive park for the citizens of Ipswich

2.12.1.6. RANGE OF BENEFITS

2.12.1.6.1. COUNCIL

These are the benefits for Council in implementing Smart Park:

- Reduced energy consumption for street lights
- Reduced water consumption for irrigation of the park
- Reduced costs of maintenance of the park
- Reduced material expenditure for the park
- Increased number of rate payers moving into Ipswich overtime
- Increased utilization of the park
- Decreased number of citizen complaints about the park

2.12.1.6.2. CITY

These are the benefits for the citizens of Ipswich in implementing Smart Park:

- Increased safety and feeling of safety in the park
- Increased services in the park (Wi-Fi, charging, biking, etc.)
- Increased levels of fitness of citizens in the park
- Improved park maintenance and condition of assets

2.12.1.7. INDICATIVE KPIS

2.12.1.7.1. COUNCIL

For Council, we will know if the benefits have been realized through the following KPIs:

- Spend on street lighting electricity consumption for the park
- Spend on water consumption for the park
- Spend on maintenance for the park
- Spend on materials for the park
- Numbers from video analytics people counting for the park
- Number of citizen complaints received about the park

2.12.1.7.2. CITY

For the City, we will know if the benefits have been realized through the following KPIs:

- Perceived levels of safety in the park
- Number of people utilizing Wi-Fi, EV charging stations, bikes, kiosks, etc.
- Number of citizen complaints received about the park

2.12.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort required to implement Smart Park is high, as Council is fully responsible for the entire design and deployment. Council will need to: • Design the technical architecture to build on the existing Safe City camera network (will be designed in parallel with Safe Precinct Initiative) • Work with Energex to establish a new rate and business model for the smart lighting grid in the CBD (which can leverage outcomes from the Smart Lighting Initiative) • Develop the RFPs to source the right hardware and software • Establish the right policies or regulations and the right standards for collection, analysis and other processing of data (to be done in parallel with Safe Precinct Initiative)
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Utility involvement – the incumbent energy utility Energex and the water utility Queensland Urban Utilities may not want to be involved in the smart lighting grid and smart water components of Smart Park. • Barrier 2: Data policies – state or federal regulations may not be favourable to the collection and processing of data as intended in the video analytics and extension components of this Initiative The following key risks are relevant for this Initiative: • Risk 1: Limited uptake – citizens may not embrace and uptake new services as expected (smart kiosks, smart benches, smart vending machines, etc.) • Risk 2: Vandalism of assets – new park assets (such as smart benches or smart kiosks) may be vandalized • Risk 3: Internalize new processes – Council employees may not transition to the new maintenance processes and continue to inspect parks manually
DEGREE OF CONTROL	Ipswich City Council will drive this Initiative in its entirety and therefore has a "high" degree of influence and control. Nevertheless, Council has a very limited degree of control over the street lights which are owned and operated by Energex, and a slightly limited degree of influence over the street lights which are operated by Energex and owned by Council. Furthermore, Council may have limited degree of control over policies and regulations around data.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: Smart Lighting Initiative – the smart lighting part of this Initiative may depend on the Smart Lighting Initiative for streetlights owned and operated by Energex • Dependency 2: Safe Precinct Initiative – the "Extension of Safe Precinct" component of this Initiative depends on the Safe Precinct Initiative as well as a definition of the policies and regulations around collection and processing of data • Dependency 3: EV ecosystem Initiative – the electric vehicle charging stations piece of the "Smart Urban Furniture" component of this Initiative depends on formal policies as developed by the EV ecosystem Initiative • Dependency 4: Application Studio Initiative - potentially, the bike system app and the digital scavenger hunt app may be developed by the Application Studio, in which case those pieces of the "Smart Urban Furniture" component would depend on the Application Studio Initiative
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Leverage Safe City platform - the Smart Park will build on Council's Health, Safety and Regulatory Services' Safe City network. • Assumption 2: Citizen-centric add-ons - the Smart Park Initiative will extend beyond improved and reduced labour-intensiveness of park maintenance, and move into providing additional and improved park services for citizens.
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: ▪ Example 1: Boston's Complete Streets – Boston's approach to complete streets is user-centric, putting pedestrians, bicyclists and public transit users at its focus. The program is intended to improve quality of life in Boston by creating great public spaces with a range of amenities. It promotes active modes of transport to improve citizen health and sustainable transport networks to address climate change. It focuses on 3 areas: multimodal roadway design to share the road among all users, especially people with disabilities. It incorporates sustainable environmental design, including urban forestry, rain gardens, bio-swales, permeable pavement and more. It also

	includes advanced technologies such as smart signals, smart meters, electric vehicle sharing and bike sharing programs, and apps for easier wayfinding and to encourage social networks. As part of this effort, the City of Boston trialled Soofas, or smart benches, in collaboration with MIT. ▪ Example 2: Qatar Smart Parks – over the next 5 years, the Ministry of Municipality and Environment, intends to develop 60 new smart public parks across the country. The Public Parks Department, wants to "incorporate innovative ideas and smart technologies". This will including LED smart lighting, solar power, free Internet and new plant, tree and flower species.

Table 47. Overview of Initiative Implications: Initiative 11

2.12.3. DETAIL

2.12.3.1. CAPABILITIES REQUIRED

2.12.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Video analytics – Experience in developing video analytics solutions. This experience will be vital in developing the required video analytics to monitor the smart park's condition
- Energy – Experience in smart lighting, solar and battery installation. This experience will be vital in designing and implementing the smart solutions for the smart park
- Project Management Skills – Experience in managing projects with tight timelines and budgets. This capability will help with planning the pilot project and subsequently support the creation of a detailed rollout plan across all parks

2.12.3.1.2. PROCESS

This Initiative will have an impact on the internal processes of the Safe City branch within the Department of Health, Safety and Regulatory Services as well as on the City Maintenance team within the Department of Works, Parks and Recreation.

2.12.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
Smart Lights and Light-Poles	LED based lighting with poles that may provide other capabilities such as: • Digital signage • Ability to connect sensors/cameras, proximity network components, public WI-FI components • Help-phones
Sensors	Sensors that may be deployed across the Smart Park to assist in for identifying security risks/incidents (e.g. noise sensors, motion sensors).
Extend Safe City	Deployment of additional cameras connected to Council's Safe City framework.

Table 48. Technical Capabilities Required by Initiative 11

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
Edge Tier and Proximity Network	Smart Lights and Sensors will exist in the Edge Tier and will need a Proximity network to be established to enable the flow of data between devices and from the devices to the Access Network.

Extend the Access Network	An Access Network link must be established to connect the Smart Park deployment to Council's enterprise landscape. This will enable the flow of data to and from the Smart Park.
Establish Platform Tier	The Platform tier will provide the ability to ingest raw sensor data and process that data (potentially along with other data sources) to trigger upstream events (e.g. raising an alert with Safe City operators).
Establish Analytics Tier	The Analytics tier allows relevant data to be stored and used for analytical modelling and visualisation.
Establish the Public Tier	The Public tier contains an API gateway that allows Council to interact with sensors and Smart Lighting solution/s via APIs e.g. controlling the smart lighting solution, or accepting regular updates of curated data from sensors.

Table 49. Technical Platform Enablers Required by Initiative 11

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Public Wi-Fi	Council may wish to extend its deployment of Public Wi-Fi to include Smart Park locations.

Table 50. ICT Programs of Work Required by Initiative 11

2.12.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program.

This Initiative has the following specific requirements for Enablers:

- Standards and Interoperability:
- Skills and Capabilities:
- Strategic Communications:

2.12.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.12.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Council could explore monetising the data obtained from the park facilities (around the smart lighting, the solar generation, the smart water)
- Opportunity 2: Council could explore charging a fee for services provided through the smart kiosk, such as from the magazines and articles or from the fitness and exercise content. Likewise, Council could charge a fee for use of the charging stations in the smart benches.

2.12.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.13. INITIATIVE 12: SAFE PRECINCT

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Liveability
THEME	Safety
INITIATIVE NAME	Initiative 12: Safe Precinct



2.13.1. OVERVIEW

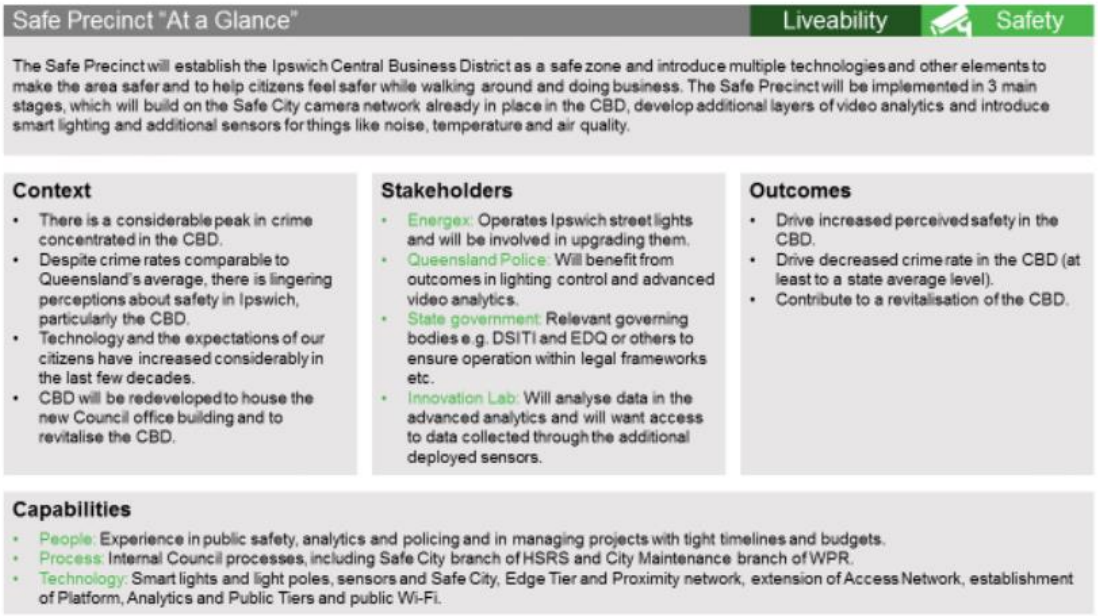


Figure 19. "At a Glance" View of Initiative 12

2.13.1.1. DESCRIPTION

The Safe Precinct will establish the Ipswich Central Business District as a safe zone and introduce multiple technologies and other elements to make the area safer and to help citizens feel safer while walking around and doing business. The Safe Precinct will build on the Safe City camera network already in place in the CBD, developing additional layers of video analytics and introducing smart lighting and additional sensors for things like noise, temperature and air quality.

2.13.1.2. CONTEXT

There are 4 key drivers behind this Initiative:

- High crime rate in the CBD: While Ipswich currently has a crime rate that is on par with Queensland's state average, there is a considerable peak in crime concentrated in the Central Business District.
- Perceived safety: Although Ipswich experiences a "normal" rate of crime, there is a lingering perception of unsafety across the city, and in particular in the CBD.

- Increasing citizen expectations: Both technology and the expectations of our citizens have increased considerably in the last few decades. We aim to meet the high expectations of our modern citizens by providing them with the latest technological capabilities.
- CBD revitalization: The heart of the CBD will be redeveloped to house the new Council office building and to revitalize the CBD in an effort to bring Ipswich to life.

To accompany CBD revitalisation effort, while addressing the high crime rate in the CBD and the associated perceived safety, it is imperative to ensure that our citizens feel safe at all times in the CBD. Only if we can maintain a high level of safety (both real and perceived) will we see a true revitalization of the CBD, with high foot traffic and meaningful economic activity.

2.13.1.3. SCOPE

Council is responsible for the implementation of the Safe Precinct. This includes bringing in the right partners, sourcing the technology, and ensuring a seamless operation once everything is set up.

There will be 3 main stages for the implementation of Safe Precinct:

2.13.1.3.1. STAGE 1: STARTING WITH THE BASICS

- Smart lighting
- Transition all lights to LEDs
- All lights will be solar powered
- All lights will operate below full brightness and light up as people walk by (based on appropriate business rules)
- Analytics adjust when the lights turn on and off depending on amount of light in the environment (based on a lux meter sensor) – applying machine learning to learn weather patterns throughout the year over time
- All lights will be remotely monitored and trigger an alert when there is a failure
- Call Buttons
- Street light poles will have call buttons that will allow citizens to link directly with Safe City
- These call buttons will have signage to make them obvious to the public and easy to use
- Signage
- Signage for Safe City video cameras will be made more prominent
- Signage can be digital or non-digital
- Wi-Fi
- Street light poles will provide Wi-Fi for public use
- Street Art
- Define areas of the CBD for permanent showcasing of public art
- Solicit art submissions from the public and rotate every 6 months

2.13.1.3.2. STAGE 2: DEVELOPING ADVANCED ANALYTICS

- Video Analytics: Apply video analytics for issue identification developed under Smart Park Initiative. This will help monitor behaviour in the Safe Precinct and ensure Council and Police are alerted to these problems as quickly as possible (ex: suspicious behaviour, graffiti, dumping, vandalism on hard infrastructure, potholes, traffic signals down, fallen trees)
- Safety Analytics: Promote safety analytics business rules, such as:

- If elderly person walking on their own falls, trigger call to police and ambulance; or if person is walking alone at night, they are automatically tracked
- Council will not provide this, but will raise awareness about the existence of those solutions in the marketplace
- Additional Analytics: Work with the Innovation Lab to develop specific analytics solutions
- Understand utilisation of the CBD (answering questions such as: what areas are currently underutilised? Why? What can we do to change that?) Through video analytics to understand people's movement patterns (both pedestrian and vehicle). Through Wi-Fi data analytics. Through social media listening

2.13.1.3.3. STAGE 3: EXTENDING TO AN INTERNET OF THINGS PLATFORM

- Add sensors for noise, temperature, carbon dioxide, air quality, humidity, smoke, etc.
- Publish data from these sensors for use by the public, Fire Station 101, the Innovation Lab, Digital Skills Program and others

As an example for Stage 3 – the Array of Things, in Chicago, has the following sensors:



Figure 20. Initiative 12: Example IoT Extensions

2.13.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Energex: the utility operates the street lights in Ipswich so they will need to be involved primarily in stage 1
- Queensland Police: this extension of capabilities of the Safe City camera network will undoubtedly involve the Police who will benefit greatly from the video analytics in stage 2 and will likely want access to remotely change the lights in stage 1
- State government: Council will need to work with state government (DSITI, EDQ or others) to ensure they are operating within legal frameworks in the collection and analysis of data from the video cameras and additional sensors
- Innovation Lab: entrepreneurs, students, professors and others will contribute to the analysis of data in stage 2 and will want access to the data collected in stage 3

2.13.1.5. POTENTIAL OUTCOMES

The Safe Precinct will result in these 3 outcomes for the city:

- Drive increased perceived safety in the CBD
- Drive decreased crime rate in the CBD (at least to state average level)

- Contribute to a revitalization of the CBD

2.13.1.6. RANGE OF BENEFITS

2.13.1.6.1. COUNCIL

Council will benefit in the following ways from Safe Precinct:

- Decreased costs of electricity for street lighting
- Decreased costs of maintenance for street lighting
- Decreased costs of maintenance across the CBD (for Council -owned assets)
- Increased understanding of movement patterns across the city for use in planning and development
- Increased number of rate payers moving to Ipswich
- Collection of data (from sensors and video analytics) that can be sold to companies

2.13.1.6.2. CITY

The city will benefit from a wide range of angles:

- Improved lighting in the CBD
- Improved safety in the CBD, both real and perceived
- Ability to call Safe City officers directly
- Access to free public Wi-Fi
- Improved cleanliness and overall good condition of the CBD and all its assets

2.13.1.7. INDICATIVE KPIS

The two primary KPIs for this Initiative are:

- Increase in perceived level of safety in the CBD
- Decrease in crime rate in the CBD

However, a few other KPIs help provide a full picture of the impact of the Safe Precinct:

2.13.1.7.1. COUNCIL

- Cost of street lighting (electricity, maintenance, etc.)
- Cost of monitoring and maintenance of CBD (by WPR and HSRS primarily)
- Number of times planning and development department (or other Council departments) utilise collected data from stages 2 and 3
- Revenue from selling of data to 3rd parties
- Number of people walking through and doing business in the CBD per month

2.13.1.7.2. CITY

- Lux measurements throughout the CBD after stage 1 as compared to current baseline
- Number of times the call buttons are utilized to call Safe City officers
- Number of times the public Wi-Fi is accessed per day or per month
- Percentage of the Ipswich population that utilizes the public Wi-Fi in the CBD

- Number of citizen complaints about the CBD

2.13.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort of this Initiative for Council will be "high", as Council is directly responsible for the entire implementation of this Initiative, across all 3 stages. As such, Council will need to: • Design the technical architecture to build on the existing Safe City camera network (with the addition of new sensors, the integration of the smart lighting grid, and a robust real-time analytics layers with a flexible business rule engine) • Work with Energex to establish a new rate and business model for the smart lighting grid in the CBD (which can leverage outcomes from the Smart Lighting Initiative) • Develop the RFPs to source the right hardware and software for stages 1 and 3 • Develop the analytics required for stage 2 (internally or outsourcing to a vendor, Fire Station 101 or the Innovation Lab) • Establish the right policies or regulations and the right standards for collection, analysis and other processing of data as described in stages 2 and 3
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Utility involvement – the incumbent utility Energex may not want to be involved in the smart lighting grid program. Without their endorsement and involvement, it will be very hard for Council to proceed with stage 1 of this Initiative. • Barrier 2: Data policies – state or federal regulations may not be favourable to the collection and processing of data as intended in stages 2 and 3 of this Initiative The following key risks are relevant for this Initiative: • Risk 1: Queensland Police involvement – the Police may not want to receive additional sources of information and alerts, given their current high volumes of work
DEGREE OF CONTROL	Ipswich City Council will drive this Initiative in its entirety and therefore has a "high" degree of influence and control. Nevertheless, Council has a very limited degree of control over the street lights which are owned and operated by Energex, and a slightly limited degree of influence over the street lights which are operated by Energex and owned by Council. Furthermore, Council may have limited degree of control over policies and regulations around data.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: Smart Lighting Initiative – the smart lighting part of this Initiative may depend on the Smart Lighting Initiative for streetlights owned and operated by Energex • Dependency 2: Smart Park Initiative – stage 2 of this Initiative depends on the Smart Park Initiative, which will develop advanced analytics to monitor and identify issues with Council -owned assets such as illegal dumping, potholes or vandalism
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Leverage Safe City platform - the Smart Park will build on Council's Health, Safety and Regulatory Services' Safe City network.
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Mankato, Minnesota – Mankato is revitalising its downtown through a major redevelopment project. In addition, the city is investing in an important safety program. They have implemented new high-definition cameras that are strategically placed throughout high traffic areas of the downtown and have installed high-powered street lights that can become extremely bright. Safety officers are able to access all the video feeds from a Command and Control centre, where they are continuously on the lookout for suspicious activity. The safety officers can directly alert and dispatch police officers to the scene. Police officers are also patrolling the area much more frequently and they are working with bar owners to reduce unsafe drinking behaviours. • Example 2: Singapore Safe City Test Bed – the Singapore government is using advanced video analytics to make its city one of the safe and most efficient in the world. They are trialling centralised public safety analytics solutions, through a command and control centre, for a precinct of the city designated as a test bed. The program was tested during two large public events in the Marina Bay

	district. They were able to predict and manage crowd behaviour, make better use of resources, respond effectively to incidents and better coordinate all government agencies involved. • Example 3: Chicago's Array of Things – similar to stage 3 of this Initiative, Chicago has deployed a sensor platform throughout the city called the Array of Things. These sensor boxes can measure temperature, pressure, light, vibrations, sound intensity, pedestrian and vehicle traffic and much more in real-time. They act as a fitness tracker of the city. The data is published openly, allowing city players to use the data to tackle issues like poor air quality, congestion or excessive noise.

Table 51. Overview of Initiative Implications: Initiative 12

2.13.3. DETAIL

2.13.3.1. CAPABILITIES REQUIRED

2.13.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Safety – Experience in public safety, analytics and policing. This experience will be vital in designing and implement the smart solutions for the safe precinct
- Project Management Skills – Experience in managing projects with tight timelines and budgets

2.13.3.1.2. PROCESS

This Initiative will have an impact on the internal processes of the Safe City branch within the Department of Health, Safety and Regulatory Services as well as on the City Maintenance team within the Department of Works, Parks and Recreation.

2.13.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
Smart Lights and Light-Poles	LED based lighting with poles that may provide other capabilities such as: • Digital signage • Ability to connect sensors/cameras, proximity network components, public WI-FI components • Help-phones
Sensors	Sensors that may be deployed across the Safe Precinct to assist in identifying security risks/incidents (e.g. noise sensors, motion sensors).
Extend Safe City	Deployment of additional cameras connected to Council's Safe City framework.

Table 52. Technical Capabilities Required by Initiative 12

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
Edge Tier and Proximity Network	Smart Lights and Sensors will exist in the Edge Tier and will need a Proximity network to be established to enable the flow of data between devices and from the devices to the Access Network.
Extend the Access Network	An Access Network link must be established to connect each particular Safe Precinct deployment to Council's enterprise landscape. This will enable the flow of data to and from the Safe Precinct.

Establish Platform Tier	The Platform tier will provide the ability to ingest raw sensor data and process that data (potentially along with other data sources) to trigger upstream events (e.g. raising an alert with Safe City operators).
Establish Analytics Tier	The Analytics tier allows relevant data to be stored and used for analytical modelling and visualisation.
Establish the Public Tier	The Public tier contains an API gateway that allows Council to interact with sensors and Smart Lighting solution/s via APIs e.g. controlling the smart lighting solution, or accepting regular updates of curated data from sensors.

Table 53. Technical Platform Enablers Required by Initiative 12

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Public Wi-Fi	Council may wish to extend its deployment of Public Wi-Fi to include Safe Precinct locations.

Table 54. ICT Programs of Work Required by Initiative 12

2.13.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program.

This Initiative has the following specific requirements for Enablers:

- Standards and Interoperability:
- Skills and Capabilities:
- Strategic Communications:

2.13.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.13.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Council could explore monetising the data obtained from social media listening and share the data with justice and social service sector.

2.13.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.14. INITIATIVE 13: SOCIAL MEDIA

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Liveability
THEME	Safety
INITIATIVE NAME	Initiative 13: Social Media



2.14.1. OVERVIEW

Social Media "At a Glance" — Liveability — Safety

A creative social media strategy will reposition Ipswich's brand and reputation by challenging residents' and visitors' pre-conceived notions of the city, including its safety and liveability. The social media strategy will fold into a broader place branding strategy for Ipswich. This initiative provides an opportunity to organize, differentiate and focus Council efforts around Ipswich's reputation.

Context

- Despite crime rates comparable to Queensland's average, there is lingering perceptions inside and outside the community about safety in Ipswich.
- The internet and social media are very powerful tools that can influence human behaviour and even culture at large.
- Ipswich can leverage social media to change the way people perceive and interpret the community.

Stakeholders

- External stakeholders: Input from external stakeholders including tourism operators, event planners, real estate agents, regional and national media, and visitor information centres.
- Customers: Input from current residents, current small-medium sized businesses (SMBs) and larger corporations, visitors/tourists, target residents and target SMBs.

Outcomes

- Change the nature of the conversation in the media and in the streets about Ipswich.
- Change internal and external citizens' perception of Ipswich.

Capabilities

- People: Competencies in project management, digital branding/marketing, place/destination branding, creative marketing, and social media.
- Process: Internal Council processes of the Department of Economic Development and Marketing, including ongoing support of social media campaign, content generation and response management.
- Technology: Social media platforms for Facebook, Twitter and Instagram.

Figure 21. "At a Glance" View of Initiative 13

2.14.1.1. DESCRIPTION

A creative social media strategy will reposition Ipswich's brand and reputation by challenging residents' and visitors' pre-conceived notions of the city, including its safety and liveability. The social media strategy will fold into a broader place branding strategy for Ipswich. This Initiative provides an opportunity to organize, differentiate and focus Council efforts around Ipswich's reputation.

2.14.1.2. CONTEXT

Ipswich is a much safer city today, with crime rates comparable overall to Queensland's average. However, given Ipswich's past, there are still lingering perceptions inside and outside the community about safety. In order to fully transform Ipswich's perception of safety, social media can play a powerful role.

Leveraging an emotional narrative is the most effective way for people to process information. As described in the Aspen Institute Prague's article "How the Internet and Social Media Are Changing Culture", the Internet and social media are very powerful tools that can influence human behaviour and even culture at large. Great examples include the significant role social media played in recent outbreaks of social resistance like the Occupy protests or the Arab Spring. The institute believes that "if the experience of printing serves as a precedent, it is likely that digital technology

will not simply intensify prevailing cultural trends but also provide resources for reinterpreting its meaning." Ipswich can leverage social media to change the way people perceive and interpret the community.

2.14.1.3. SCOPE

The scope of this Initiative, for Council, involves:

- Defining the strategy
- Designing the social media channels and materials
- Launching the social media campaign and continue to operate the channels overtime, hiring the appropriate people, as needed

Internal or Outsourced: This could all be done internally within Council or, ideally, we recommend going out to market to look for a place branding design consultancy. Once the social media campaign is set in motion, Council would need to continue to maintain it over time as a Business as Usual activity.

Target Audience: The primary audience for the social media campaign is the external community, i.e. potential future residents of Ipswich. Ipswich aims to grow and needs to continue attracting residents to the region.

Increased Engagement: The advantage of social media, in addition to allow Council to broadcast information about Ipswich, is fast and efficient engagement with citizens. This should be leveraged to the maximum potential.

Other Social Media Uses: Currently, Ipswich City Council has multiple social media channels open for various departments, with different owners, target audiences and objectives. As stated previously, this Initiative is intended primarily for non-Ipswich residents, which means it will likely not intersect with the existing channels and does not require them to change or close. Nevertheless, Council should consider consolidating all social media into one voice, making interactions with target audiences much stronger.

2.14.1.3.1. SOCIAL MEDIA STRATEGY

Key Questions: The social media strategy should aim to answer questions like these:

- What is the brand's place in the world?
- What will the city be known for?
- What are the brand's relationships?
- How can the brand be expressed visually and verbally?
- How will the brand come to life?
- How can stakeholders support the brand?
- How will the brand be kept fresh and relevant?

Key Activities: The strategy team needs to:

- Understand current perceptions towards Ipswich
- Identify target markets and demographics
- Identify and assess competitors
- Test the city's positioning
- Monitor performance

2.14.1.3.2. SOCIAL MEDIA PERSPECTIVES

This will involve primary and secondary research including face-to-face interviews, community forums, focus groups and workshops. The strategy should bring in perspectives such as:

- Internal stakeholders (examples: Department of Economic Development, CBD revitalization team)

- External stakeholders (examples: tourism operators, event planners, real estate agents, regional and national media, visitor information centres)
- Customers (examples: current residents, current SMBs and larger corporations, visitors/tourists, target residents, target SMBs)
- Competitors (examples: regional competitors like Brisbane, Toowoomba or Logan, national competitors such as Parramatta, or international competitors like Columbus, USA or Milton Keynes, UK)
- Ipswich's strengths and assets (examples: heritage, proximity to Brisbane, amount of space, housing affordability, natural estates, manufacturing)
- Broader market trends (higher urban density, urbanpreneurship, innovation, advanced manufacturing)

We envision a social media strategy that is creative and unique – that will gain a following and differentiate Ipswich in the eyes of its residents and visitors. See examples under Section 13.4.6:

2.14.1.3.3. SOCIAL MEDIA GUIDING PRINCIPLES

Here are a few guiding principles for the social media strategy from Efe Sevin, Assistant Professor of Public Relations at Kadir Has University in Turkey, who recently published "Branding Cities in the Age of Social Media: A Comparative Assessment of Local Government Performance":

- Two-way communication: Communication needs to be two-way, transparent and honest. Social media makes it possible to engage with people, to use friendly, common language, and to reach everybody.
- Think local: Social media can help humanise cities. By interacting with individuals or by using a language that reflects the local characteristics, cities can establish unique identities for themselves on social media.
- Long-term impact: Social media's fast-pace does not change the fact that branding is a long-term process. Branding is about building a reputation, so the return on investment will take several years.
- Place branding: Place branding is not branding – it is a distinct field of study. In practice, though, cities tend to follow corporate advertising and marketing practices and employ companies that do not specialize in place branding.
- Social media is a tool: The focus should not be on specific communication platforms – social media channels are only tools. The focus should be a strong communication strategy that fits the city's branding needs and then choose the communication outlets and tools.

2.14.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- External stakeholders: Solicit input from external stakeholders such as tourism operators, event planners, real estate agents, regional and national media, and visitor information centres, among others.
- Customers: Solicit input from current residents, current SMBs and larger corporations, visitors/tourists, target residents, and target SMBs, among others.

2.14.1.5. RANGE OF BENEFITS

2.14.1.5.1. COUNCIL

This Initiative realistically generates only long-term benefits for Council:

- Increased attraction of new residents and new businesses to Ipswich
- Increased resident and business rates for Council
- Attract residents from higher socioeconomic backgrounds
- Attract higher number of small and medium sized businesses

- Attract bigger corporations to the region

2.14.1.5.2. CITY

A social media strategy that showcases Ipswich as a highly amenable, liveable and great place to live would be beneficial to both current residents and prospective residents:

- Increased pride in Ipswich, including increased "sense of place" and meaningful attachment to the community
- Stronger bonds between members of the community
- Increased attraction of new residents, from Australia and beyond, to Ipswich

2.14.1.6. INDICATIVE KPIS

The primary KPI revolves around a change in perception of Ipswich:

- Polling of both Ipswich residents and the broader SEQ region on their perception of Ipswich (comparative year-on-year)

This could be done through YouGov or other channels. YouGov uses a large online community to ask Americans how safe or unsafe they felt in each of the ten largest US cities. A similar approach could be used to understand trends in perception about safety in Ipswich.

However, there are also other indicators that could act as proxies to this information:

- Number of followers or unique visitors to the social media channels selected as part of this social media strategy
- Number of articles showcasing or other references made in media to Ipswich's creative social media strategy
- Performing sentiment analysis across multiple social media channels and traditional media channels, change in the number of positive and negative statements about Ipswich

These indicators can serve as a supplement to the polls to provide a broader understanding of the impact of this Initiative.

2.14.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort required to implement this Initiative, whose responsibility falls squarely under Council, would be "medium". Council will need to: • Create an RFP to go out to market to source this work from a place branding, digital branding, social media strategy consultancy or similar • Work with the vendor to design a creative and high impact social media strategy and timeline • Work with the vendor launch the social media strategy and campaign • Depending on the timeline set out during the design phase of the project, work with the vendor to transition all responsibilities of the social media strategy to Council employees • Maintain the social media strategy overtime Depending on the exact nature of the social media strategy, it may have varying degrees of impact on Council processes, especially for the marketing department. A higher impact on process inherently means a higher level of effort to integrate the Initiative into Council's way of working.
CHALLENGES AND RISKS	The following key barriers are relevant to this Initiative: • Barrier 1: Stretched business case – the main barrier to the launch of the social media strategy is that Council will be making an investment in the event. It is hard to predict and measure the tangible return on investment. The following key risks are relevant to this Initiative: • Risk 1: Intangible outcomes – the lack of direct tie-in from the social media strategy to the intended outcomes (change in perception and higher attraction of residents and businesses) could lead to abandonment of this effort before it kicks off or while it is already running and benefits being realised are hard to prove. Council needs to embrace that this is a long-term investment.

DEGREE OF CONTROL	Council's degree of control for this Initiative is "high" as definition and implement of the strategy is fully under the responsibility of Council.
DEPENDENCIES	The following key dependencies are relevant to this Initiative: • Dependency 1: Fold into overall branding strategy – the social media strategy needs to build on and work within the parameters set by Council's overall marketing strategy, which is currently be
OVERALL ASSUMPTIONS	There are no specific assumptions that have been taken into consideration for this Initiative.
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Humans of New York -it could follow a touching narrative similar to Brandon Stanton's Humans of New York, which provides intimate stories and photos of people on New York's streets and which provides "a comfort, an affirmation, a validation in being exposed to people with similar problems", and has gone on to garner 17 million followers on Facebook and sell two bestselling books. • Example 2: Upworthy – it could follow an uplifting narrative similar to Upworthy, the social sharing site for emotionally resonant videos and links, is the "fastest growing media site of all time," according to Fast Company. It generated 8.7 million unique monthly visitors in its first 6 months. • Example 3: Queensland Police – it could follow a humour and usefulness narrative like Queensland Police, whose Facebook and Twitter social media channels were a lifeline during the Queensland floods of 2011 and is now the most popular police Facebook page in the world. Over just 3 days in January 2011 the number of people following the Queensland Police Facebook page grew from 20,000 to 160,000 and now it is followed by 1 in 10 Queenslanders. See the case study at the end of this section for another great example of a social media campaign, for Iceland.

Table 55. Overview of Initiative Implications: Initiative 13

2.14.3. DETAIL

2.14.3.1. CAPABILITIES REQUIRED

2.14.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Project management
- Digital branding and digital marketing
- Place/destination branding
- Creative marketing
- Social media

2.14.3.1.2. PROCESS

This Initiative will have an impact on the internal processes of the Department of Economic Development and Marketing, as the marketing and digital teams will need to provide ongoing support of the social media campaign, creating and/or finding the content, pushing out content, and responding to posts.

2.14.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
Social Media Platforms	• Facebook

• Twitter • Instagram

Table 56. Technical Capabilities Required by Initiative 13

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
None identified	

Table 57. Technical Platform Enablers Required by Initiative 13

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
None identified	

Table 58. ICT Programs of Work Required by Initiative 13

2.14.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative does not have any additional specific requirements for Enablers.

2.14.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.14.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: The social media data gathered by Council can be shared with existing and new commercial businesses to identify demand, find unique business propositions, and anticipate business issues.

2.14.3.5. OUT OF SCOPE

This Initiative does not include the overall place branding strategy and social media strategy overall for Ipswich at part of its scope.

2.14.3.6. CASE STUDY

In 2008, Iceland declared bankruptcy and fell into a long and drawn out economic depression. The country's image was further negatively impacted, considering most people already knew very little about the island. At the bequest of the Icelandic Tourist Board, they solicited the services of Takk Takk, a marketing organisation. The organisation was charged with using social media to attract attention to Iceland as a tourism destination. They launched a campaign in late 2009 called "Iceland Wants to Be Your Friend". As Takk Takk describes it:

"The big idea behind Iceland Wants to Be Your Friend is that Iceland — a remote island in the middle of the Atlantic, millions of years old, home to many humans, mountains, waterfalls and sheep — has somehow discovered "The Internets" and how to use "them" to talk to people. As you would expect from a very old island in the middle of the ocean, it talks a bit funny, and doesn't always understand its human friends very well. (And of course it uses Courier.)" ("Iceland Wants to Be Your Social Media Campaign", Takk Takk)



The campaign introduces itself to everyone through icelandwantstobeyourfriend.com in a quirky letter, befitting the Iceland persona that Takk Takk aimed to create, that looks like this:

The social media campaign spills over across Facebook, Twitter, Tumbler, Vimeo, Flicker and a blog. All, except the last, are written in first-person, as the Iceland island persona.

The campaign has been extremely well received, with multiple references across media outlets, on Twitter and by social media thought leaders voicing their delight over the cleverly crafted Icelandic campaign. In fact, the World Economic Forum also placed Iceland as the world's best welcoming holiday destination in 2013.

More importantly, while not attributable only to the campaign of course, the number of foreign visitors to Iceland increased by nearly 16% in 2012. That year, tourism traffic at the capital's international airport broke all records to date, with 2.4 million passengers, 25% of which were new visitors from overseas.

2.15. INITIATIVE 14: HEALTH LIVING LAB

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Liveability
THEME	Heath
INITIATIVE NAME	Initiative 14: Health Living Lab



2.15.1. OVERVIEW

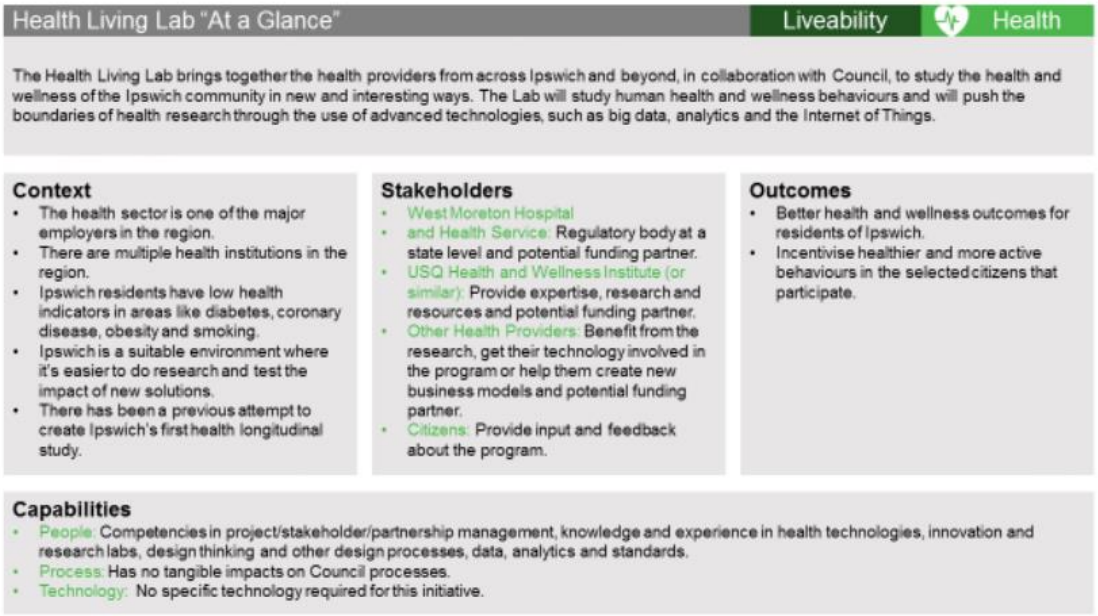


Figure 22. "At a Glance" View of Initiative 14

2.15.1.1. DESCRIPTION

The Health Living Lab brings together the health providers from across Ipswich and beyond, in collaboration with Council, to study the health and wellness of the Ipswich community in new and interesting ways. The Lab will study human health and wellness behaviours and will push the boundaries of health research through the use of advanced technologies, such as big data, analytics and the Internet of Things.

2.15.1.2. CONTEXT

Ipswich has a convergence of multiple health-related components that make it an ideal testbed for health-related initiatives:

- The health sector is one of the major employers in the region and there are a multiple health institutions (from small scale providers to large hospitals) in the region
- Ipswich residents have low health indicators in areas like diabetes, coronary disease, obesity and smoking
- The size of the city and the strength of the community's connectedness creates an environment where it is easier to do research and test the impact of new solutions

- There had previously been an attempt to create the first health longitudinal study of its kind in Ipswich.

This Initiative wishes to pick up on the momentum of the longitudinal study project, leveraging the existing strength of health in the community and add in new technologies such as the Internet of Things to create a one-of-a-kind health and wellness Lab.

2.15.1.3. SCOPE

This Initiative is scoped around the successful launch of the Health Living Lab. This primarily encompasses launching one major study or program. After that, the Health Living Lab turns into a Business as Usual Activity.

2.15.1.3.1. HEALTH LIVING LAB CHARACTERISTICS

The partners involved in this Initiative would initially be West Moreton Hospital and Health Service and USQ Health and Wellness Institute. Other partners could include: regional hospitals, private health providers, health insurance providers and health technology companies.

The Lab could work out of Fire Station 101.

2.15.1.3.2. HEALTH LIVING LAB DEVELOPMENT PROCESS

- Council will bring in founding partners (i.e. West Moreton Hospital and Health Service and USQ Health and Wellbeing Institute)
- Partners will collaboratively decide on a governance structure with roles and responsibilities of partners
- Partners will collaboratively decide on the initial lighthouse study or program (see example below)
- Partners will collaboratively bring together the required funding for the initial program
- Partners will collaboratively launch the initial program
- Council will continue to work to attract new partners to the Lab, with the help of West Moreton Hospital and Health Service and USQ

2.15.1.3.3. HEALTH LIVING LAB EXAMPLE LIGHTHOUSE PROGRAM

The Health Living Lab could start by selecting to study children with Type II diabetes through a collaborative agreement with a local school. Each child would be given a fitness tracker to collect data from their daily behaviours (including biometric data such as heart rate, steps, daily activity levels, calories burned, sleeping patterns and more). Furthermore, the Lab could collect data such as eating habits and detailed physical activity by extracting data on the cafeteria food and physical education classes attended by the children in that particular school. This data would be used for analysis by top health and wellness researchers, looking for patterns that cause and affect diabetes. More importantly, the researchers could test out a wide range of hypotheses, changing small variables in the children's behaviours (whether through food, fitness, sleep, etc.) to study the impact of these interventions on the children's health.

2.15.1.3.4. HEALTH LIVING LAB ALTERNATIVE APPROACHES

There is possibility that the Health Living Lab fails to launch because West Moreton Hospital and Health Service is not brought on board and Council is unable to drive any programs in the health space due to regulation. Alternative approaches for this Initiative include:

- Explore other partnerships that will allow Council to drive research in the health space. This may involve working with federal government, working with other local Council s or working with a university already doing research in that space.
- Pivot towards alternative initiatives that had been considered during the program's design process, such as:
- Health Precinct: Develop a world-class health precinct through clear zoning with premiere medical facilities that utilise smart buildings, etc. and that have strong digital infrastructure, working with caregivers to

consolidate an online reservation system for health appointments, allowing professionals, working parents, elderly, diabetes patients, etc. to easily access and manage their health services and consolidating health record information across the hospitals, primary care facilities and other health organisations to create a 360 degree view of patients.

- Food: Online platform to share/exchange grown and cooked healthy meals, leveraging existing food exchange platforms such as Sprig, Blue Apron or Hungryroot and developing a healthy food program that includes farmers markets, CSAs, community gardens and nutritional educational programs

2.15.1.3.5. FUTURE OF THE HEALTH LIVING LAB – LEADING INTO AN R&D LAB

Building on the momentum of the health living Lab, which would begin to bring together multiple players from across the health spectrum – patients, small scale health providers, health technology providers, larger health research organisations, large health institutes and health insurance providers, a research and development Lab should be developed to continue to create new patents and solutions around health. The Health Living Lab will generate vast amounts of data that should be utilised by a broad range of players, even beyond health, to bring to market innovative solutions that will improve the lives of Ipswich residents and beyond.

2.15.1.3.6. VEHICLE OF CONTINUOUS INNOVATION

This Initiative constitutes a Vehicle of Continuous Innovation. By creating a structure and environment for the collection of data and the application of research around health, the Health Living Lab provides a space for innovation to grow. Building on the success of the first research program implemented by the Lab, more partners and more funding will undoubtedly be attracted to launch successive programs. Furthermore, if an R&D Lab is successfully built on top of the Health Living Lab, creating new patents and technologies on the learnings of the Lab's programs, this vehicle will continue to yield even more innovation.

2.15.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- West Moreton Hospital and Health Service: Health is regulated at a state level so this regulatory body must join the Lab in order to be able to play in this space in Ipswich. We will also approach QH to help fund the Lab.
- USQ Health and Wellness Institute (or other educational and research institutions): The educational/research institutions will bring in the expertise, research and resources to guide the program of the Health Living Lab. We will also approach these institutions to help fund the Lab. One great example is CSIRO, as they have a big focus area in health, in terms of understanding and addressing illnesses, and even developing solutions like an app for cardiac patients.
- Other Health Providers: We expect other health providers to become involved in the Lab as the research could benefit them, they could get their technology involved in the program or could help them create new business models. We will approach health providers to contribute funding as well for the Lab.
- Citizens: Citizens, or a particular sub-set of citizens, will be involved in the lighthouse program, providing input and feedback.

2.15.1.5. POTENTIAL OUTCOMES

These are the primary outcomes of the Health Living Lab:

- Lead to better health and wellness outcomes for the residents of Ipswich
- Incentivize healthier and more active behaviours in the selected citizens that participate

2.15.1.6. RANGE OF BENEFITS

2.15.1.6.1. COUNCIL

Council will benefit from this program in a few different ways:

- Attract more citizens choosing to move to Ipswich overtime and collateral benefits in rates and an investment in the city
- Attracting more businesses to move to the city to build research and development
- Growing new businesses in the health space
- Increased rates for Council from an economic standpoint.
- Increased revenue through data monetisation

2.15.1.6.2. CITY

The city will benefit in the following ways:

- Increased health and healthy behaviours in the community
- Increased awareness and understanding for people living with health conditions
- Increased active lifestyles that move residents towards greener forms of mobility and associated reduction in carbon emissions
- Decreased healthcare (at an individual and community level)

2.15.1.7. INDICATIVE KPIS

Ultimately, overtime, the Health Living Lab aims to decrease negative health behaviours, so the primary KPI is:

- Obesity, diabetes, coronary disease and smoking rates in Ipswich

Other indicators that demonstrate that the Health Living Lab is having a tangible impact on the health of the community are:

- Percentage of people engaging in physical activity
- Percentage of people choosing to walk or bike for transportation
- Number of steps taken on average by all wearable users
- Average BMI in patients
- Average annual healthcare costs per capita
- Purchase of organic fruits and vegetables

While these are some sample key performance indicators, the right indicators will be highly dependent on the exact nature of the first program to be implemented as part of the Health Living Lab. For example, a program dedicated to reducing diabetes in children should select indicators around a decrease in the average BMI or an increase in the number of vegetables that the children eat per day. While a program dedicated to a reduction in coronary disease among the elderly, indicators may include increase in average number of steps taken per day or reduction in hospital visits.

2.15.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort required to launch the Health Living Lab and implement the first program will be "medium". Council will help with: • Bring together the right partners, especially the researchers and health specialists, and funding to launch the program • Scope the initial lighthouse program, including the health outcome to achieve, the selected users/patients, the technology and the partners • Address regulatory, privacy and other legal concerns as they relate to local, state and federal policies • Establish the right program governance for the length of the program, including collection of data, development of hypotheses, delivery of interventions, etc. • Select and bring in the right vendors to deliver on the program from a technology or other required perspective • Manage the program once it is launched to track health outcomes, including interventions, over time
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Regulations – the main barrier for the health living Lab Initiative will revolve around regulations, especially since health is regulated in Queensland at a state level. Council will need to liaise with Queensland to gain approval for establishing the Health Living Lab and will need to receive endorsement for them, from a legal perspective, to collect health data about the patients selected for the lighthouse program. The following key risks are relevant for this Initiative: • Risk 1: Successful lighthouse program – one area of risk revolves around successfully delivery of the lighthouse program, ensuring uptake in the selected patients and continued progress to measure results over time. Robust change management work must run in parallel to the technological and research delivery of the program to ensure the patients are fully involved in and contributing meaningfully to the program. For example, if wearable fitness trackers are provided to children in a selected school to study diabetes in children, the selected children must understand how to use the tracker, when to wear it, how to care for it, etc.
DEGREE OF CONTROL	For this Initiative, Council has a relatively "low" level of control, as the health space is governed by the state. Council will only act as a broker to bring the right parties together.
DEPENDENCIES	This Initiative does not have dependencies on any other initiatives in the Smart City program or any existing initiatives within Council.
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Council involvement - Council can be involved in and create programs in the health space, of course with involvement from the state regulatory body
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: Jiff and Accenture – Accenture is working with Jiff, an enterprise health benefits platform, to provide employees in the United States with fitness trackers and reward them on healthy behaviours. • Example 2: University of California, San Francisco Study – the university is doing a study with 60 teenagers to improve their diabetes using Fitbit devices. The adolescents were given fitness trackers to track their physical activity and diets and an associated app that recommends healthier behaviours. • Example 3: London South Bank University – the University's Health and Wellbeing Institute works with public and private health providers to innovation in the healthcare space. Among other programs, they have created the highly successful Fitflop technology and company. This is a great example for Council to understand a governance structure and operating model that works. • Example 4: Fjord and Kiqplan - Fjord and Fitbug have worked together to create 12 week fitness programs that engage people to be healthier through the Fitbug wearable (from Health Baby Bump to Beer Belly Blaster). Using the data collected by the fitness wearable, it turns the information into relevant daily, weekly and monthly goals including targets for activity, nutrition and lifestyle.

Table 59. Overview of Initiative Implications: Initiative 14

2.15.3. DETAIL

2.15.3.1. CAPABILITIES REQUIRED

2.15.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Project/stakeholder/partnership management
- Knowledge and experience in the health industry, particularly around health technology and Internet of Things
- Knowledge and experience in innovation and research labs
- Knowledge and experience in design thinking and other design processes
- Knowledge and experience in data, analytics and standards

2.15.3.1.2. PROCESS

This Initiative has no tangible impacts on Council processes.

2.15.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
None identified	

Table 60. Technical Capabilities Required by Initiative 14

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
None identified	

Table 61. Technical Platform Enablers Required by Initiative 14

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
None identified	

Table 62. ICT Programs of Work Required by Initiative 14

2.15.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative does not have any additional specific requirements for Enablers.

2.15.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.15.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Depending on the genesis of a particular start-up that is successful, especially if Council makes an investment, Council could benefit from equity in the start-up or from IP royalties from the start-up.
- Opportunity 2: Council will need to work out a shared revenue model with other partners in the Lab to understand and share the revenue streams built on the data generated by the startups' solutions.

2.15.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.15.3.6. CASE STUDY

2.15.3.6.1. JIFF

As described in an article on Wearables.com: "Jiff's enterprise health benefits platform saves employers money by organizing and curating relevant vendors for each employee. The program allows employees to choose what wearables (FitBit, JawBone, Apple Watch) will suit their lifestyles, all of which can be purchased through Jiff's online store. Jiff then gives employees incentives to use those wearables on a regular basis. If employees meet their goals, they receive rewards like vouchers and credit toward healthcare costs. Not only does Jiff customize its platform for each company it works with, but each company can customize rewards for employees. For instance, the incentives given to an employee with diabetes may look nothing like those assigned to a non-diabetic."

They believe in the creation of a digital health ecosystem underpinned by an enterprise-grade marketplace. "This new-and-improved marketplace will be elegant and efficient, seamlessly connecting diverse employee populations to the full-breadth of available point solutions, through a simple, engaging interface. It will provide the right incentives to motivate engagement with the right tools for the right people at the right time. It will be flexible enough to meet the diverse needs of many employers and populations, while also absorbing changes to the ecosystem, such as new entrants, new solution categories, and even new benefits paradigms."

Jiff looks at 4 key dimensions that will drive the uptake and success of this new enterprise-grade marketplace:

- Rapid Learning through Big Data: "When analysed properly, the cycle time between hypothesis, insight, and action will shorten dramatically—from years and months to days and minutes—giving human resources teams powerful tools to manage healthcare value. With an employer-managed hub, we can now capture all that data to build a holistic understanding of each individual. The hub will aggregate data from health claims, point solutions, self-entered information, HR and payroll systems, and more. These data sources—collected from their own employees and from other employees across the world—will help HR teams build profiles of individuals and of populations to understand what types of interventions work for whom."
- Personalized Incentives: "The same data that will supercharge rapid learning will also amplify the power of financial incentives by making them more personalized. The opportunity of personalized incentives is to understand what you want and what you need. We can then provide each individual with a unique and optimized incentive, one that yields the greatest behaviour change at the lowest cost."
- Benefits as a Service: "With the hub, employers will be able to add and remove new programs, as easily as Lego blocks. the hub will make it easy for employers to target specific groups for pilot tests, and then, if desired, scale them up quickly to their full population. Targeting a program to a specific subpopulation will be as simple as selecting a segment from a dropdown menu, toggling a few configuration settings, and clicking "go". This will take much of the cost out of pilot testing, and even allow forward-thinking benefits executives to A/B test different types of programs across sub-populations."
- The Expanding Hub: "Over time, the hub will become the first stop for all benefits, HR, and health related questions, much as Google has become the first stop for searching the internet. To become fully entrenched as this first-stop, the hub will need to be engaging, addictive, and useful. In other words, it must provide a consumer-grade experience."



Figure 23. Initiative 14: Case Study Jiff

2.15.3.6.2. LONDON SOUTH BANK HEALTH AND WELLBEING INSTITUTE

Research, Enterprise and Innovation is an integral part of London South Bank University and will continue to be a major focus for its future. REI acts as a gateway for organisations to access the university, its facilities, people and expertise.



Figure 24. Initiative 14: Case Study London South Bank Health and Wellbeing Institute

From an internal perspective, REI provides research support to professors, students and alumni. REI works with the following stakeholders:

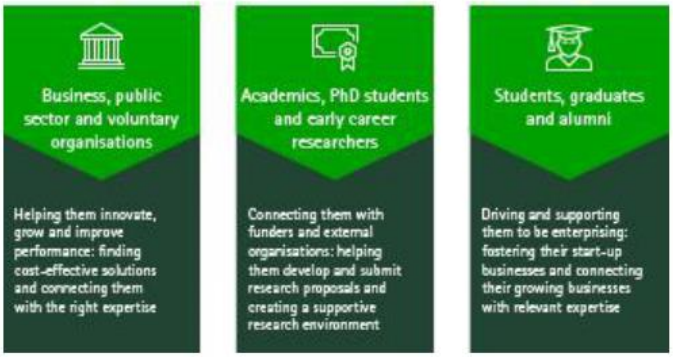


Figure 25. Initiative 14: Case Study London South Bank Health and Wellbeing Institute Stakeholders

The Health and Wellbeing Institute is housed within the broader Research, Enterprise and Innovation branch of the university. As they define it, "the Health and Wellbeing Institute is an interdisciplinary and inter-professional centre of excellence working towards improving the health status of individuals, communities and nations. The Institute combines a number of expert disciplines across LSBU in a single unit, helping foster novel collaborations, research partnerships and innovative enterprise activities. The focus of the Institute is to improve the health and wellbeing of populations through impactful interventions, research and policy guidance. The Institute brings together a broad range of expertise, which includes nursing, occupational therapy, social care, psychology, sociology, the creative industries, design, communication technologies, engineering, sports science, international development, policy and data science."

The Health and Wellbeing Institute focused on 4 key Themes:



Figure 26. Initiative 14: Case Study London South Bank Health and Wellbeing Institute Themes

As an example, "research into 'gait efficiency' carried out by specialists at LSBU's Sports and Exercise Research Centre helped develop 'Microwobbleboard™' technology. This became the unique feature of the now globally successful health and wellness sandal, the FitFlop™." FitFlop has gone on to sell over 17 million pairs of sandals in in over 52 countries.

In fact, "the Sports and Exercise Research Centre within the Health and Wellbeing Institute has delivered over £1.8 million in research, published over 166 peer reviewed publications and written over 40 commercially confidential reports for our partners over the last 5 years."

2.16. INITIATIVE 15: APPLICATION STUDIO

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Liveability
THEME	Citizen Engagement
INITIATIVE NAME	Initiative 15: Application Studio



2.16.1. OVERVIEW

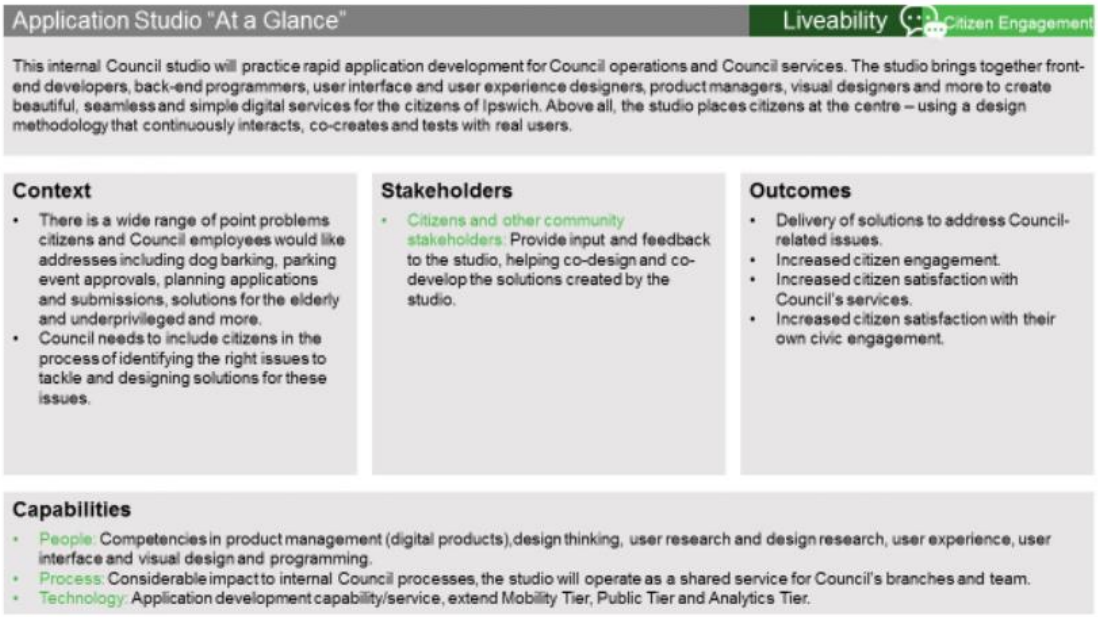


Figure 27. "At a Glance" View of Initiative 15

2.16.1.1. DESCRIPTION

This internal Council studio will practice rapid application development for Council operations and Council services. The studio brings together front-end developers, back-end programs, user interface and user experience designers, product managers, visual designers and more to create beautiful, seamless and simple digital services for the citizens of Ipswich. Above all, the studio places citizens at the centre – using a design methodology that continuously interacts, co-creates and tests with real users.

2.16.1.2. CONTEXT

This Initiative arose from the following 4 key drivers:

- Design thinking comes of age: There is an increasing trend worldwide, which started with commercial organisations, but has spread to governments, to bring design thinking in house (in effect, inside the organisation). As Harvard Business Review describes in their article "Design Thinking Comes of Age", "There's a shift under way in large organisations, one that puts design much closer to the centre of the enterprise. But the shift isn't about aesthetics. It's about applying the principles of design to the way people work…A set of principles collectively known as design thinking—empathy with users, a discipline of

prototyping, and tolerance for failure chief among them—is the best tool we have for creating those kinds of interactions and developing a responsive, flexible organisational culture."

- Embracing agile: Furthermore, in the May 2016 issue, HBR also talks about "Embracing Agile", explaining that "Agile innovation methods have revolutionized information technology. Over the past 25 to 30 years they have greatly increased success rates in software development, improved quality and speed to market, and boosted the motivation and productivity of IT teams.…Now agile methodologies—which involve new values, principles, practices, and benefits and are a radical alternative to command-and-control-style management—are spreading across a broad range of industries and functions and even into the C-suite."
- Wide range of point problems: There are a plethora of point problems that citizens and Council employees would like addressed, including dog barking, parking, event approvals, planning applications, planning submissions, solutions for the elderly, solutions for the underprivileged and more. It was not enough to try to address just one or even two of these issues; the application studio, instead, creates a structure and a process to address all of these issues, and all the new ones that will arise in the future.
- Need to involve citizens: Furthermore, across Council, all employees believe strongly in incorporating the viewpoints of citizens. How will Council know if it is addressing citizens' issues except by asking them? How will Council know the best ways to address citizens' complaints except by asking them? Therefore, the application studio is premised on the inclusion of citizens in the process of identifying the right issues to tackle and designing solutions for these issues.

This Initiative creates a channel to address all point issues overtime in a way that generates increasingly greater citizen involvement, by bringing design thinking in house and embracing agile.

2.16.1.3. SCOPE

The scope of this particular Initiative is the establishment or launch of the studio and the successful implementation of 2 initial digital solutions. As such, the scope of this Initiative includes:

- Decide the governance and operational structure of the studio
- Describe the roles and associated skills required in the studio
- Outline the design process for the studio
- Recommend the two initial digital solutions to be developed by the studio

Overtime, the studio will adapt and evolve, depending on the strengths and weaknesses that it identifies in the delivery of its first two digital solutions, but the key objective of this Initiative is ensuring the studio is up and running.

2.16.1.3.1. KEY OBJECTIVES OF THE STUDIO

- Identify the key use cases that would benefit from a digital revamp in providing better services to the citizens and visitors of Ipswich
- Develop use case designs and working prototypes for selected use cases to demonstrate them in a tangible way
- Build a lean prototyping process and capability that can be applied to a wide range of use cases

2.16.1.3.2. KEY ACTIVITIES OF THE STUDIO

- Build a rapid prototyping capability that can translate defined use cases into working proofs of concept
- Create detailed definitions of the user journeys through field research, street testing visual story boarding, user interactions and information flows
- Develop low and hi fidelity mock ups of the proof of concepts which can include wireframes, video walk throughs, UI sketches and UI mock-ups. In the case of physical objects, it could include early prototype builds to test functionality

- Develop vidual design and UI builds which include defining the design principles, application of brand guidelines and development of UI components
- Build Minimum Viable Products including UI and functional components (the MVP would build on the first iteration of the PoC)
- Conduct field testing of the MVP in the field environment with real users

2.16.1.3.3. KEY CHARACTERISTICS OF THE STUDIO

- Civic Innovation Branch: The studio will be the civic innovation branch within Council. Cities around the world are adopting this approach of internalizing and bringing design and agile delivery in-house.
- Agile Delivery: The team will embrace rapid development principles such as agile and lean to accelerate development, experimentation and fail-fast style to produce better products and services, faster, will always think about reusability, to quickly assemble new applications using existing code and APIs to increase operational efficiency and transform customer experiences and, most importantly, create a culture of user-centricity, where the citizen, or end-user, dictates the product experience.

2.16.1.3.4. KEY PRINCIPLES OF THE STUDIO

Based on the US government's Digital Service agency, Council will leverage the "Digital Service Playbook":

Digital Service Play

1. Understand what people need
2. Address the whole experience, from start to finish
3. Make it simple and intuitive
4. Build the service using agile and iterative practices
5. Structure budgets and contracts to support delivery
6. Assign one leader and hold that person accountable
7. Bring in experienced teams
8. Choose a modern technology stack
9. Deply in a flexible hosting environment
10. Automate testing and deployments
11. Manage security and privacy through reusable processes
12. Use data to drive decisions
13. Default to open

Example Design Process for the Studio

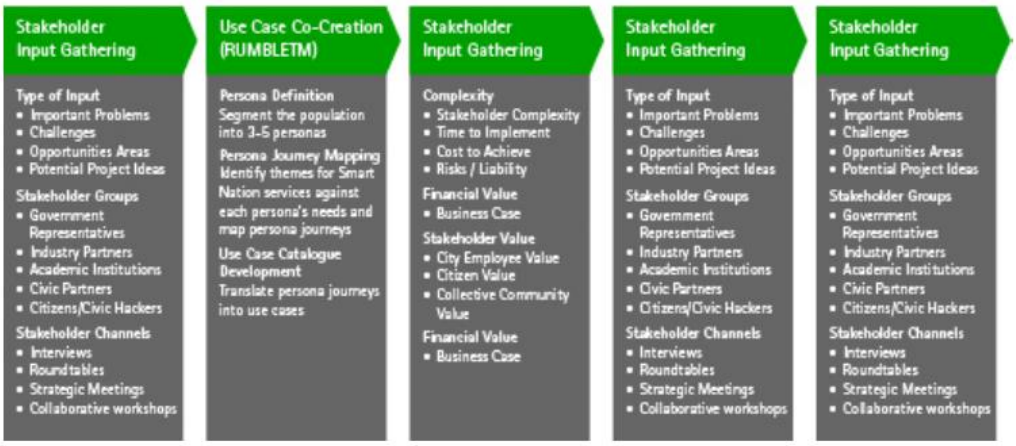


Figure 28. Initiative 15: Example Design Process

Example Deliverables and Outcomes of the Studio

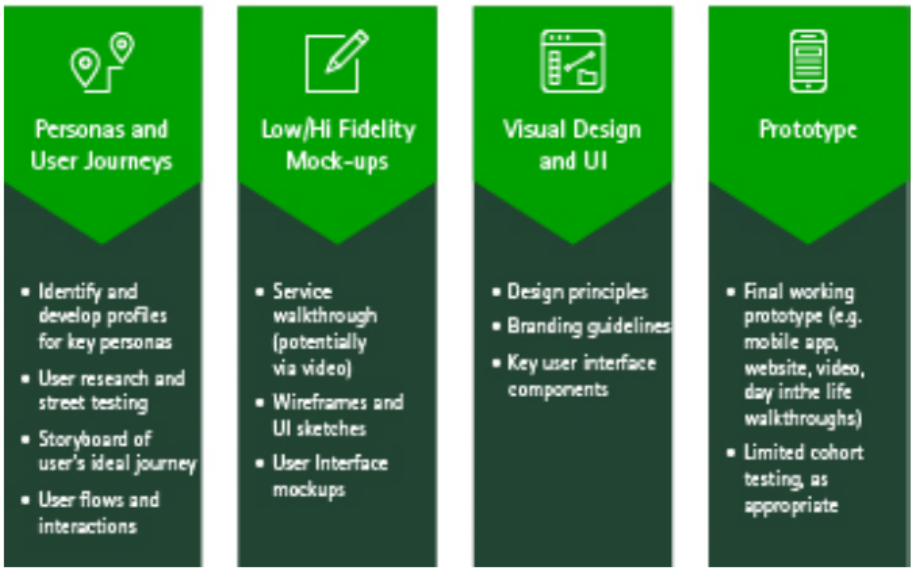


Figure 29. Initiative 15: Example Deliverables and Outcomes

2.16.1.3.5. VEHICLE OF CONTINUOUS INNOVATION

This Initiative constitutes a Vehicle of Continuous Innovation as it creates a structure and environment for innovation within Council. The studio will continuously improve on and innovate around Council's services. Overtime, the studio will spin out a variety of point solutions across a wide range of Council -related services.

2.16.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- Citizens and other community stakeholders: The studio is primarily intended to increase engagement with citizens. The studio is meant to help Council learn how to best engage with citizens and how to bring them into our processes. As such, these community stakeholders will provide input and feedback to the studio, helping co-design and co-develop the solutions created by the studio.

2.16.1.5. POTENTIAL OUTCOMES

The following key outcomes are relevant for this Initiative:

- Delivery of solutions to address Council -related issues
- Increased citizen engagement
- Increased citizen satisfaction with Council's services
- Increased citizen satisfaction with their own civic engagement

2.16.1.6. RANGE OF BENEFITS

2.16.1.6.1. COUNCIL

The main benefits of the studio for Council are:

- Deliver new Council digital services
- Improved digital services at a lower cost
- New skills and capabilities that can be harnessed throughout Council

- Channel for Council to recruit and hire young, digitally-savvy and innovative employees
- Improved talent and potential of Council's human capital

2.16.1.6.2. CITY

From the citizens' perspective, they will gain:

- New digital services that work well for their needs
- Ability to be involved with Council and the way Council provides services
- Visibility into the way Council operates
- Ability to guide the discussion, influencing on whether Council provides a dog barking app or a parking app, for example
- Increased efficiency in utilization of citizen rates

2.16.1.7. INDICATIVE KPIS

These are a few sample indicators to demonstrate the health and success of the studio:

- Number of proof of concepts created
- Measuring progress through a burndown chart (following agile methodology)
- Number of successfully completed design or development sprints
- Number of citizens engaged in the design process (including testing)
- Level of satisfaction of citizens engaged in the design process
- Number of launched digital services (online, app, other)
- Number of downloads/users for launched apps
- Number of unique visitors for launched online services
- Percentage of people that utilise new digital service vs. existing analogue counterpart (if applicable)

2.16.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort required to launch the studio is "low", relating primarily to hiring the right people. If hiring is done well, the main product manager or lead designer can put together the right design process. All other effort is minimal – relating to providing the right space and tools for the team to design, bring in citizens and develop the digital products.
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Engaging with citizens - the main barrier to the successful launch and delivery of the studio is overcoming Council's reticence to engage citizens as part of the studio's design and testing process. The success of the studio hinges on the designers ability to connect with citizens, listen to their needs and work alongside them to create something of value for them. • Barrier 2: New ways of working - Council must be ready to embrace this new way of working, engaging citizens in a much more proactive and systematic way. Council must be ready to let go of any presuppositions on how it will work, or how successful the engagements will be and must not impose legal or other requirements for citizens that wish to be involved, thereby hindering their willingness to do so. The following key risks are relevant for this Initiative: • Risk 1: Strong team - It is important to hire the right lead designer and/or product manager – people with extensive experience in this type of environment and product development. They will be able to guide the studio and its design process to deliver promising results from the get go.

	• Risk 2: Quick wins – If the studio does not generate healthy results early on, citizens may quickly become less willing to be involved in the design process and Council may move to quickly shut down the studio.
DEGREE OF CONTROL	For this Initiative, Council has a very "high" level of control, as the studio sits entirely within Council.
DEPENDENCIES	This Initiative does not have dependencies on any other initiatives in the Smart City program or any existing initiatives within Council.
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Start small – it is assumed that the studio will start out as a small team, with the minimum required roles to launch digital products (likely 3-5 people). Overtime, depending on the delivered results, the continued relevancy of digital services to Council and the desire of Council, the team may grow further. Or, perhaps, instead of growing to become a larger shared services organisation, the digital roles may be embedded in each department. These are questions to be pondered later in the growth cycle of the studio, at least 1-2 years into its launch.
LEARNING FROM OTHERS	• Example 1: The Mayor's Office of New Urban Mechanics – a network of civic innovation offices that explores "how new technology, designs and policies can strengthen the partnership between residents and government and significantly improve opportunity and experiences for all. While the language may sound new, the principles of New Urban Mechanics – collaborating with constituents, focusing on the basics of government, and pushing for bolder ideas – are not." One of the best examples within the network is in Boston. • Example 2: United States Digital Services – even the US federal government has jumped on board this trend, launching US Digital Service in August of 2014, founded by a direct edict from President Obama, a self-defined start –up intended "to bring together the best technology, design, and government talent." The USDS has created new digital services for veterans, for immigration, to obtain federal college loans, a college scorecard to help young citizens choose the best college for them, and more. • Example 3: San Francisco Mayor's Office of Civic Innovation – this department is charged with bringing new ideas, tools and approaches to their government. This includes projects such as the Civic Innovation Spotlight series that highlights creative city programs, the Mayor's Innovation Roundtables that explore new start-up areas that are relevant to local government, SF Open Law which helps makes the city's laws more transparent and easy to understand for citizens, the Living Innovation Zones, that aims to improve public spaces with creativity and innovation, and the Start-up In Residence program, that matches startups with city challenges to co-develop new solutions for the city.

Table 63. Overview of Initiative Implications: Initiative 15

2.16.3. DETAIL

2.16.3.1. CAPABILITIES REQUIRED

2.16.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Product management, particularly for digital products
- Design thinking, user research and design research
- User experience
- User interface and visual design
- Programming (front-end design, front-end development, back-end development)

2.16.3.1.2. PROCESS

This Initiative will have a considerable impact to internal processes. The group will operate as a shared service for all the branches and teams across Council.

2.16.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
Application Development capability/service	The development of applications may be performed as a service or by in house developers using development software.

Table 64. Technical Capabilities Required by Initiative 15

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
Extend Mobility Tier	Application may be hosted and exposed through the Mobility tier.
Public Tier	Applications will use APIs exposed through the Public Tier's API Gateway to access Council data and business services in a secure manner.
Analytics Tier	Applications may require access to analytical services and content (accessed via the API Gateway in the Public tier).

Table 65. Technical Platform Enablers Required by Initiative 15

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Mobility Tier	The mobility tier is being extended to include define standards for operating systems and Council mobile devices, and to include a Mobile Device Management capability to manage devices used for Council business (e.g. enforce security controls on the device).

Table 66. ICT Programs of Work Required by Initiative 15

2.16.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative has the following specific requirements for Enablers:

- Skills and Capabilities: Please refer to Section 15.4.1 (People), for further elaboration on the Skills and Capabilities required for this Initiative.
- Governance Structure: The studio will operate as a shared service for all departments within Council.
- Strategic Communications: For any form of civic engagement, including the studio's engagement with citizens and other community stakeholders, it is imperative that the right strategic messages are conveyed. These include:
- Council is obsessed with improved service delivery
- Council is focused on citizen-centric design
- Council is focused on innovating and keeping up to date and up to par in the world of digital
- Council is focused on innovating in its own approaches and tools to improve delivery of services to citizens

2.16.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.16.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Council could explore externalising the app it develops, to sell to other Council s in the area and beyond. Council would retain the IP.

2.16.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.17. INITIATIVE 16: DIGITAL PLATFORM

This section provides an overview of the following Initiative, a description of its potential outcomes, its implications, supporting detail and relevant case studies.

CORE DRIVER	Liveability
THEME	Citizen Engagement
INITIATIVE NAME	Initiative 16: Digital Platform



2.17.1. OVERVIEW

Digital Platform "At a Glance" — Liveability, Citizen Engagement

The digital platform, which builds on MyIpswich, will "one-stop-shop" for Council services. The platform will enable citizens to complete all their transactions with local government online. It will use a virtual assistant to help users with any queries related to Council's services. Residents will be able to connect to other city providers through the platform. It will be personalized to each resident, providing up-to-date information on things that matter to each individual. Finally, residents will be able to find others with similar interests, creating forums and blogs to discuss these topics as well as being able to pose ideas on how to improve life in Ipswich.

Context

- Council wants to engage more easily and deeply with the citizens of Ipswich.
- Council wants to provide an open, accessible and responsive digital platform as a true " one-stop-shop".
- Council wants to enable residents and businesses to self-service and offer community support via social collaboration.

Stakeholders

- State Government: Work with various state government departments to provide information on their services.
- Federal government: Work, where possible, with federal agencies to provide information on their services.
- Other City Providers: Work with other city service providers to add information on their services on the digital platform to extend the "one-stop-shop" experience to citizens.

Outcomes

- Provide citizens' with a seamless, engaging and exciting experience with Council.
- Meet citizens' where they are, any time or location, living up to their expectations.
- Provide increasing Council transparency to citizens.
- Reduce the bureaucratic burden on Council and citizens
- Increase operational efficiencies for Council.
- Attract businesses to Ipswich based on easier interactions with Council to set up and run a business.

Capabilities

- People: Business process design, business analysis, platform and solution architecture, platform design and development, and project mgmt.
- Process: High degree of impact to internal Council processes as services from across Council are brought online for users to complete those transactions on the platform.
- Technology: Social media listening, digitise Local Government Services, chat messaging, language translation tools.

Figure 30. "At a Glance" View of Initiative 16

2.17.1.1. DESCRIPTION

Building on mylpswich, Council will provide the residents of Ipswich with a one stop shop for all city services online. This digital platform will allow residents to perform all transactions with Council online. The platform will use a virtual assistant to help users with any queries related to Council's services. Furthermore, this platform will provide information about all city services to residents, whether they are provided by Council or other city providers. Residents will be able to connect to these other city providers through the platform. The platform will be personalized to each resident, providing up-to-date information on things that matter to the resident, whether he is a father with 2 young daughters in prep school or a new entrepreneur that just moved to the city from abroad. Additionally, residents will be able to find other residents with similar interests, creating forums and blogs to discuss these topics. Residents will also be able to pose ideas on how to improve life in Ipswich and vote on other people's ideas.

2.17.1.2. CONTEXT

Ipswich City Council wants to engage more easily and deeply with the citizens of Ipswich. Furthermore, throughout our stakeholder engagement, we heard loud and clear that all levels within Council want more direct input from citizens

and also wants to make it much easier for citizens to complete transactions with Council, both to make the citizen's experience more seamless and to reduce burdens on Council.

By providing an open, accessible, and responsive platform, the new mylpswich would facilitate direct, immediate communication to citizens, including questions, comments, suggestions, and requests. It would help Council cost-effectively deliver on promises, create transparency, empower individual and collective action, and creates a resident experience that is whole, new, and exciting. The mylpswich experience would enable residents and businesses to self-service and offer community support via social collaboration thereby reducing the day-to-day burden on Council. With fewer enquiries, Council would be able to focus on strategy, delivering core services more efficiently, and engaging with constituents near and far.

2.17.1.3. SCOPE

The scope of the digital platform Initiative is extensive. These are the stages of development of the platform:

2.17.1.3.1. STAGE 1: START WITH COUNCIL SERVICES

- Online Transactions: The first stage of development will put all Council services online.
    - All Council services should provide information to citizens about that particular service (ex: how to submit a planning application).
    - Many Council services will allow citizens to perform the transaction online (ex: citizens can submit a planning application online). An estimated 80% of Council services can be automated.
    - Impact on Back-End/Internal Processes: It is expected that these front-end changes to the way citizens can complete these transactions will have an impact on Council's internal processes, as the idea is that it can remove unnecessary or redundant touchpoints.
    - At a minimum, the front-end transactions will be routed to the right departments with Council. For example, if a citizen submits a pothole complaint, the complaint would be routed to the City Maintenance branch of the Works, Parks and Recreation department.
    - Overtime, we expect to more fully integrate with the front-end. For example, if a citizen submits a pothole complaint, this will directly create a job in the queue for the next available or most appropriate city maintenance crew.
- Sequencing: Council will consider one of the following two paths in the sequence of services being added to the platform:
    - Currently, the sequence is based on the primary services used by citizens. This user-centric model is a great method to ensure uptake and usage of the platform.
    - Another possibility is sequencing across departments within Council, such as starting with Planning and Development, moving onto Works, Parks and Recreation and so on. This Council -centric model will ensure services are added to the platform more efficiently and more quickly.
- Responsive Web Design: The design of the digital platform should follow responsible web design guidelines such that the platform would be viewable and usable on any device.
- Complementary Native App: Council will also consider the development of a complimentary app. We believe that millennials have an expectation for native apps and while many citizens across Ipswich have smartphones, they may not have laptops or desktops. Council will reach out to citizens to better understand and predict uptake and usage of the app. Depending on these signals, we can build a business case to understand the return on investment of creating an app.

2.17.1.3.2. STAGE 2: ENABLING ONLINE SOCIAL COMMUNITIES

- Engagement: this tool will enable Council to communicate with users, including emailing with individual and multiple citizens, posting on social media and direct communications outward on the platform. This

engagement capability will allow for the flexibility of tailoring messaging to particular users and give Council the power to bring users onto the platform.

  - This digital platform should be where users go for first point of contact for Council information. Interactions via mylpswich can be utilised with an identity management system to feed the CRM, online transactions and personalisation elements as well as collaborative elements.

- Interactive Forums and Blogs: Council will add forums to the digital platform. This will allow citizens with common interests to discuss those topics. Citizens will be able to start their own forums, follow other forums and comment on any forums. The forums shall meet standard online etiquette with regards to language, freedom of speech, etc.
- Citizen Consultation: Council will add an ideas challenge section to the digital platform. This will allow citizens to propose changes in services or new services to Council. Citizens will be able to comment on other people's ideas, add to them and vote on them. (Similar to pointed deployments of the "Bang the Table" platform.)
  - Council will head these ideas, seriously considering the implementation of highly voted ideas.
  - This functionality enables citizens to be heard and to feel they are being heard. It allows them to post their opinion in a way that is public and others will see. This will have a very positive impact on the level of civic engagement experienced by residents of Ipswich.
  - Council may consider starting with this piece of functionality, as it will provide a new, fun and different way for users to get engaged with Council and can change the expectations that users have of the platform and that citizens have of Council.

2.17.1.3.3. STAGE 3: ADDING OTHER CITY SERVICES

- State Government: This will involve primarily state services, such as the energy provides, water and wastewater utility, the health department, the education department and the police department.
- Other City Service Providers: Other relevant 3rd parties will also be allowed and welcome to provide their services online. This may include Australia Post, real estate agencies, etc.
- Basic 3rd Party Information: Council will work to engage these partners, provide basic information about their services and provide contact pathways for users to reach these 3rd parties.
- Hub and Spoke Model: In addition, Council will create a hub-and-spoke model whereby these 3rd parties can create their own transactions on mylpswich. These 3rd parties may find greater uptake or other benefits by providing their transactions directly on Council's platform.

2.17.1.3.4. STAGE 4: CHATBOT/VIRTUAL AGENT

- Virtual Assistant: This virtual assistant functionality will help answer queries from users on the platform. It will of course operate 24/7, allowing users with busy schedules, to find an ever-responsive Council and it will allow users to easily complete their online transactions.

2.17.1.3.5. STAGE 5: PERSONALIZATION

- Tailoring: Overtime, Council wishes to personalise information to each citizen, based on key attributes of their profile (ex: does the person have children? In what neighbourhood does the person live?)
- Example Notifications: Information like notifications for traffic delays, construction work, flooding, a new planning application, critical pollen levels, school changes, etc. can be tailored.

2.17.1.3.6. OTHER COMPONENTS

While this platform includes many components, there are 3 critical ones and several other add-ons.

- Critical components:

- Customer Relationship Management (CRM): This component allow customers/users/citizens to perform transactions with Council online. The cost and difficulty of implementing this component is driven by the number of transactions that we will offer online (based on the number of services that Council wants to automate for citizens). Examples include Salesforce.com, Workday and Takada.
- Experience/Engagement: This component will give users an engaging experience with Council. The cost and difficult of implementing this component is driven by the size of the audience (i.e. number of expected users) and complexity of the underlying information architecture of the platform. Examples include Adobe Experience Platform, Drupal and Sitecore.
- Content Marketing: This component will enable Council to push out content to its citizens, in a way that is tailored and real-time. Examples include Adobe Marketing Cloud.

- Add-On Components
  - Chatbot/virtual agent: this component interacts with users to resolve issues and answer queries in real-time. Examples include Facebook M or Amelia.
  - Forums and Blogs: this component allows users to interact with each other around topics of interest.
  - Ideas Stage: this component allows citizens to pitch ideas to make Ipswich a better place to live, work and play.
  - Personalization: this component builds on the experience and marketing critical components. Depending on the extent of personalisation that Council wishes to do (which may increase overtime), this may require increasingly sophisticated tools to segment and understand the platform's users, tailor content and push it out in real-time in a way that is increasingly granular and specific to the user.

It is expected that the platform will be provided in multiple languages. The number of languages and extent of content and functionality available in multiple languages will need to be decided during the design phase of the implementation process.

2.17.1.4. STAKEHOLDERS INVOLVED

The following key stakeholders are relevant for this program:

- State government: Council will work with various state government departments to provide information on their services on the digital platform to provide Ipswich citizens with a true "one-stop-shop". These organisations include: Energex, Queensland Urban Utilities, West Moreton Hospital and Health Service, Education Queensland, Queensland Police and Economic Development Queensland among others.
- Federal government: Council will work, where possible, with federal agencies to provide information on their services as well. This may include Australia Post, Veterans' Affairs, Immigration, Agriculture, and Royal Australian Air Force among others.
- Other City Providers: Could will work with other city service providers to add information on their services on the digital platform to extend the "one-stop-shop" experience to citizens. These providers may include real estate agents and property renters, sports clubs, tourism operators, medical service providers (i.e. private practitioners), and more.

2.17.1.5. POTENTIAL OUTCOMES

The digital platform is intended to:

- Provide citizens' with a seamless, engaging and exciting experience with Council
- Meet citizens' where they are, any time or location, living up to their expectations
- Provide increasing Council transparency to citizens
- Reduce the bureaucratic burden on Council and citizens

- Increase operational efficiencies for Council
- Attract businesses (especially Small and Medium-sized businesses) to Ipswich based on easier interactions with Council to set up and run a business

2.17.1.6. RANGE OF BENEFITS

2.17.1.6.1. COUNCIL

- Increase speed of delivery of Council services
- Decrease number of people involved in delivery of a Council service
- Increase effectiveness of Council's notifications
- Increase efficiencies in managing Council data (including property and customer data)
- Decrease inquiries for Council about non-Council services
- Decrease telephony traffic overtime and associated resources (to be re-focused)

2.17.1.6.2. CITY

- Allow citizens to interact with Council 24/7
- Allow citizens to find all the information about Council and other city services online
- Allow citizens to receive real-time and relevant information on things that impact them
- Increase ease and speed of interactions with Council for citizens
- Decrease anger and disappointment in interactions with Council for citizens
- Increase civic engagement of Ipswich citizens
- Allow citizens to provide input into the future of Ipswich
- Increase sense of community and connectivity between residents of Ipswich
- Increase ease of business transactions with Council

2.17.1.7. INDICATIVE KPIS

2.17.1.7.1. COUNCIL

- Time from notification to implementation of Council service (ex: receive complaint of pothole to seal of pothole)
- Number of resources involved in each Council transaction (ex: number of people involved in sealing of pothole, including all touchpoints)
- Amount of duplication of data within Council
- Amount of time spent manually dealing with data within Council
- Number of inquiries to Council on non-Council services
- Number of calls to Council's contact centre and number of resources in Council's contact centre

2.17.1.7.2. CITY

- Distribution of users accessing the platform throughout the week
- Self-reported citizen satisfaction with the platform

- Number of available pages about and transactions for non-Council services
- Number of times pages about non-Council services are accessed online
- Time spent by citizen on a given transaction with Council (ex: time from inquiry on how to submit a planning application through to obtaining the relevant permit from Council)
- Number of users, ideas, votes and comments on the ideas stage component of the platform
- Number of users, forums, blogs, topics and comments on the forums/blogs component of the platform
- Number of businesses that use the platform to interact with Council
- Time spent by a business on a given transaction with Council (ex: time from inquiry on how to set up a business in Ipswich through to obtaining the relevant permit from Council)
- Self-reported business satisfaction with the platform

2.17.2. IMPLICATIONS

LEVEL OF EFFORT	The level of effort required to fully implement the digital platform for Council is "high". Council is responsible for the full implementation. This includes activities such as: • Follow tender process to engage vendor(s) to deliver on the platform or continue to deliver it internally • Work internally or with selected vendor(s) and departments across Council to gather business requirements for the platform • Work internally or with selected vendor(s) to design the front-end platform • Work internally or with selected vendor(s) and departments across Council to redesign back-end processes based on new front-end • Work internally or with selected vendor(s) to design the underlying architecture of the platform • Build internally or work with selected vendor(s) to build the 3 critical components of the platform (CRM, experience and marketing) • Build internally or work with selected vendor(s) to build the add-on components of the platform (chatbot/virtual agent, forums and blogs, ideas stage, personalization) • Work with 3rd parties (federal, state, private) to provide information on their services online • Build internally or work with selected vendor(s) to build the middleware for a hub-and-spoke model that allows 3rd parties to provide transactions for their services online • Work with 3rd parties (federal, stage, private) to provide transactions for their services online
CHALLENGES AND RISKS	The following key barriers are relevant for this Initiative: • Barrier 1: Significant upfront investment – delivery of this digital platform, even at its core (without any bells and whistles), done right, will require significant investment from Council. A full-fledged business case will help Council objectively evaluate the return on investment. • Barrier 2: Lack of ambition – in order for this digital platform to deliver on its promised benefits, really reaping the benefits of a truly seamless, engaging and exciting experience for citizens, Council must be ambitious and willing to listen to Ipswich resident's ideas in the ideas stage, allow citizens to interact with one another through forums and blogs, personalize content to individual citizens and more. The following key risks are relevant for this Initiative: • Risk 1: Unwillingness from 3rd parties – 3rd party city service providers, from state government agencies to sports clubs, may not be willing to collaborate with Council or share information on their services on Council's platform. • Risk 2: Limited uptake from citizens – Ipswich residents may not take to online platforms to transact with Council and may continue to use the contact centre, leaving Council's investment to fall by the wayside. • Risk 3: Increased burden for Council – depending on how the platform is implemented and the associated redesign of internal processes, Council may find itself under greater stress through citizens' increased transactions with Council given the ease provided by the platform. • Risk 4: Discontent from citizens – Ipswich residents may choose to use the platform (particularly the interactive components) voice their disagreements and discontent with Council's services and decisions. As with any service provided by Council, citizens may also find themselves unsatisfied with Council's online platform and take to social media, traditional media and other channels to voice this discontent.

	• Risk 5: Increased digital inequity – provision of Council services through an online platform may leave those without access to the Internet and with limited digital literacy further disconnected from Council and the rest of the community.
DEGREE OF CONTROL	Council will have a "high" degree of control over this Initiative, as it will be fully implemented by Council.
DEPENDENCIES	The following key dependencies are relevant for this Initiative: • Dependency 1: Leverage mylpswich - The development of mylpswich, as we hope it will build on and leverage on it • Dependency 2: Integration of CES - The development and integration of CES, the Customer Engagement System • Dependency 3: DSITI Identify management – Council should work with Queensland government and DSITI to understand if and how to bring in the state-wide identity management system that is currently under development.
OVERALL ASSUMPTIONS	The following key assumptions are relevant for this Initiative: • Assumption 1: Back-end integration – the redesign and redevelopment of the front-end services that interface directly with the user, will be linked to the redesign and redevelopment of the back-end processes and systems in order to reap the full benefits of a digital platform. • Assumption 2: Sourcing the 3 critical components – Council will need to source the 3 critical components to pull together a fully developed digital platform. However, Council may already have some or all of these in place (CRM, experience and marketing). This will impact the implementation and business case of the Initiative.
LEARNING FROM OTHERS	Council will look at, explore, engage with and learn from organisations around the world that are embarking on similar initiatives. The following key examples are relevant for this Initiative: • Example 1: NYC 311 – New York City was one of the first cities to integrate all of its services into a one stop shop platform. The platform also conveys information about 3rd party city service providers. See the case study in section 16.5 for further information. • Example 2: Boston.gov – Boston is revamping its government platform and is taking a very unique approach to do doing so, working directly with citizens to co-design it.

Table 67. Overview of Initiative Implications: Initiative 16

2.17.3. DETAIL

2.17.3.1. CAPABILITIES REQUIRED

2.17.3.1.1. PEOPLE

The following key competencies are relevant for this Initiative:

- Business Process Design – Experience in redesigning processes to link back-end services with new front-end services
- Business Analysis – Experience to gather requirements for digital platform
- Platform and Solution Architecture – Experience with Customer Relationship Management, Engagement/Experience Management platforms and Content Marketing to design Council's platform
- Platform Design and Development– Digital Skills, such as user experience, interface design, front-end and back-end development, required to develop the platform
- Project Management – Experience in managing projects with tight timelines and budgets
- Stakeholder Management – Experience in engaging with multiple parties to liaise with other city service providers

2.17.3.1.2. PROCESS

This Initiative will have a high degree of impact on internal processes as the services from across Council are brought online for users to complete those transactions on the platform. For example, a user would be able to submit a service complaint on the platform which would automatically generate a service request for the City Maintenance team. A user

could submit an objection to a planning application which would be visible to the Department of Planning and Development and influence their assessment.

2.17.3.1.3. TECHNOLOGY

The following technical capabilities components must be considered for this Initiative:

TECHNICAL CAPABILITY	DESCRIPTION
Social Media Listening	Capability/service to identify and assess what is being said about Council, specific city initiatives, or the city of Ipswich itself.
Digitize Local Government Services (permits, licensing, development applications)	Digitizing front end services may be based on introducing new specific local government focussed software that provides customer portals and administrator functionality, or through introducing web/mobile technologies to front existing processes/applications.
Chat Messaging	Capability to enable the public accessing the digital platform to connect and chat with a Council customer service operator.
Language Translation Tools	Tools to enable users of the digital content to consume and interact using languages other than English.

Table 68. Technical Capabilities Required by Initiative 16

In addition, the following Smart City Technology Platform Enablers are required:

TECHNICAL PLATFORM ENABLER	DESCRIPTION
None identified	

Table 69. Technical Platform Enablers Required by Initiative 16

There are also a number of activities on the ICT forward program of work that will occur during the timeframes of the Smart City Program that must be considered as inputs/dependencies with this Initiative.

ICT PROGRAM OF WORK ACTIVITY	DESCRIPTION
Enterprise Architecture Blueprint/ Policies/ Procedures	Enterprise Architecture policies should guide the selection of applications/services for the Digital Platform.
Integration Blueprint/ Policies/ Procedures	The Integration Blueprint that outlines the existing landscape of interfaces between Council applications should inform all activities related to digitizing front end services.
Data Governance/ Policies/ Procedures	Data Governance and Policies should inform all activities related to digitizing front end services.
Common Data Model	The addition of any applications/services for the Digital Platform and any new related technical interfaces should be informed by the Common Data Model.
Process Modelling	Current state business processes that have been modelled and captured in a modelling tool should be considered as input to the design of the Digital Platform and updated as appropriate.

Table 70. ICT Programs of Work Required by Initiative 16

2.17.3.2. ENABLERS REQUIRED

Please refer to Section V Part A for a full description of the Enablers required for the Smart City program. This Initiative has the following specific requirements for Enablers:

- Skills and Capabilities: Please refer to section 16.4.1 (People) for further reference.

- Strategic Communications: Council will need to ensure the right messaging surrounds the launch of the platform and that the Digital Platform always conveys and ties into the strategic communications program for the Smart City program, via the communications that are pushed out through the platform.

2.17.3.3. BUSINESS CASE SUMMARY

Please refer to Appendix A for high-level costing, duration and resourcing for this Initiative. Please refer to Appendix B for a high-level benefits case for this Initiative.

2.17.3.4. POTENTIAL REVENUE OPPORTUNITIES

The following potential revenue opportunities are relevant for this Initiative:

- Opportunity 1: Council could charge a fee for every transaction that is done for an external city service provider on its platform.
- Opportunity 2: Council could explore selling the data from transactions, personalisation, community interactions and web analytics to 3rd parties. The data would remain anonymized and would not include any personally identifiable information.
- Opportunity 3: Council could implement a freemium model, whereby more advanced platform features, such as personalisation of notifications or access to private forums, would be priced for a fee to customers.

2.17.3.5. OUT OF SCOPE

This Initiative does not set anything in particular out of scope.

2.17.3.6. CASE STUDY

2.17.3.6.1. NYC311

As the biggest and most populated city in the United States, New York has one of the nation's largest and most complex city governments. More than 50 agencies provide over 900 different services to 8 million residents.

When Michael Bloomberg became mayor, he made it a priority to give New Yorkers an improved level of government service. His vision was to align existing systems and processes to make it easier for residents to interact with city agencies to receive information, file complaints and resolve issues.

Mayor Bloomberg envisioned a centralized, all-purpose call facility that residents could easily access through a simple-to-remember 311 phone number. Live operators would answer calls and efficiently direct customers to the information or resources they needed—24 hours a day and seven days a week. This single, integrated communication channel would manage all of the city's nonemergency service and information requests. The city needed help in designing, developing and launching the ambitious 311 Customer Service Centre Initiative—the most comprehensive customer service centre ever developed by a government organisation. The city called upon Accenture based on its deep customer relationship management (CRM) capabilities, largescale integration experience and its ability to deliver a comprehensive solution within a short time frame.

Working closely with the city's Department of Information Technology and Telecommunication (DoITT) and the Mayor's Office of Operations, Accenture led multiple teams to efficiently build and launch the new customer service centre and 311 hotline. Unlike many technology projects, NYC 311 was about fundamentally transforming the way in which the city operates. The integrated 311 solution provides a single point of entry to city government for all residents, visitors and businesses and is evidence of the city's leadership in managing change while implementing solutions for high performance.

Accenture also worked with the city to launch 311 Online, which brings online the same information and assistance available through the call centre. A customer can use 311 Online to report a problem, request services, check the status of a request, submit a video or photo to support a request, and file a city agency complaint or compliment. 311 Online has helped the city reduce costs by offering self-service through a more economic channel. The system also

supported cost savings as it used existing DoITT enterprise components. • Using the same enterprise content management technologies as the call centre, 311 Online supports the city's response to the dynamic New York City environment through a data-driven architecture. The online service request intake capability can be modified and extended without a major release. Frequently accessed information such as alternate side parking, school schedule, and garbage/recycling pickup is available on the 311 Today section of the 311 Online homepage and can be overwritten with breaking news and alert information if needed.

311 is an evolving service that is constructed to grow along with the city. "It's not just a citizen service hotline, it is the most powerful management tool ever developed for New York City government," said Mayor Michael R. Bloomberg. "I can't imagine running the city without it."

311 has significantly impacted service delivery by New York City agencies:

- Reducing the burden on 911 (emergency calls)
- Eliminating duplication of services
- Filling gaps in service
- Directing resources to areas of need
- Allowing agencies to focus on their mission
- Improving agency efficiency and service delivery
- Excellence in customer satisfaction
- Hosting delegations from around the world

The project has received a large number of accolades, including the 2012 United Nations Public Service Award. The 311 project represents a revolutionary change in government. It has changed the way the public and the mayor hold agencies accountable. It also has transformed the manner in which New Yorkers access government services and how agencies operate.

Visit: www.nyc.gov/311

See "Transforming Customer Services to Support High Performance in New York City", from Accenture, for full case study.

2.17.3.6.2. ENTER FINLAND

Immigration is one of the most influential trends affecting the modern world. In 2013, nearly 1.4 million non-EU nationals emigrated into the EU alone. With more and more people emigrating to a new country to study or work, there is an increasing demand to handle the immigration process more efficiently and with a human touch. Since 2010, the average number of people applying for their first residence permit in Finland has been around 22000 persons annually. Approximately half of them would like to study or work.

The Finnish Immigration Service (Migri) was quick to understand this and set out to make the process of immigration as intuitive as possible. With immigration services often making the very first impression of Finland on newcomers, it is essential to provide concrete support to people dealing with the already complex journey of moving to a new country. From the start, Migri's goal was ambitious: to design the very best eService in the world.

Migri already had a long-standing relationship with Accenture, so alongside Fjord, all 3 teams combined together in order to review, identify and improve the overall operational efficiencies through a better experience for all users; for the people filing applications as well as the staff processing them. The emphasis of the project was to help simplify the overall application process for people who were planning to move to Finland to study or work. This was the challenge we set out to tackle with the Finnish Immigration Service.

The new eService, named Enter Finland, was designed by Accenture and Fjord. Fjord redesigned the service around the core needs of the different internal and external users. In April 2016 the project was given the Service Design Gold Award at Finland's most recognised design and advertising award "Vuoden Huiput".

, has been warmly welcomed amongst its users. In a 2016 survey with more than 2000 users, 93% of applicants gave it a positive rating. They stated the service is 'very good' (53%) or 'good' (40%), with a further 6% remaining neutral in

their assessment. Also, the vast majority of users (95%) said they would recommend it to their friends.

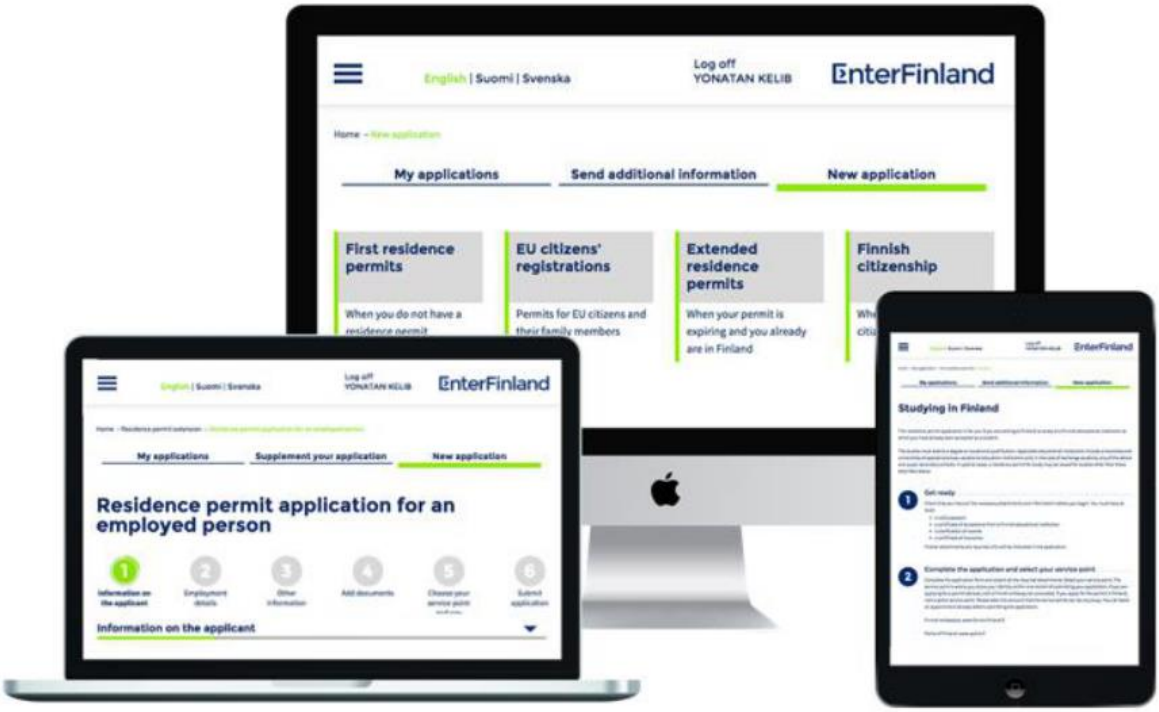


Figure 31. Initiative 16: Case Study Enter Finland

See "Untangling Red Tap to Enter Finland", by Fjord, for full case study and video.

3. SMART CITY BUILDING BLOCKS

3.1. SMART CITY ENABLERS

3.1.1. GOVERNANCE AND PERFORMANCE MANAGEMENT

3.1.1.1. CONTEXT

Governance is a formal management framework and structure supported by a set of standard processes and practices. Governance frameworks and structures are used to enable Council to manage the Program - specifically stakeholder relationships, expectations, key decisions, deliverables, benefit realisation, contractual dependencies and services required to achieve program objectives and target outcomes. However, Smart City initiatives often require very different governance, KPIs, processes and funding gateways compared to organisational norms.

Development of the Smart City Vision for Ipswich has required significant commitment from Council's Leadership Team and stakeholders to align on the key priorities and future for the city. Delivery of that vision then requires that leadership to be sustained over many years and embedded within effective governance processes. As outlined in the UK Department for Business Innovation and Skills Smart City Framework[1], there is no ideal leadership structure for a Smart City Program: the optimal positioning of the leadership team will depend on the context of each city. However, global experience suggests the following factors are vital to address in whichever way is most appropriate for the specific city context:

- A clear focus of accountability within the Council. At both the political and administrative levels there should be an explicit functional responsibility for the Smart City Program within the city authority. These functions should be occupied by individuals with sufficient authority to shape resource allocation and organisational priorities.
- Building a broad-based leadership team across the Council. It is not essential that all city stakeholders are committed to the Smart City Program from the very outset. Indeed, a key requirement of building and managing a Smart City roadmap is to work in ways that nurture and grow support for the strategy through the implementation process. However, it is important the Smart City Program is not seen as a centralized or top-down Initiative led solely by Council. Sharing leadership roles for the design and delivery of a Program with senior colleagues across the other sectors and organisations across the city is therefore important.
- Bringing city leaders together in effective governance arrangements. City-wide, cross-sectoral governance systems need to be established at two levels:
    - The strategic governance level, focused on defining required outcomes of the Smart City Program and ensuring effective benefit realisation; and
    - The delivery governance level, focused on implementation of the Smart City roadmap and initiatives.
- Deployment of formal program management disciplines. To deliver effective city-wide transformation, it is vital to develop and manage a portfolio of Programs and projects that together are intended to deliver the Smart City vision. While these can be managed by many different actors around the city, they should be brought together into an overall strategic Program of work with:
    - An overall business case, supported by measurement of clear success indicators;
    - Prioritisation of activities and Program changes, based on performance and feedback criteria linked to the city's guiding principles; and
    - Common frameworks for managing strategic risks, issues and constraints, bought into by all delivery partners.

[1] http://shop.bsigroup.com/upload/267775/PAS%20181%20(2014).pdf

- Ensuring the right skills mix in the leadership team. Effective leadership of a Smart City Program requires the senior accountable leaders to have access to a mix of key skills in the leadership team which they build around them, including: strategy development skills, stakeholder engagement skills, marketing skills, commercial skills and technology management skills.
- Allowing for organisations' evolution over time. Contributions by private and voluntary stakeholders are likely to be subject to engagement lifecycles. Organisations are created, evolve and eventually merge or decline. The continuity of Smart City assets and services needs to be actively managed throughout this evolutionary process.
- Ensuring an open and transparent governance process. Transparency is important in order to build trust, strengthen accountability for delivery of the Smart City Program, and to facilitate openness and collaboration with all stakeholders. This means that the leadership of a Smart City Program should aim to publish all key vision and strategy documents, make names and contact details of Program leaders publically available, and publish regular updates of performance and delivery against the Smart City roadmap.

As highlighted by Forrester[2], the key to being a truly Smart City, however, lies in bringing these elements together, creating an integrated approach to city governance as a whole.

3.1.1.2. IPSWICH SMART CITY PROGRAM GOVERNANCE

To effectively implement the Smart City Blueprint, a number of different stakeholders will need to be involved in the governance and delivery of the Program. Some of these stakeholders include:

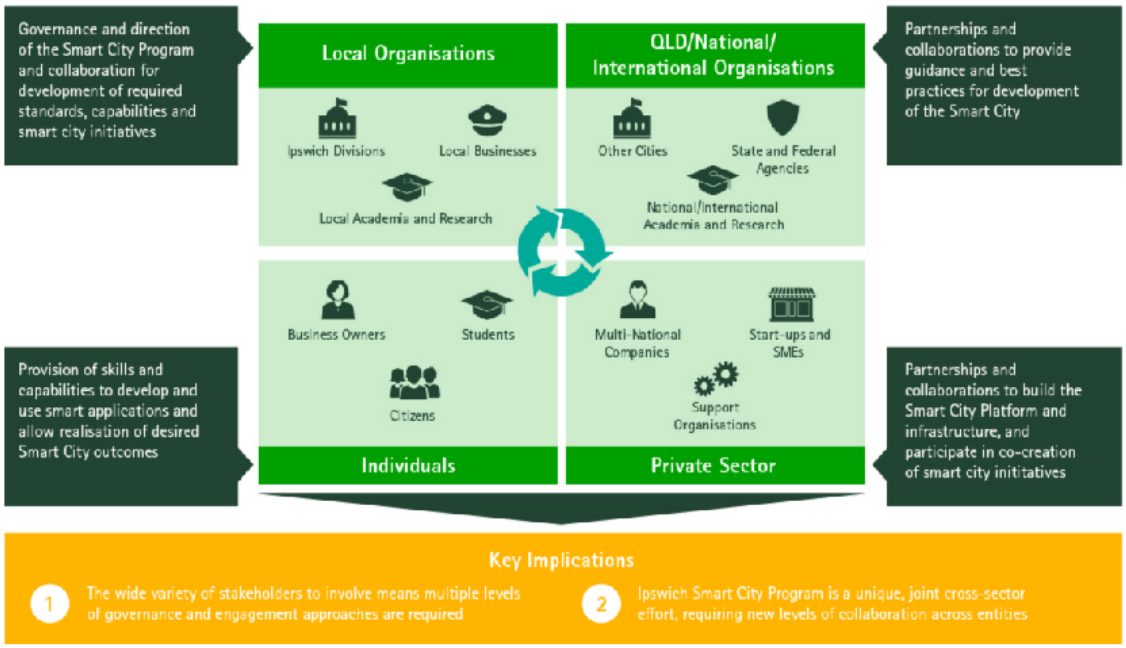


Figure 32. Ipswich Smart City Key Stakeholder Groups

The key objectives of the governance structure, process and procedures for the Ipswich Smart City Program are to:

- Support the delivery of Council's Smart City objectives and the expected outcomes and benefits identified in the Blueprint.

[2] https://www.forrester.com/report/Smart+City+Leaders+Need+Better+Governance+Tools/-/E-RES58966

- Provide the forum for Council's Program Sponsor and key stakeholders to have the necessary visibility and influence over Program decisions and outcomes to enable the Blueprint to be delivered as endorsed by Council ;
- Provide the forum for Council's key partners in the Smart City Program to have the necessary visibility and influence over Program decisions and outcomes to enable them to meet their contractual responsibilities;
- Provide the forums for all Program stakeholders to have an appropriate level of visibility and influence over Program decisions and outcomes commensurate with their stakeholder role;
- Provide a set of principles, guidelines and processes for the management of relationships and performance of stakeholders involved in the Program;
- Enable the Program to maintain a Smart City focus and target realisation of business outcomes;
- Provide for centralised governance of the Smart City Program so that all governance issues can be dealt with in accordance with agreed procedures;
- Provide consistency of Smart City Program performance reporting across all stakeholder groups;
- Ensure Program risks and issues are channelled through the appropriate forums for their effective resolution or mitigation;
- Document and define escalation paths and delegation authorities for effective decision making within the Smart City Program;
- Ensure appropriate commercial contract interactions between Council and its partners are effectively managed;
- Promote innovation and collaborative behaviours across the Program.

3 levels of governance have been recommended for Ipswich's Smart City Program:

- Strategic Governance: Guides and advises the Program Sponsor on Program execution, delivery of strategic outcomes and management of senior stakeholder relationships.
- Management Governance: Oversees the delivery of the Smart City Initiatives, outcomes and performance targets.
- Execution Governance: Plans and executes the day-to-day design, development and implementation of the Smart City initiatives.

These governance levels are illustrated by the following image:

Smart City Program – Collaborative Governance and Engagement Model

To support the implementation of the Ipswich Smart City Program, a collaborative governance model involving key stakeholders across the city and within Council is needed at 3 levels:

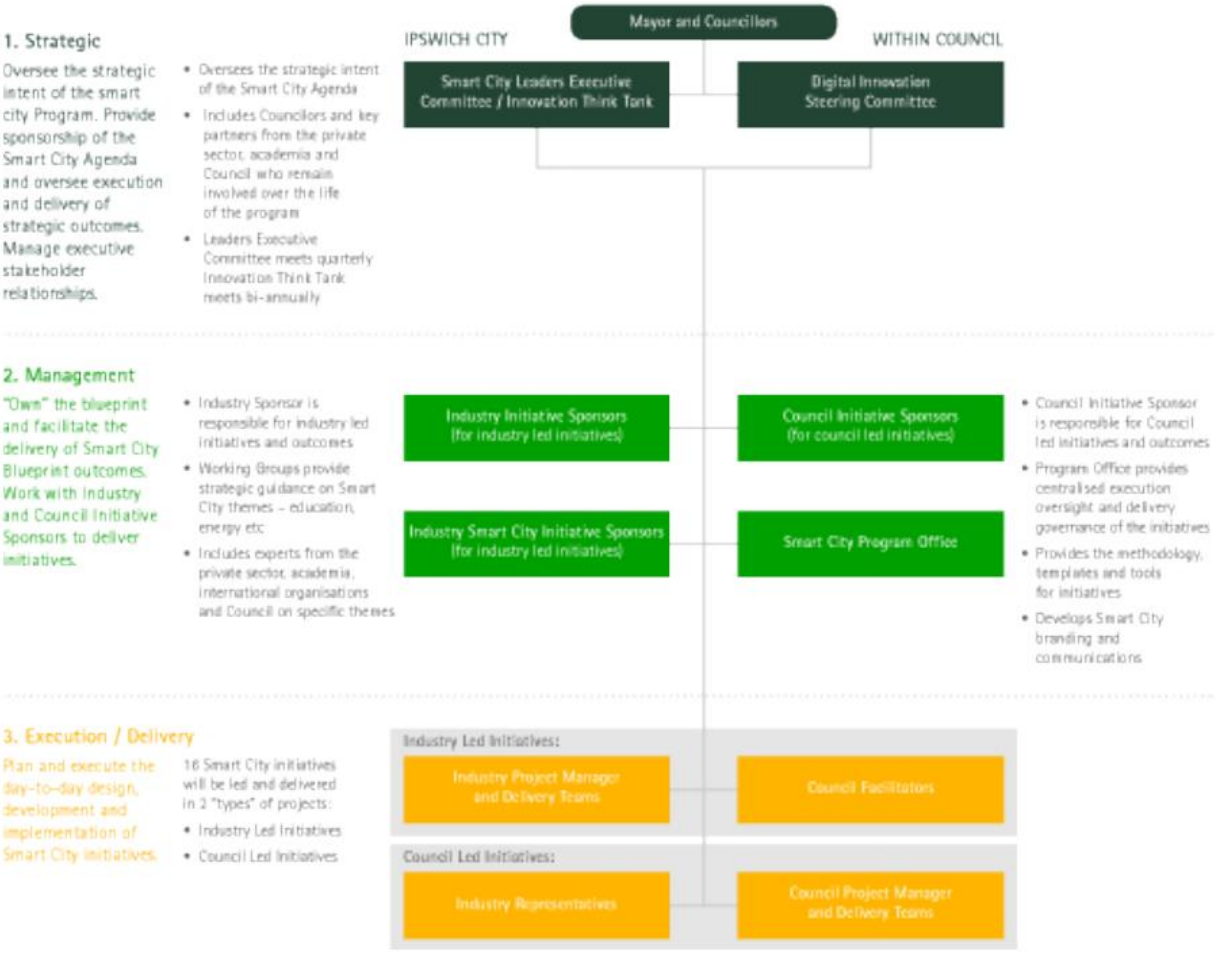


Figure 33. Recommended Governance Levels for Smart City Program

Development and confirmation of the governance arrangements for the Smart City Program would be a critical first step at the start of the Implementation Phase. Key will be to define the role of specific governance bodies and forums that would operate at the Strategic, Management and Execution levels. For example:

GOVERNANCE LEVEL	GOVERNANCE FORM
1 STRATEGIC LEVEL	Smart City Leaders Executive Committee Meeting
	Innovation Think Tank
	Digital Information Steering Committee (DISC)
	Council CEO and Executive Management Team Meeting (EMT)
2. MANAGEMENT LEVEL	Smart City Initiative Sponsor Meetings
	Smart City Working Group Meetings
	Smart City Initiative Design Authority (Change Control Board) Meeting

	Smart City Program Directorate Meeting
3. EXECUTION LEVEL	BAU Forums
	Smart City Initiative Project Manager and Facilitator Status Meeting
	Smart City Initiative Team Meetings

Table 71. Examples of Governance Bodies and Forums

3.1.1.3. PERFORMANCE MANAGEMENT

Performance Management plays an important role in the Smart City Program and will need to outline the strategy and approach for identifying, planning and tracking the delivery of the outcomes so that targeted benefits of Smart City initiatives are actually achieved and maximised. A number of KPIs, ranging from strategic to operational, are needed to measure the effectiveness of the Smart City Program and identify areas for improvement. An example of the type of dashboard that would be created during the initial stages of Implementation is shown below:

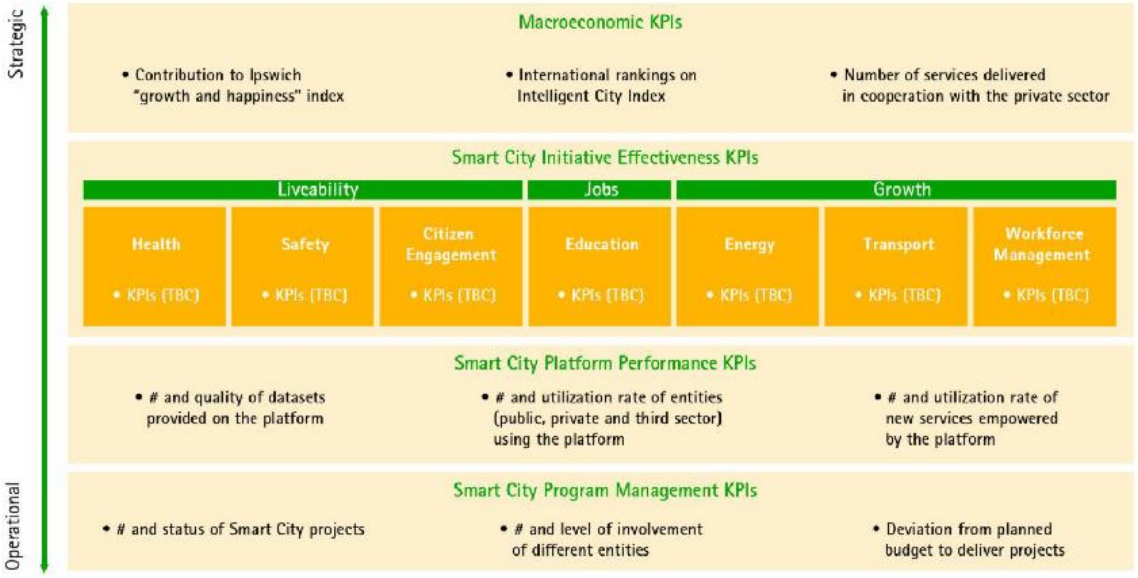


Figure 34. Example Smart City Performance Management Framework

3.1.1.4. IMMEDIATE NEXT STEPS

The following diagram outlines the immediate next steps to establish the Smart City Program Office:



Figure 35. Key Activities to Establish Smart City Program Office

Each of these activities are described in more detail below:

- Mobile Program Office Resources: Confirm and onboard program office resources.
- Implementation Phase Kick Off: Conduct Implementation Phase kick-off with Executive Management team, Program Directors and Program Office team that outlines the timeframes, key activities, and deliverables to establish the Smart City Program Office.
- Develop Approaches, Tools, Templates and Processes: There program office will work to define, document and communicate approaches, tools, templates and processes across 9 key capability areas.
- Smart City PMO "Run": Once these capabilities are in place, they will be operationalized and utilized to run the program office and manage program initiatives.

3.1.2. PROCUREMENT AND VENDOR MANAGEMENT

3.1.2.1. CONTEXT

Procurement is one of the key Enablers of Council's Smart City Vision for Ipswich. The procurement needs of Council's Smart City Program will not only have a significant impact on how Council's procurement team interacts internally with Council stakeholders and the external supply base, but in the governance, policies, processes and mindset of the way in which the procurement team itself operates. While the ask of Council's procurement function will continue to be to focus on savings and cost-effective operations, they will be asked to take on far more with a focus on innovation, Smart City outcomes, and a nurturing of suppliers, startups and partners. The definition of the "value" from procurement will move from a focus of cost reduction and savings to more advanced measures that are linked to Council's outcomes from the Smart City blueprint and the achievement of the Program initiatives over the next 3 to 5 years.

In parallel to Council's Smart City Program, across the globe advances and trends in procurement over the same next 3 to five year timeframe could have a broader impact on Council's procurement function. For example, new cloud computing, analytics, and industrial internet of things capabilities will provide more content the organisation can use to facilitate core procurement activities and generate deeper and more valuable insights to enhance decision-making as well as identify potential issues and mitigation strategies. By way of example, Accenture's point of view is that the infrastructure supporting procurement's needs by 2020 consists of what Accenture calls "The 5 Apps", representing the main app bundles that will be required for procurement to be successful in the future. The 5 Apps are as follows:

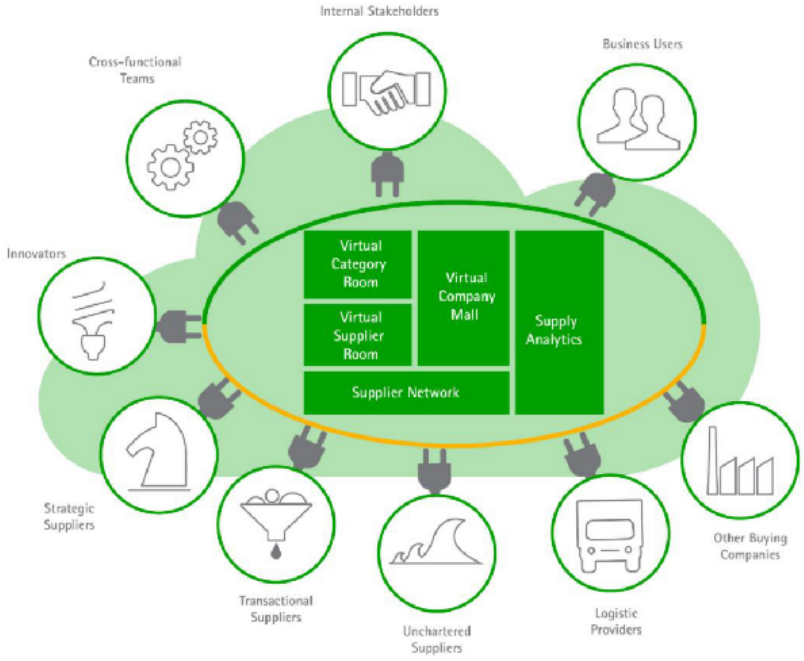


Figure 36. The 5 Apps

Each of these are briefly described in more detail below:

- The Virtual Company Mall: Owned and managed by procurement, the Company Mall will feature a cloud-based set of pre-approved private and public "shops" (i.e. including content from outside the company) from which internal customers can select goods and services, supported with business logic that guides their purchasing based on policies, preferred suppliers and contracts. The mall will include a robust service desk that directs customers to the right shops and provides spot-buy services as required, as well as virtual agents delivering consistent and automated buying support. These services will be enabled by a mix of digital disruptors, including cognitive systems through intelligence augmentation and, where possible, intelligent automation.
- Supply Analytics: The Supply Analytics apps will bring together a wide variety of data and, through a standard dashboard, will enable both procurement and business users to interpret analytics to solve specific problems or answer questions. Big Data will be a key component of the Supply Analytics apps, bringing in information from outside sources such as the Industrial Internet of Things. Crucially, Supply Analytics apps will no longer simply provide information and insights. They will mature to a point at which, via cognitive computing capabilities, they can recommend decisions and opportunities for procurement to capitalize on (such as supply optimization and savings opportunities).
- Virtual Supplier Room: This virtual collaboration room is a critical component of the virtually integrated enterprise. It will enable the company to virtually interact with strategic suppliers to share insights and ideas, as well as collaborate on innovation programs via common social media methods. It will also provide uncharted suppliers with an avenue to collaborate with the company on possible future innovations.
- Virtual Category Room: This is a virtual central gathering place to which a company's category managers will go to keep track of their in-flight projects based on where they are in the process by category. In addition, category managers will be able to find relevant market intelligence data for their category—both what the category managers upload themselves as well as content that is pushed to them automatically by content aggregators. Because the Virtual Category Room is powered by social media, it is context driven. Category managers' preferences and collaboration behaviour will influence recommendations they receive, for example, for contacts or opportunities.

- Supplier Network: The Supplier Network, which will be accessed via an app, connects a company seamlessly with the supply market, the Virtual Company Mall (i.e., for transactions of purchase orders and invoices), and to the Supply Analytics apps. Powered by technology solutions supporting tendering, performance assessment, supplier discovery and supplier interaction, the app is also linked to both the Virtual Supplier Room and the Virtual Category Room.

The majority of these digital capabilities already exist in the market while some still need to evolve, as depicted in the diagram below:

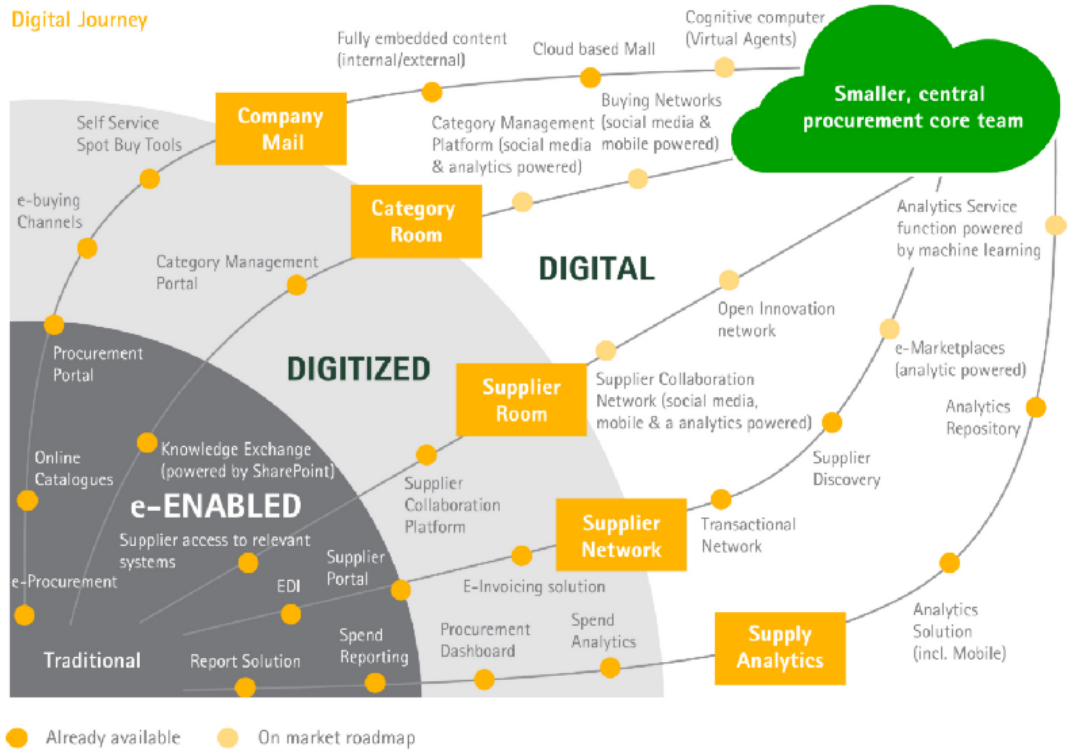


Figure 37. The Digital Journey for Procurement

3.1.2.2. SMART CITY PROCUREMENT CAPABILITIES

While these digital trends impacting the procurement functions of organisations around the globe are likely to have an impact in the timeframes for implementation of Council's Smart City Blueprint, there are a number of immediate actions Council needs to take to support the implementation of the Smart City Initiatives in the coming 1 to 2 years. As outlined in the UK Department for Business Innovation and Skills Smart City Framework[3], traditional procurement practices can represent a significant obstacle to innovation and the realisation of desired outcomes of Smart City initiatives within a city. "The key barriers are rooted much more in procurement culture and practice (than the legislation) which can and should be tackled at city level. " We see cities around the globe utilising outcomes-based procurement, which is compatible with public procurement legislative frameworks, to move to a culture of partnership and innovation with both suppliers and internal teams.

The below model, adapted from the UK Department for Business Innovation and Skills Smart City Framework as well as Accenture's work with NESTA and the Future Cities Catapault[4], recommends a key set of capabilities needed within Council's procurement team to enable, compliment, and drive Council's Smart City Program:

3 http://shop.bsigroup.com/upload/267775/PAS%20181%20(2014).pdf

4 http://citie.org/

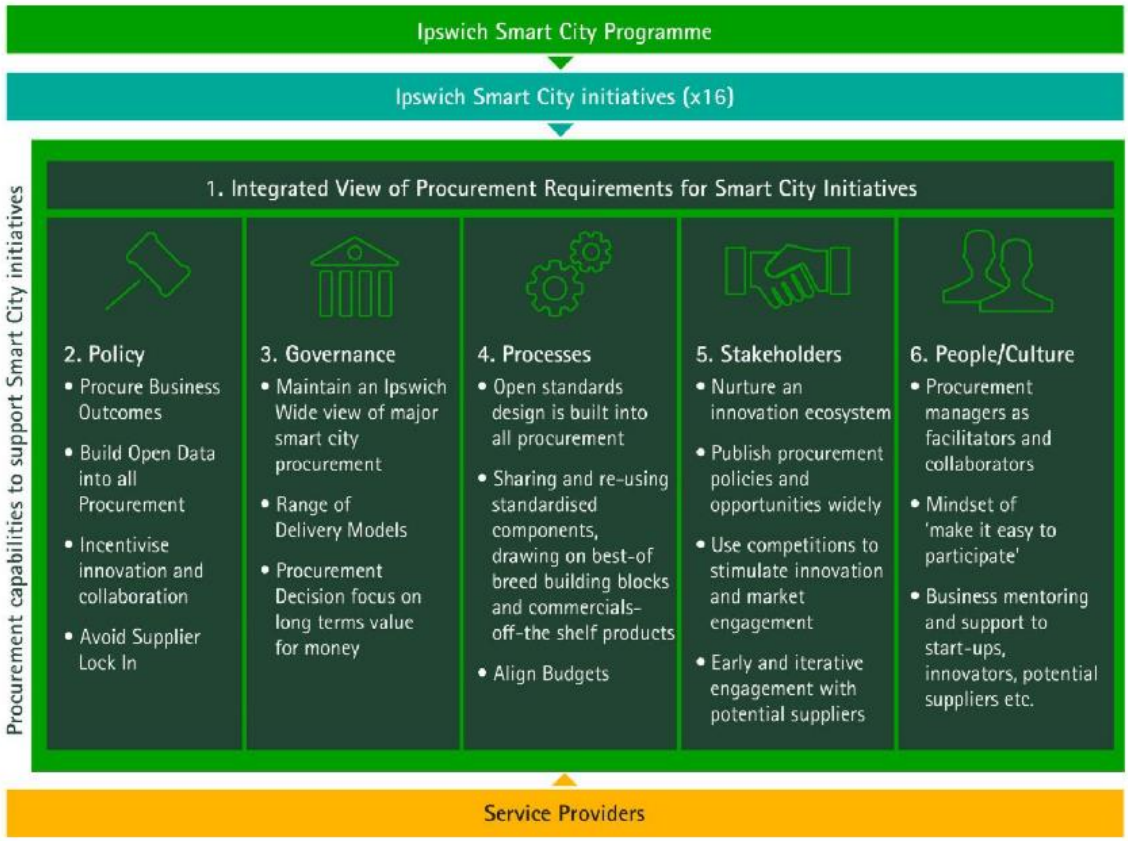


Figure 38. Procurement Capabilities to Support Smart City Initiatives

Each of these capabilities needed within the Procurement function are described in more detail below:

NO	CAPABILITY	DESCRIPTION
1.	Integrated View of Requirements	• Take an integrated, holistic and strategic view of the city's procurement requirements for Smart City initiatives. • Consolidate the needs across all Smart City projects from a Council perspective and perspective of other delivery organisations. • Publish a pipeline of future requirements and enable suppliers to propose cross-cutting solutions to deliver multiple requirements (both within and across cities). • Requirements are developed iteratively in partnership with Council, customer and supplier.
2.	Policy	• Focus on procuring business outcomes that specify what the supplier should achieve, not how it should achieve it. • Build open data into all procurements. Be clear that all data is to be owned by the city not the supplier, or establish clear requirements for the supplier to make data available via open standards and fair, reasonable and non-discriminatory terms. • Incentivize innovation and collaboration: ensure that contractual arrangements encourage collaboration with others to create new value, and the sharing of common city asset. • Avoid supplier lock-in, by integrating interoperability requirements into all ICT procurement, using commercial off-the-shelf products and open standards wherever possible, and factoring in the costs of exit from the outset
3.	Governance	• Establish governance arrangements that enable an Ipswich-wide overview of major procurements by Council and other major public sector organisations operating in Ipswich. • A range of innovative delivery models are deployed, including city companies, joint ventures, and partnerships between cities, industry and academia that promote collaborative solutions wile safeguarding the intellectual property of each

		• Procurement decisions focus on long term value for money including: – Total cost of ownership – Supplier's ability to innovate – Confidence in delivering the expected business benefits
4.	Processes	• Budget alignment mechanisms enable effective provision of common good platforms and services. • Ipswich City Council buys from a large pool of small suppliers, plus strategic relations with one or a few platform suppliers who themselves integrate with many SMEs. • Align contracting principles with open, service-oriented, city-wide IT architecture. • Interoperability based on open standards is designed into all procurements from the outset • Sharing and re-using standardised components , drawing on best-of-breed building blocks and commercial-off-the-shelf products
5.	Ecosystem	Work to nurture an innovation ecosystem across Ipswich and its suppliers, including by: • publishing the city's procurement policies, ensuring that all changes following the review are widely known; • publishing and updating a pipeline of major city procurement opportunities (e.g.. on billboards or social media); • early and iterative engagement with potential suppliers, including local and other SMEs, to benefit from innovation and stimulate the market; • stimulating SME-led innovation, including through use of competitions and placing SME-engagement requirements on large suppliers.
6.	People and Culture	• Procurement managers act as facilitators and collaborators of the procurement process. • Provide business mentoring and support to startups, innovators, potential suppliers, suppliers and partners. • Have a mindset to "make it easy to participate" in Council's procurement process. • Balance risk management and enhanced access to procurement processes. • Drive forward the internal cultural and behavioural changes entailed by these new capabilities.

Table 72. Procurement Capabilities

3.1.2.3. IMMEDIATE NEXT STEPS

The following diagram outlines the immediate next steps to establish the Smart City procurement capability:

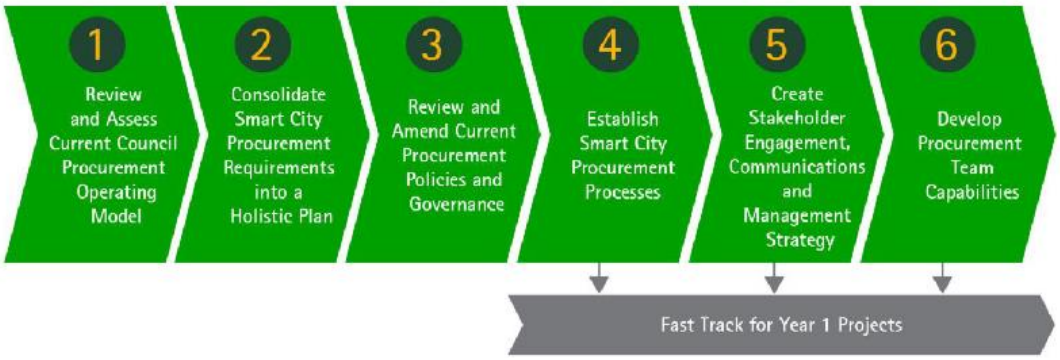


Figure 39. Procurement Priorities to Support Ipswich Smart City Initiatives

Each of these activities are described in more detail below:

- Define Procurement Operating Model for Smart City Initiatives: Clearly define the roles and responsibilities of procurement resources supporting Smart City initiatives.

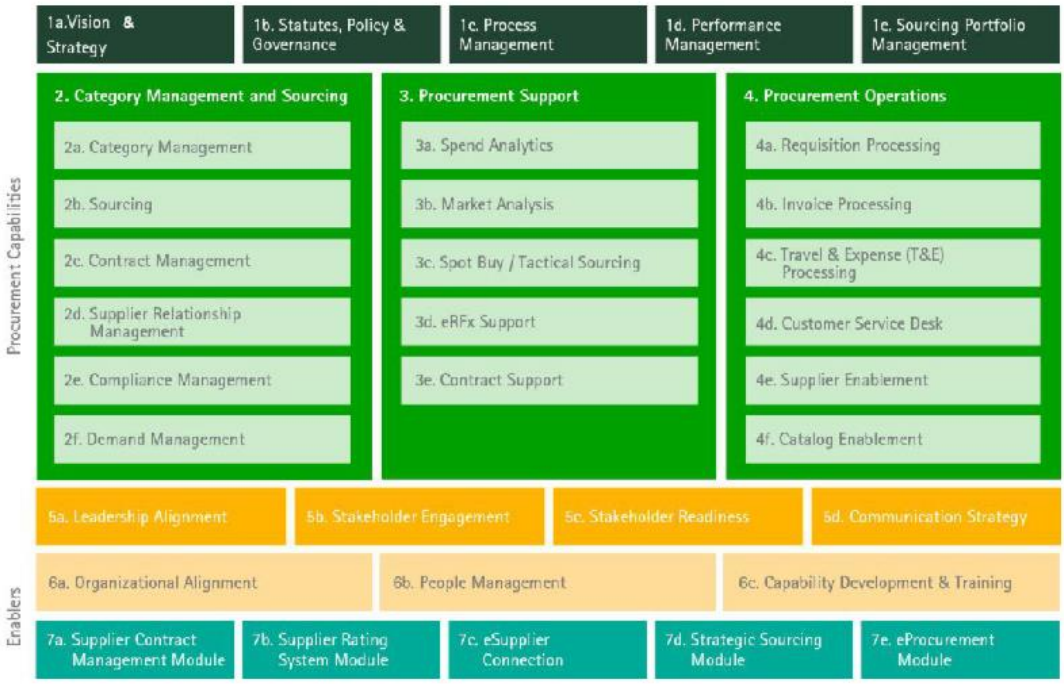


Figure 40. Accenture's High Performance Procurement Operating Model

- Consolidate Smart City Procurement Requirements into a Consolidated Plan: Create a consolidated inventory of forward procurement requirements that can be shared with potential partners, vendors and startups.
- Define Procurement Strategy and Governance: Utilise the existing Government Strategic Framework as the basis for defining the procurement framework and approach for Smart City Initiative procurement.
- Establish Procurement Processes: To support Year 1 Smart City Initiatives.
- Create Strategy for Stakeholder Engagement, Communication and Management: Of parties involved in Year 1 of the Smart City Program.
- Develop Capabilities of Procurement Team: Through Training and Skills Development to Support Year 1 activities and beyond.

3.1.2.4. AN EXAMPLE CASE STUDY FROM BARCELONA

"City challenges are magnets for innovation"

High-performing cities see the value of outcome-based procurement strategies which invert the traditional procurement process. They work to define the challenge and then open up it to the wider community to submit solutions to the problem, drawing from a wider pool of ideas and solutions. This approach often provides answers that are cheaper and more effective than the city could have developed on their own. Barcelona City Council has successfully re-defined the way they conduct procurement. Two initiatives highlight their leading practice. The first is the Barcelona Open Challenge, which set out 6 challenges for businesses and entrepreneurs to provide solutions to transform public space and services:

- Reducing bicycle thefts in the city
- Empowering support systems to reduce social isolation
- Monitoring pedestrian flows in the city
- Tools for digitisation of museum and archive collections
- Automatic detection and alerts of damaged road surfaces

- Empowering local retails through technology

The Challenge sought to procure innovative solutions, support winning companies and validate projects. Winning proposals were provided with guaranteed public service contracts and office space from which to run their operations. The Barcelona Urban Lab which predates the Open Challenge, turned Barcelona into an urban laboratory where public spaces were used as a testing ground for new products and services. The CITIE team met with Josep M. Pique, CEO of the Office of Economic Growth, and Anna Majó, Director of Strategic Sectors and Innovation at the Barcelona City Council to discuss the city's approach to procurement and how others can learn from the progress that they have made. There are five key lessons to Barcelona's success:

- Build user-centricity into the design of procurement tenders - "The shift involved moving from a view of protecting government to one of making it easy to participate." When designing the Open Challenge the original Request for Proposal (RFP) was 60 pages. Barcelona realised that to attract new entrants they would have to think about the accessibility of procurement tenders. This meant minimising pre-qualifying requirements and working to clearly articulate the challenge. Long, complicated tendering procedures create a significant barrier to entry for small businesses and entrepreneurs who often lack the capacity and experience to successfully fulfil the criteria. Making this change required a shift of perspective from viewing complex RFPs as important for "protecting government" to one where the goal is making it "easy to participate" in procurement. This meant a careful balancing act between the rigour required for risk management, and ease of use for enhanced access. Barcelona worked with Citymart to make the process as frictionless as possible, simplifying their tendering documentation and clarifying messages into key components. The final package for all 6 city challenges was significantly reduced to make the tender easy for entrepreneurs and SMEs who were not used to presenting their solutions through public tender documents.
- Make procurement opportunities visible to new entrants - "The role of a city manager is changing to defining the challenge and bringing in innovators from outside to solve the problem." Small businesses and entrepreneurs lack the time and resources to keep up to date with procurement opportunities as they arise. This often results in the same applicants submitting proposals, limiting the pool of new ideas. Barcelona identified this early on when designing the Open Challenge and with Citymart reached out directly to 200 pre-identified companies for each of the 6 challenges. They estimated on average that each firm required five unique outreach efforts to recognise the opportunities available, a large but important task. Barcelona used the resources at its disposal to greatly enhance the visibility of the Open Challenge. The city placed advertisements on subway cars, billboards, buses and social media. The marketing campaign was highly successful with the website receiving an unprecedented number of hits and many start-up entrepreneurs tweeting when they were in the process of submitting a new proposal.
- Signal commitment and offer the right incentives - "Cities need to signal a commitment to procuring innovative solutions." For a challenge prize to be successful the city needs to clearly signal commitment to the businesses taking the time to submit proposals and help them de-risk the investment of their time and money. Practitioners looking to employ a similar model in their own municipalities will need to be ready to demonstrate a serious commitment to creative business ideas and a willingness to invest, both financially and with business mentoring support. In Barcelona, the winner of each of the 6 Open Challenges was rewarded with a full procurement contract, allowing them to use Barcelona City Council as a first customer for their ideas. The City set aside €1 million euros for the Initiative with anything between €60,000 and €250,000 on offer for each individual challenge. Winning firms were also provided with office space to run their projects from.
- Adapt the role of the city procurement manager. Using collaborative procurement methods that engages with entrepreneurs and innovators requires a fundamental shift in the role of the city procurement manager. Procurement managers, rather than defining prescriptive solutions behind closed doors, need to move towards acting as facilitators, collaborators and challenge setters. In Barcelona, the city manager's role is to define the challenge and bring innovators in from the outside to solve the problem. Building these new skills sets takes time and requires training, restructuring and a fundamental re-conceptualisation of the role of a city procurement manager.
- Set up an urban laboratory to test and validate new ideas - "Successful innovation requires application and testing." City challenges are potential business opportunities for innovators and entrepreneurs. However, to be successful new innovation requires application and testing in a real-life environment. The Program launched

in 2008 and is based within the 22@ innovation district. The Challenge supported companies to trial innovative products and services in public spaces. The city has found a low cost way of creating value by using existing city resources and open innovation methods. The annual cost of the Program is approximately €250,000.The Barcelona Open Challenge is an evolution of the Barcelona Urban Lab, linking the innovation process with real procurement. By turning the city into an urban laboratory it supports solutions that help solve urban challenges where innovation can be tested and validated. The Urban Lab has the twin goals of achieving better outcomes for citizens and supporting commercially successful local businesses. Additionally, by enabling businesses show the value of their ideas at a local level, it helps support them grow internationally. Of the 16 pilot projects the Urban Lab has supported so far, the city's Office for Economic growth has estimated that 90% have gone on to develop a business based on their pilot.

3.1.3. SKILLS AND CAPABILITIES

3.1.3.1. OVERVIEW

The transformation towards a "Smart" city will be fundamentally underpinned by the Skills and Capabilities of the city participating in initiatives/trials. The key distinction to note is the fact that the skills and capabilities required in developing a Smart City are not just limited to the Council but extends to all residents and businesses in the city.

These skills and capabilities will be brought together in the city through a multi-stakeholder model which will include Council, industries, residents, startups etc. Council will become a leader in this space in a city context and start nurturing these skills and capabilities.

Traditionally, skills and capabilities are evaluated with the future in mind. The reason being, there is quite a lag time between when a skill will become relevant/important and the readiness with which the capability is made available. Additionally, the Council needs to have a clear view on what new skills and capabilities needs to be built to "future proof" itself.

This challenge is exacerbated by the fact that technology advances are occurring at a rapid pace with new capabilities emerging very quickly. The ability to spot the base capabilities and building internal capability within the Council will be an important measure for the program.

Additionally, it is vital to establish the point that Smart City does not imply directly to technology and Digital Skills. While new innovation and creative ways of problem solving may be initiated to through this channel, there are a number of other capabilities required which will have to work in combination and tandem to deliver the requisite outcomes for the city.

3.1.3.2. THE SKILLS AND CAPABILITIES REQUIRED

In this section, we will discuss the key capabilities and skills that the Council will need while moving towards a Smart City of the future. The section does not define or determine the specific roles as they are transient in nature, with a degree of evolution over time and are generally tailored to specific needs of the organisation. Hence, we will be describing the future needs of the organisation at a capability level with a description of what these capabilities mean.

The following core capabilities will have to be developed –

- Digital capability
- Commercial capability
- Social capability
- Program Management capability
- Data Management Capability
- Regulatory, policies and standards capability

3.1.3.2.1. DIGITAL CAPABILITY

Digital capabilities will be a central capability that needs to be built across the Council workforce and eventually across the city. This capability will encompass the following aspects

- Information Technology capability – which would include elements around systems and technical architectures, systems implementation, integration, software and hardware capability
- Communication Technologies – the various communication technologies that could be installed and managed in a city to support a "digital" environment. Capabilities will include wireless communication, broadband communication, related hardware and software products
- Digital technologies – the capabilities that relate to developing apps, online solutions, social media, collecting and interpreting data from sensors etc.
- IT Hardware – Information technology hardware and networking capability that is required to support technologies implemented.

3.1.3.2.2. COMMERCIAL CAPABILITY

Commercial capabilities are required in a Smart City context, to create partnerships and attract funding opportunities that may not be traditionally adopted by the city. The ability to form commercial partnership models that support collaboration will be crucial to make Smart City programs sustainable.

- Financial Skills – Core financial capability such as business case development, budgeting and forecasting, risk assessment, cost modelling etc.
- Commercial Skills – the ability to create partnership models, risk sharing models, new business viability assessment, revenue generation opportunity etc.
- Legal Skills – Legal and policy capability required to engage multiple stakeholders to solve civic issues, address legal risks revolving around emerging areas such as Open data etc.

3.1.3.2.3. SOCIAL CAPABILITY

The ability to engage with all stakeholders across the city i.e. citizens, businesses, commercial establishments, tourists etc. to intimately understand their needs/wants and obtain regular feedback on new services. One of the core tenants of a Smart City is the ability of the Council to engage deeply with the city

- Strategic Communication – The ability to understand the different modes of communication that are effective across the city demographics and developing the right tools for communication. Capability to understand and use digital modes of communication
- Service Design – The capability/ability to bring all stakeholders across the city together to completely rethink the current way of working and determine innovative ways of conducting work (or problem solving)
- Minority and Disadvantaged citizens – The ability to understand and develop initiatives that meet the needs/wants of minorities and disadvantaged sects of the population

3.1.3.2.4. PROGRAM MANAGEMENT CAPABILITY

The experience, understanding and capability to setup, run and deliver programs as well as projects. A number of Smart City projects will test new technologies and capabilities which will require the rigour of program management to ensure delivery and realisation of benefits.

- Program Management – Skill, experience and capability to structure, implement and run complex programs with multiple stakeholders across the city
- Project Management – Skills and experience to run complex projects through the adoption of project management techniques
- Project Management Office – Capabilities around measuring, monitoring and controlling project progress e.g. risks, issues, dependencies, costs etc.

3.1.3.2.5. DATA CAPABILITY

The acceleration in innovation and new business models have been heavily driven by the fact that it has become quite economical and feasible to collect data. The ability to analyse the collected data and act on it will be an important determinant in fostering innovation in the city

- Technical capability on data management – The IT/database capability to collect, manage and analyse data. Understanding and capability to set up data management platforms that will allow for sharing data across multiple functions, capabilities and projects
- Data Architecture – Capability and understanding on data architectures. This capability will help determine the best way to structure the way data is collected, stored, utilised and shared both internally and externally in the organisation
- Data Analytics – The ability to combine various datasets to make meaningful inferences that could give rise to resolving civic issues or provide opportunities to develop new business models

3.1.3.2.6. REGULATORY, POLICIES AND STANDARDS CAPABILITY

Smart cities to a large extent will try and implement new technologies that will end up challenging the status quo regulation, standards and policies that the Council complies to. The city will need to have the right skills to understand these barriers and determine the best ways to mitigate them which will allow for innovation to thrive

- Regulatory capability – Many of the civic services provided by the Council will be governed by regulation and historically it has been found that regulation is an impediment to drive innovation. The capability and experience to understand regulatory constraints and addressing them will be important to ensure projects are implemented.
- Policies and Standards – Policies and Standards is a wider ranging capability that the Council will have to develop to support Smart City Initiative. In this case, understanding policies and standards across multiple areas may not be feasible for a select few individuals. The ability to develop the capability in each topical area within the Council will be vital to work through implementation of initiatives.

3.1.3.3. NEXT STEPS

The skills and capabilities needed for smart cities will broadly fall under two buckets namely, Enablers and individual projects. The capabilities required for Enablers will be relevant beyond just the Smart City and hence critical in building the future capability. As the project team understands, this Initiative has already been kicked off. The following activities suggested should be integrated with the existing activities to address the skills and capabilities required for Smart City program –

- Establish a clear structured and preferably templatised approach to evaluating the skills and capabilities required for each enabler. Understand the long term requirements for the Council and determine the best means of staffing/building the capability
- For projects/initiatives, while developing the project charter (i.e. business case) identify the skills and capabilities required for executing the project. Additionally, form an early view of how these capabilities will be staffed.
- At an appropriate point through the Smart City program, carry out a competency assessment for the future and determine the key capabilities that definitely needs to be kept in-house.
- Where possible, has enough critical mass and makes sense create Centres of Excellence to attract new talent

3.1.4. POLICIES AND REGULATIONS

3.1.4.1. CONTEXT

One of the key challenges hindering cities and organisations to develop new products and services is the ability to address regulation. Regulatory frameworks and policies have been in place to ensure compliance and foster the right set of behaviours. But the challenge has been that regulation and policies have increasingly become a burden in the form of "added" cost for compliance.

With the rapid pace of technology growth and disruptions to businesses happening at electrifying pace, it has been extremely difficult for regulation to keep pace. A classic and current example in Australia has been the introduction of new services such as Uber and Airbnb which have forced state agencies to look at the current regulation and determine ways to safeguard interests of all stakeholders. This is a classic example of the inability of regulation to keep pace with innovation occurring in the market.

In the Ipswich context, embarking on Smart City program means dabbling with cutting/bleeding edge capabilities which may not be addressed by current forms of regulation and policies. These regulations and policies may be governed by the Council, State and/or Federal level. To have the ability to truly foster innovation and provide new products/services to citizens will mean Council must have a proactive and well-structured approach. The following section provides an overview and high level approach.

3.1.4.2. UNDERSTANDING THE COMPONENTS OF REGULATION

Broadly, there are 3 types of regulation that govern the way we function as a society. The 3 types are

- Economic Regulation: These are type of regulation that are tailored to support free markets and reduces duplication of monopolistic assets that may increase the cost of delivering products/services to consumers. This nature of regulation will be relevant for startups that will be spun out of Smart City initiatives. For example, a startup working at Fire Station 101 may develop a solution to a Civic problem through the Application Studio which may provide it with an opportunity to expand into newer markets. This new startup may have to comply with regulations in turning that output from application studio to a commercial product or service.
- Social Regulation: This type of regulation covers a broad range of areas such as Safety, Environment, Health, Liveability etc. This type of regulation is framed to provide a certain standard of living to all citizens. The regulations and policies will be directed to the Council with two variations where either the Council only complies and policies/regulation are framed by other independent bodies and the other model is one where Council has control in developing and complying to a regulation/policy. The ability/capability within the Council to understand the relevant regulatory challenges and influencing them to be altered to support innovation will be critical in implementing Smart City initiatives. For example, there is considerable greenfield development in Ipswich City which has led the Council to choose sustainability initiatives such as ecovillage, smart lighting etc. The regulation around set up around microgrids, smart street lighting are with multiple agencies such as Australian Energy Regulator (AER), Institute of Electric Engineers (IEEE) etc. These agencies will have to move at pace to change regulation and possibly involved in trials to ensure regulation is not stifling the ability to innovate and create "future proof" infrastructure.
- Administrative Regulation: This type of regulation provides direction/guidance to the more day-to-day/operational level working of public and private companies. This type of regulation will be very much directed at the process/procedural level that has an impact on the efficiency with which Council /organisation operates. Hence, this regulation will be very relevant for initiatives that are aimed at improving the efficient way of working. This regulation will be critical in providing services to the community in the most efficient manner. For example, the Council may intend to develop a full-fledged digital platform for providing services for citizens. To deliver operational benefits that could mean existing walk-in customer centres may be closed. Any regulation/policy around making this transformation needs to be addressed.

The key is for the individual projects, at the stage of finalising scope clearly understand the nature of regulation, policy and standards which will act as barrier in implementing the Initiative along with the relevant stakeholder who is

responsible. The plan to address the regulatory barrier needs to be built into the project plan early on to ensure there are no roadblocks later.

3.1.4.3. ADDRESSING THE REGULATORY / POLICY CHALLENGE

In order to address the regulatory challenges, especially with advancement in technology the framework suggested in a whitepaper by Luke A. Stewart on "The Impact of Regulation on Innovation in the United States: A Cross – Industry Literature Review" will be relevant and can act as start point for the Council to consider.

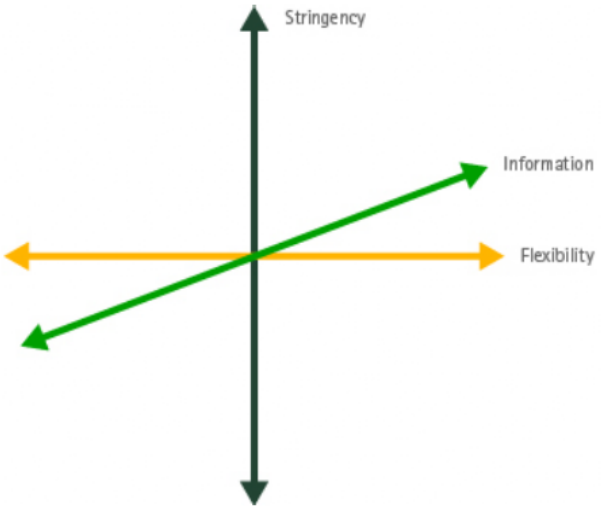


Figure 41. Regulatory / Policy Framework

The 3 dimensions mentioned above are a suggested way of understanding the regulatory outcome for an Initiative. It is important for each Initiative before they are started, to identify the type of regulation and the dimensions that will hinder implementation. Subsequently, the responsible project team needs to work with the right stakeholders to agree on the right level of regulation that will allow the particular Initiative to be implemented and also facilitate new innovations to happen. .

- Stringency: Stringency is defined as the extent to which compliance 'burden' is placed on stakeholders. In other words, it is the degree of 'exacting' performance or compliance standards that a regulation requires stakeholders to achieve. For example, an emission target could be set for the city through regulation and they may be asked to achieve it in 5 years. The regulator may for example provide a target for each year to be hit with a final outcome on year 5. This is quite a stringent target that will drive a behaviour of compliance with limited thought around innovation. On the same example, if just the five year target is set and the trajectory to achieve it is left to stakeholders they may take different routes to get to the final outcome. The Council needs to understand this impact to determine the best way to lobby for the right outcome.
- Flexibility: Flexibility is defined as the nature in which a regulation/policy is enforced upon stakeholders. The extent of flexibility in regulation will determine the cost burden involved in complying on one of the spectrum to fostering innovation on the other end. Typically these are regulations that are targeted at setting performance standards e.g. service levels or specification standards e.g. technical standards for buildings, electrical fitting etc. Typically initiatives that are related to providing basic civic services such as utilities, transport etc. will have considerable technical standards that they will have to adhere to. For example, technical standards for street lighting have been set in the 1960s and hasn't gone through a major overhaul. This has meant, newer smart lighting features cannot be trailed or installed.
- Information: Information is an important element that removes uncertainty/ambiguity for one or all the players in the marketplace. The idea of this regulation is to ensure there is no information asymmetry which may lead to misuse of market position. Regulations could be passed to either control or share information with all stakeholders. This nature of regulation is very relevant in a local government/Council context. The ability to share information in the form of Open data and support innovation is critical in a Smart City context. Council

will have to work with regulators and standards organisations to ensure the right data sets are made available to the city for purposes of transparency, supporting innovation.

3.1.4.4. KEY LEARNINGS FROM OTHER SMART CITIES

The CITIE framework (City Initiatives for Technology, Innovation and Entrepreneurship) provides a set of key recommendations based on review of a number of Smart Cities, which can be adopted by the Council:

- Reframe regulation for new business models: Regulation needs to be ahead of the current times to look at the future trends and determine the right frameworks that will support emergence of new business models and aid economic activity in a city. For example, San Francisco was a forerunner to change regulation and legalize short-term letting for Airbnb. They went through a process of understanding city needs, carried out research, listened to all stakeholders and eventually decided to amend the regulation. This is an important capability a city needs to develop and hone to reduce barriers from regulation and help innovation thrive.
- Regulations reviewed and updated regularly: As discussed in the previous section, the pace at which technology evolves implies the possibility to create new products or services increases every day. This implies existing regulations need to be reviewed on short turnaround timelines to ensure they are still relevant and are achieving the intended outcome they were initially set out for. Where technologies have advanced and changes are emerging, Council could be proactive in making regulatory changes that could attract new businesses and innovation to the city.
- The full spectrum of stakeholders are involved to craft balanced regulation: While changes to regulation are being considered or when the city plans to lobby for a change in regulation it is important that all perspectives from stakeholders are clearly understood. The loudest voices for changes to regulation will the incumbents who may not want any changes as that may affect their status quo. In the Smart City context, hearing perspectives of startups and young entrepreneurs will be important to ensure regulatory changes considered produce the right outcomes.

3.1.4.5. IMMEDIATE NEXT STEPS

The following next steps can be adopted by the Council as part of the Smart City program

- Set up a regulatory/standards function as part of the program: Their role needs to around understanding the regulatory and policy implications of ideas that are being evaluated for implementation. Additionally, they form the single point of contact across the Council to deal with regulatory barriers and challenges, along with identifying ways to address them.
- Ensure regulation is part of the evaluation and business case: Regulatory changes required and the extent of a barrier it has in implementing an Initiative needs to be explicitly understood as part of the Business case. In the event of complex regulatory implications appropriate actions are taken well in advance to allow for the Initiative to be implemented smoothly.
- Consider a Regulatory team in Business as Usual operation: Currently regulatory affairs are managed by the individual divisions. While they may be required to manage compliance, in order to proactively manage regulation and allow a cross functional environment it may be considered to create a centralized regulatory team. There are pros and cons of bringing in a central function and this needs to be evaluated to determine the right model

3.1.5. STANDARDS AND INTEROPERABILITY

3.1.5.1. OVERVIEW

Imagine a future, where an autonomous electric vehicle is driving down a street and is able to communicate with the smart streetlight to provide information on a traffic situation down the road which is transmitted to a traffic centre, following which the vehicle remotely switches on the air conditioners at home as it is entering the street and also

provides the current charge level to an energy optimiser at home to decide on when to charge the car. One of the main elements that is going to accelerate the ability to achieve this vision will be a sound approach to Standards and Interoperability.

When cities think about developing a Smart City Strategy, typically Standards is not on the top of the list of aspects considered. Hence, a clear approach and strategy from a standards standpoint doesn't get defined. This is one of the fundamental pitfalls of a Smart City strategy.

While it may seem counter intuitive to think and strategize around standards, it is one of the fundamentals elements that helps breaks barriers both within a Council and across the various stakeholders in a city. This is in addition to the considerable cost savings that cities stand to benefit based on a well-defined approach to standards.

Interoperability is one of the characteristics that is espoused through standards. While Smart City strategies talk about partnerships and collaboration across stakeholders in a city, the true ability to achieve collaboration is when two organisations are able to share data and information seamlessly with no prohibitive costs for implementing this capability. A robust standards strategy and practice championed by the Council will be fundamental in achieving this outcome.

3.1.5.2. CONTEXT

Standards is defined by International Standards Organisation (ISO) as a document that provides requirements, specifications, guidelines, or characteristics that can be used consistently to ensure materials, products, processes and services are fit for their purposes. The important wording in this definition is "fit for purpose" and being able to clearly articulate what does this mean in a Smart City context. This has been the fundamental challenge for cities and nations in adopting common and open standards towards developing new products and services.

The key challenges cities face today in developing standards are mentioned below –

- The very requirement to ensure there is the ability to allow for interoperability between different systems (firstly within the local government and subsequently across organisations in the city)
- The challenge of understanding the complex requirements and drivers between multiple organisations (both public and private) before developing a well thought through standards
- The complex requirements in a city/community context to manage issues such as privacy, security etc.
- Ability to make the technical requirements for standards simple for Smart City leaders and non-technical personnel to understand, so as to ensure the effort is not seen as an intense engineering exercise with no value

Cities and nations have started on the journey of developing "smart" standards. The following paragraphs provide a brief overview of some of the cities/nations/organisation.

- Poland: At the national level, Poland has set up the Polish Committee for Standardisation (PKN). The body has been looking at setting up terminology and technical committees that can support with individual cities procuring and implementing to similar standards.
- Germany: Germany has set up nine working groups to address standards across multiple areas. The nine areas are Buildings/Construction, Safety and Security, Mobility, Smart Grid/Energy, Information and Communication, Urban processes and organisation, Products, Logistics and an overall group across the 8 called the Standardisation Roadmap.
- British Standards Institute (BSI): BSI has worked at the first stage develop a foundation of knowledge on smart cities and try to build a common view of the capabilities required in creating Smart City . The organisation has taken specific efforts around Common terminology for Smart Cities (PAS 180), Smart City planning guidelines (PD 8101), Decision making framework for Smart City leader (PAS 181), and Smart City data concept model (PAS 182) etc.
- Spain: Spain has developed 13 technical standards at the national level to support with smart cities – Metrics for public service networks, multiservice local networks, convergence of management and control systems in smart cities, comprehensive systems for Smart City , Universal access, urban and land use planning, specification guideline for public buildings, open data, smart street lighting, smart tourism to name a few.

- International Standards Organisations (ISO): ISO has developed a standard ISO37120:2014 that provides a methodology for a set of indicators to guide and measure the performance of city services and quality of life. There are a total of 17 Themes defined which act as standards for cities, municipalities to utilise.

3.1.5.3. DEVELOPING STANDARDS

There are essentially 3 layers at which standards will be required in a Smart City context, as defined by British Standards Institute (BSI).

- Strategic Level: These standards are tailored for the city leadership in helping them develop the strategy, create a roadmap and importantly an approach to monitoring and evaluating progress. The standards at this level are more to act as a guideline and are less prescriptive. They are intended to ensure the thinking is comprehensive and all elements that form part of a Smart City strategy has been considered.
- Process Level: These standards are aimed at providing procedural standards/guidelines for various Enablers required for a Smart City program. These could include aspects such as procurement standards, procurement processes, financing packages guidelines etc.
- Technical Level: For specific initiatives/projects that implement a technical solution e.g. infrastructure, IT platform etc. relevant standards will apply. These standards will have to be highly specific and by nature complex to develop standards for. The reason being, this is the true layer where interoperability occurs and requires systems to talk to each other. At the technical level, there would be a number of standards for each functional area. There will be quite a few functional areas such as buildings, transport, data etc. Hence, there would be a number of standards that will have to be effectively managed at this level which effectively poses the challenge around interoperability.

The standards and interoperability requirements for each Initiative have been identified within the individual profiles where relevant.

The Smart City program will have to set up a standards and interoperability team that looks across all these 3 levels and develop associated standards. Developing and maintaining technical standards will be the most complex aspect to implement.

3.1.5.4. NEXT STEPS

The following next steps are proposed for the Council to consider in setting up the Smart City program.

- A standards and interoperability team should be set up as part of the governance structure for the Smart City program.
- The team will have to develop a plan to address the strategy and process layer by identifying the right standards that could be adopted by the city
- For the technical layer, working groups or standard committees need to be set up for each functional area. The number of functional areas can be determined based on the nature of projects under implementation in the short to medium term
- The team should conduct a light, audit style review in 6 months to determine if projects have been delayed or impacted due to standards. Based on the review, appropriate interventions can be planned.

3.1.6. STRATEGIC COMMUNICATIONS AND COMMUNITY ENGAGEMENT

3.1.6.1. CONTEXT

Communications is about building awareness and understanding from stakeholders, end users and program sponsors. A communications strategy informs audiences what is changing, who is impacted, why the change is necessary and what is in it for the user. The strategy should purposefully target key messages and layer communications for each audience to further encourage commitment and support.

While the Smart City program revolves around the initiatives and the benefits realised, these results need to be communicated to the program's stakeholders. The Smart City program is intended to make Ipswich a more prosperous and liveable place to be, and Council needs to work to make that message clear and demonstrate how the Smart City program is indeed achieving the desired outcome.

A communications or branding program, achieves the following objectives:

- It raises awareness about the Smart City program and puts the city under a regional, national and global spotlight
- It advertises business benefits of the program to attract direct investment (regional, national or international)
- It develops a common language to be used by stakeholders for participation and promotion of the program
- It increases participation and strengthens the Smart Nation program by creating a unique culture and promoting it

3.1.6.2. TARGET AUDIENCES

There are multiple audiences that the Smart City program needs to address:

- Ipswich citizens: First and foremost, the Smart City program is intended to improve the services that Council provides to its constituents. Ideally, the citizens of Ipswich should understand why the Council has embarked on the Smart City journey, what they have to gain from it and how it is progressing.
- Ipswich future residents: As part of Advance Ipswich and the Smart City vision, Council wants to help Ipswich grow and do so successfully. A large part of this involves helping potential residents understand the increasing value of choosing to live in Ipswich. These future residents will want to understand why Council has embarked on the Smart City journey, how this will change Ipswich for the better, what they have to gain from it and how it is progressing. This stakeholder, more broadly, also includes visitors to Ipswich – helping them understand the fun and engagement they will experience upon visiting the city.
- Queensland and Australia: The Smart City Vision aims to position Ipswich as the most prosperous and progressive Smart City in Australia. To do so, Council will need to demonstrate to the broader national audience that this is in fact the case. Council will focus on letting this audience know the scale and ambition of Ipswich's Smart City program, how it is transforming the city and how it is progressing.
- International city landscape: Part of the recognition of becoming Australia's most prosperous and progressive Smart City comes from the international scene, as they, through their awards and rhetoric, will be distinguishing between Australian cities' performance and to compare Ipswich to other smart cities around the world. Furthermore, positioning Ipswich in the international smart cities scene will enable Ipswich to tap into a wider network of resources to help us achieve our ambitious goals.

The importance of community engagement, as a core component of strategic communications, cannot be overstated. It is imperative that Council works closely with the community to ensure a strong uptake of the initiatives and ultimately to ensure the success of the program as a whole. The 16 initiatives are intended to improve the lives of Ipswich residents, so they should be involved in shaping them. Specific initiatives, such as the Innovation Lab (01), the Application Studio (15) and the Digital Platform (16), involve the community quite strongly, but all the initiatives should strive to do so as part of the scoping, design and development activities of the initiatives. At a program-level, a framework should be put forward to enable community engagement as a new way of working. The community fabric should be deeply weaved into the program.

While it is extremely important to communicate the goals and objectives of the Smart City program to internal Council staff, this falls out of scope of the "strategic communications", being covered within the Performance Management, Governance Structure and Sustainability sections of this Blueprint.

3.1.6.3. KEY MESSAGES

Communicating Ipswich's Smart City journey involves focusing on these critical messages:

- Telling the Story: Ipswich City Council will focus on telling the story of our Smart City journey.
    - We will explain why we embarked on this journey, providing a macro view on global trends and, more importantly, a micro view contextualised to Ipswich.
    - We will explain what we hope to get out of it and how we have gone about embarking on this journey. We believe we are one of few cities that have approached becoming a Smart City in a holistic 360 degree way.
    - We will explain how our Smart City program fits in our broader place branding. The Smart City program is intended to augment our city vision, Advance Ipswich.
- Goals, Index and Measurement: Ipswich City Council will showcase how we are achieving our overall Smart City Vision and our overall goals.
    - Measuring achievement of the Vision: Council needs to show how Ipswich is meeting our vision of becoming "Australia's most liveable and prosperous Smart City ". For example, we can collate Smart City indices from various sources (Siemen's Green City Index, Ericsson's City Index, the CITIE Index, IESE Business School's Cities in Motion Index, 2thinknow's Innovation Cities Index, or Mercer's Top Quality of Living Ranking) to demonstrate that we appear on more rankings and more highly ranked than any other city in Australia.
    - Measuring achievement of the overall goals: Furthermore, Council needs to show how we are achieving our overarching goals of job creation, growth and liveability. Again, we can quantify our achievements through year-on-year job growth, population growth, growth in density and other liveability indicators. There are also a plethora of quality of life indices and rankings that we can pull from to understand how we are improving from year to year. This is not a comparison between us and others, but a commitment to always build on our previous results.
- Benefits Realisation: Ipswich City Council will showcase how we are progressing on our Key Performance Indicators.
    - We need to show what benefits we aim to realise across our Themes and specific initiatives and how this will ultimately improve the lives of our citizens. If, for example, we believe that the Build and Learn Fair will let our young children explore their creativity and embrace innovation as a way of life, leading to more of our youth exploring STEM disciplines, we will show both how many young children attended the event and the percentage of our Year 12 graduates enrolling in STEM disciplines at TAFE or USQ.
    - We aim to show this in the most user-friendly, understandable and high impact way. This is where our citizens will really understand why we embarked on this journey and what they will gain from it – we want to ensure that we can engage them in understanding this and that they really get it.

3.1.6.4. COMMUNICATION CHANNELS

The channels for communicating the Smart City journey can and should be varied, as different audiences will be reached through different channels. A few for consideration should be:

CHANNELS	DESCRIPTION
Smart City website	A website that focuses on communicating our Smart City journey: telling our story, explaining our goals, indices and measurement, and how we are realising benefits. Examples include: • Barcelona: http://smartcity.bcn.cat/en • Dubai: http://www.smartdubai.ae/ Very few Smart Cities have made the required effort to communicate outwards in a comprehensive and cogent manner. In fact, the reputations some of the world's most progressive Smart Cities, such as Singapore, Barcelona or Copenhagen, have only built over long periods of time through traditional media and limited Smart City websites. On the other hand, when looking at the commercial sector, Unilever and Nike, for example, have built strong, robust and validated reputations with regards to environmental and social sustainability, in very short amounts of time and reaching a much larger audience. Commercial examples include:

CHANNELS	DESCRIPTION
	• Unilever: https://brightfuture.unilever.us/ • Nike: http://about.nike.com/pages/sustainable-innovation • Interface: http://www.interface.com/US/en-US/campaign/negative-to-positive We believe that in order for Ipswich to "punch above its w8" and put itself on the Smart Cities map in a short period of time, having the impact that it desires, we will need to make a strong push to really communicate our unique journey – ensuring we amplify our outcomes to create resonance around the world.
Smart City Social Media Campaign	A social media campaign, that can be complementary to the Smart City website or stand on its own, that focuses on relaying progress on the Smart City initiatives. This campaign can be kept separate from other Council social media campaigns. If brought together, the campaign will need to be able to distinguish itself through a hashtag or other method.
Smart City Annual Report	Similar to corporate annual reports or corporate citizenship/sustainability reports, this annual report would focus on recapping the Smart City journey and providing updates on progress across all 16 initiatives. The annual report would look back at the year to understand what has been achieved, if we are on track based on our roadmap and if we are realising benefits to the extent we had hope for. This retrospective will allow us, not only to communicate about the Smart City program, but also readjust the Smart City plan based on lessons learned, allowing us to improve every year.
Leveraging Media	Council and other Ipswich city partners can work with traditional media channels (journals, magazines, newspapers, radio, TV, public ads, etc.) to relay progress on the Smart City initiatives. We believe that news agencies will naturally pick up on Ipswich's Smart City initiatives, but Council can also make a proactive effort to launch its stories on regional, national and international news. Many Smart Cities around the world, like New York, Chicago, Barcelona, Dubai, Singapore and others, have built their reputations primarily through traditional media.
Smart City Circuit	Council can tell its Smart City story and provide further detail on particular initiatives and overall progress through involvement in Smart City related conferences, boards and networks regionally, nationally and internationally. Again, many smart cities around the world continue to build their reputations in this space through the international Smart Cities circuit. Furthermore, many of these cities host a conference themselves to showcase themselves as being on the cutting edge of Smart Cities in their particular region (examples include Austin, Singapore, Barcelona and Dubai).

Table 73. Communication Channels

3.1.6.5. IMMEDIATE NEXT STEPS

A communications plan typically follows this approach:

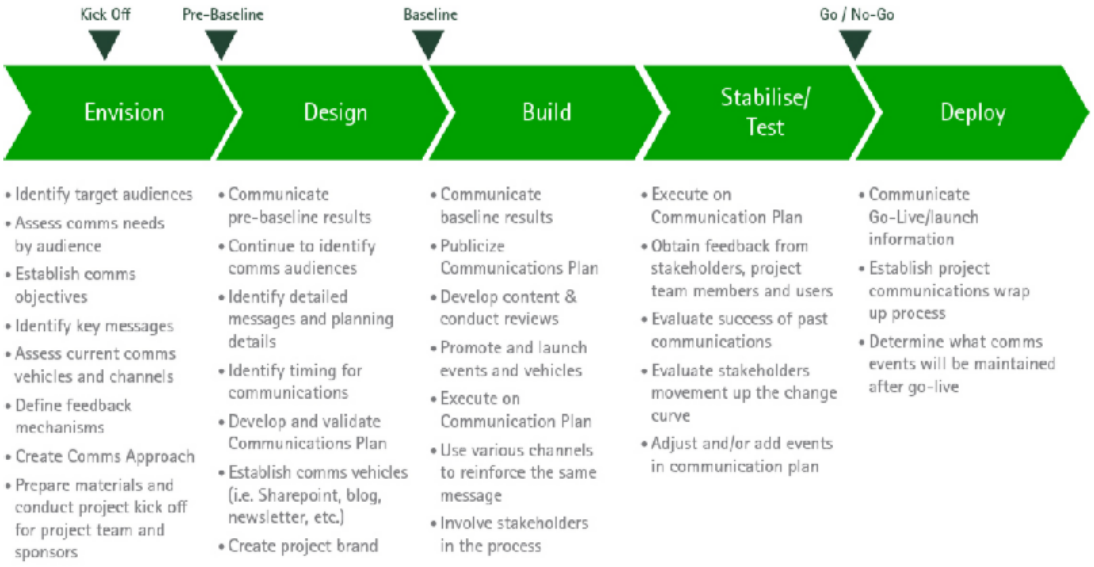


Figure 42. Communications Plan Approach

As part of the broader Smart City program, the communications strategy should be established upfront. This is especially important to be able to gather pre-baseline and baseline results before the individual initiatives kick off.

As a first step, a team or a resource needs to be identified that will be responsible for the communications plan. This team/resources can be internal or the plan can be outsources to a vendor with deep experience in this area. Once the team is identified and launched, they can begin designing the communications strategy and plan.

3.1.7. NEW WAYS OF WORKING / CULTURE OF INNOVATION

Success in digital / smart cities requires new ways of working that drive innovation and collaboration across vertical silos that typically exist in a local Council. Joined-up delivery and harnessing opportunities for innovation across organisational boundaries is at the heart of delivering more sustainable and citizen-centric services. Innovation needs to be a core competency for all in the organisation. This brings with it an expectation that some efforts will fail, which is typically a new mindset for local government organisations. Finding meaningful and practical ways to incentivise innovation and promote collaboration between staff within Council is key. Increasingly we see cities across the globe working to:

- Change mind-sets of staff: Work to change the mind set of staff and increase the Digital IQ of the "top 50 – 100" Managers and Team Leaders across the organisation e.g. through digital boot camps and mentoring programs.
- Accelerate skills development: Identify innovation and Digital Skills gaps within Council and create roadmap for filling them. This could include injecting new talent and youth into the organisation. Key will be to work out what skills are needed within Council in the long term that need to be built, versus what could be provided by a partner, versus what needs to be "bought".
- Establish enterprise wide processes to capture and prioritise ideas of staff: Whether through competitions or other channels for capturing the ideas and suggestions of staff, cities are seeking to engage their people in innovation experiences and opportunities in their day-to-day jobs.
- Establish an Innovation capability external to Council: While there are a number of ways to embed innovation organisationally within Council, there are many examples of cities across the globe taking the approach of establishing an innovation delivery unit that is separate from Council and reports directly to the Mayor. Typically this unit has a remit to work differently, operate under different governance, and new hiring practices etc. Other approaches such as embedding with existing teams can work (e.g. Paris has an innovation community with fellows within each department), but this approach can be slow and traditional thinking will often fight against change and innovation. Successful examples of external innovation units include Amsterdam's Smart City and Boston's Mayor's Office for New Urban Mechanics.
- Partner by default: Success will also require actively curating partnerships to deliver Smart City initiatives. Amsterdam for instance works with a network of 500 innovators, startups and corporates. Every project has a partner. San Francisco brings innovators inside city hall with its "Entrepreneurs In Residence" Initiative. Tel Aviv set up a digital co-working space in the heart of the city – as much to support entrepreneurs as it was for city officials to understand a new way of working and the needs of the community.

3.1.8. FUNDING

3.1.8.1. OVERVIEW

A Smart City Program is truly developed for the city in its entirety and not just for the Council. The local government authority i.e. Council plays a facilitator role and takes ownership to ensure initiatives are implemented within the city to improve quality of life for all citizens.

This naturally implies the investment in Smart City initiatives does not necessarily have to happen all from the Council. A range of stakeholders such as all levels of government, private players, individual citizens etc. will have a role to play in terms of investment.

A key capability that the Council needs to start building immediately will be the ability to identify and executive creative funding options to implement Smart City initiatives. This capability will be crucial to ensure a broad range of initiatives from bleeding edge to city efficiency initiatives are implemented.

In the following sections, we will describe the potential funding options that can be adopted in setting up the Smart City Program.

Note: This section is intended to provide a guide of the funding options typically available for a city. It does not list all of the specific entities or available range of funding.

3.1.8.2. CHALLENGES WITH FUNDING

Funding can be one of the first hurdles/challenges that needs to be addressed in building the inertia to implement an Initiative. Cities around the world have encountered the following key impediments in securing funds:

- Perception of high risk to invest in leading innovations/technologies
- Current/Existing regulatory and policy barriers that hinder government and/or private agencies to invest
- The sheer size of investment required in certain cases will act as a deterrent
- Relatively longer duration to achieve benefits or results from the Initiative

It is important for the Smart City team to clearly understand the challenges from the above which will be relevant for each/individual project. This will be critical to identify the right mitigation mechanisms and the funding model that will work best. For example, to test a bleeding edge technology trying to source funding purely from the Council will not be the best strategy. Potential possibilities for public private partnerships or complete private investment options should be considered.

While developing the business case for each Initiative, the Council should also specifically spend time discussing the funding challenges and the potential strategies that can be adopted to secure investment. This activity will also ensure, Council staff start changing their mindset that initiatives have to be solely funded by Council and will begin to provide innovative ideas on how investment can be attracted.

3.1.8.3. FUNDING MODELS

There are a few broad funding categories that are at the disposal of each city to support financing of smart Initiative. In the following section, these categories have been described. As one of the foundational activities, Council should research on the potential funding options under each of the funding categories for the short and medium term initiatives (in line with the implementation plan).

The funding categories are depicted below:

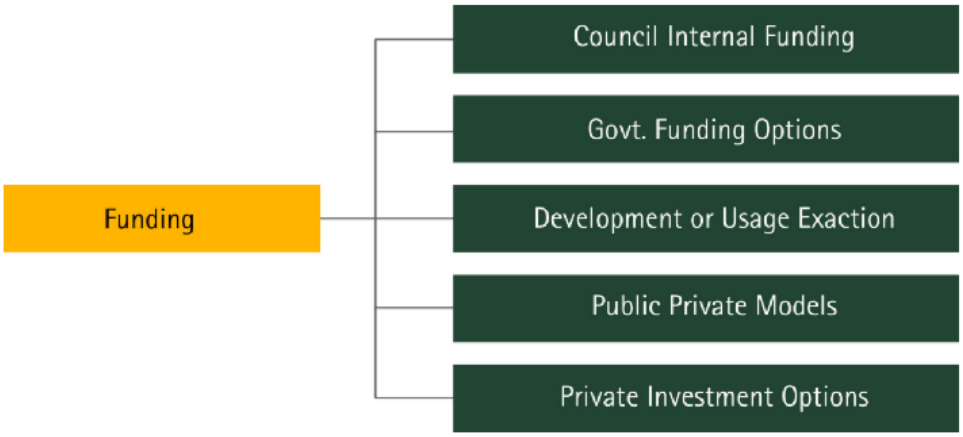


Figure 43. Overview of Key Funding Categories

3.1.8.4. COUNCIL INTERNAL FUNDING

This will be one of the easiest and most accessible mode of funding for the Council. This source of funding will be most appropriate for initiatives that target driving operational efficiencies of Council operations or delivering new revenue streams for the Council. The ease of acquiring investment will solely depend on the ability to present a robust business case with well-articulated returns (both tangible and intangible). The approvals for gaining investment will follow the existing governance processes within the Council.

3.1.8.5. GOVERNMENT FUNDING OPTIONS

At all levels of government i.e. local government, state government and federal government funds are allocated each year for specific areas or resolving specific civic issues. Typically, these investments are aimed at investing in core infrastructure which are typically high investment projects with a longer return duration.

The key challenge for Council will be the ability to attract available investment to the city. This would require effort in building a very compelling story coupled with the right lobbying. To achieve this outcome, the Smart City team needs to have a very clear strategy of the investment buckets that are worth chasing at the State and Federal level.

Types of funding options that are typically available –

- Government Bonds – State and Federal governments could release a range of bonds to attract funds for investment. Examples of types of bonds are
- General Obligation bond which is typically guaranteed by the tax revenues of issuing jurisdiction
- Revenue Bonds – These are bonds that are structured directly linked to the revenue generated from the Initiative which will go to repaying the loan
- Green Bonds – This investment vehicle has been popular in Europe and has been used to fund energy efficiency and sustainability projects.
- Grants – Government funding that do not have to be repaid and is channelled to provide specific social outcomes for a society. Grants may not necessarily cover the entire cost of implementing a project but more as an upfront financing to prove up a concept. This would work best for projects/initiatives that are scoped out as trials. For example the Australian federal government has grants for startups, incentives for solar initiatives etc.

3.1.8.6. DEVELOPMENT OR USAGE EXACTIONS:

This nature of investment is best suited for initiatives/projects that are proven and financing is required to scale the capability to a wider population. The recovery of the investment made is through some form of fees/tax paid by users, developers etc. Once the funded amount is recovered the usage charges can be rescinded. This mechanism works well in cases where infrastructure is built for citizens and they have clearly expressed their acceptance to pay a fee to access the said service.

3.1.8.7. PUBLIC PRIVATE MODELS:

This is one of the newer financing options that seeks collaborative investment between the public and private entities to achieve a desired outcome for the city. The key for these models to work is the ability to create win-win outcomes and equitable risk sharing across all proponents. For example, the government of Philippines have established a separate Public Private Partnership centre. The intent of this entity is to hammer out collaborative models to deliver funding outcomes. A similar task force could be setup in Ipswich who are primarily look at ways and means to create partnership models to deliver Smart City projects.

The models in a private public models is not restricted to partnerships but could extend to models such as structured financing, pay for performance or disaster/catastrophe bonds

3.1.8.8. PRIVATE INVESTMENT OPTIONS:

As the name suggests, this funding category attracts purely private investment in initiatives that will improve quality of life for citizens. The main attraction for private companies would be their ability to either create new business models (i.e. revenue streams), or attract new customers or generate a considerable improvement to their bottom line.

Some of the Smart City initiatives utilise bleeding edge technologies which would have wide ranging application beyond solving a specific civic problem. This may be of considerable interest to a business and may be keen to perfect their product by using the city as a test bed. This would mean the city gets an improved service at no investment, while the private entity has developed a product they can commercialise with limited investment.

This is a very promising area and there are different financing vehicles that could be adopted under this category such as On-bill financing, Value Capture, Pool bond financing etc.

3.1.8.9. NEXT STEPS

There are a number of key steps that the Council needs to undertake as a foundational activity:

- Appoint a team or set of resources who will primarily focus on funding of Smart City initiatives and are part of the governance structure for Smart City Program
- Conduct an initial research on the potential government bonds, grants, loans, incentives available against initiatives that are planned to be delivered in the short and medium term
- Identify the immediate opportunities that the city should lobby for and decide on a plan of attack
- Ensure funding options is included as a component of the detailed Business Case and includes a discussion on creative financing
- Consider spawning off a separate team who can interact across all public – private players and are solely responsible for delivering funding outcomes for initiatives planned in a year

3.2. PLATFORM

3.2.1. OVERVIEW

To allow ICC to embrace best of breed Smart City solutions now and into the future, the current ICC technology landscape must be broadened to include a new common set of open services and platforms. These additional components will enable Council Smart City solutions to:

- Integrate with Council's enterprise systems and interoperate with each other;
- Enable the harvesting, analysis, and visualisation of 'Big Data' whether from sensors video, or social media; and
- Allow Council services and data to be exposed to other organisations and the public.

This approach represents a 'Federated Architecture' whereby vendor solutions can co-exist and interoperate via these common platforms and services. This approach avoids a landscape of closed systems and makes it easier to introduce new technologies as they emerge and to replace solutions without impacting the overall architecture.

The inclusion of sensor networks, video streaming, and other big data sources such as social media streams, drives a need for the architecture to provide 'real-time' processing of a large volume of data. This has impacts on the network, messaging and database layers of the architecture. The data domain is also impacted by the fact that the types and definitions of this 'big data' are more dynamic and flexible than traditional structured data.

The following diagram outlines Council's Smart City Platform framework.

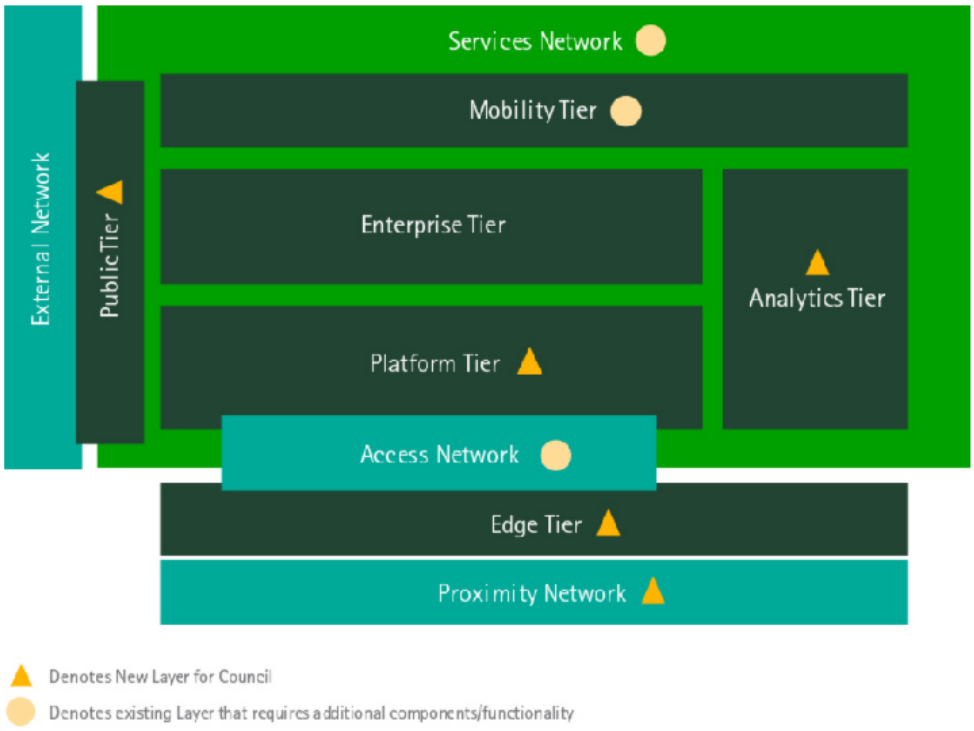


Figure 44. Council Smart City Platform Architecture

TIER	DESCRIPTION
EDGE TIER	This is the Physical environment containing the 'Things' that are part of the smart eco-system (e.g. sensors, video cameras, actuators, routers, gateways) This can be a single physical location or multiple physical locations. The network that the things use to communicate locally is called the "Proximity Network". When communicating with Council's Platform tier, 'things' use the "Access Network".
PLATFORM TIER	The Platform tier is composed of two layers: • The Data Ingestion layer contains the necessary Input/Output adaptors to capture data from either the Edge Tier (e.g. sensor data via the Access Network) or from external 'Big Data' feeds (e.g. social media data via the External Network). This layer provides the necessary traffic control, data security, and data transformations necessary for its consumption. • The Data Orchestration layer is responsible for the processing of the data – it applies the business rules, machine learning, and Complex Event Processing (CEP) required to enable Smart City services.
ENTERPRISE TIER	The Enterprise Tier is Council's existing landscape of Enterprise Applications (e.g. HR, Finance, Customer Management, and Enterprise Asset Management). Moving forward other smart applications will sit within this tier e.g. Planning, Parking, Traffic, Energy, etc. An Enterprise Service Bus sitting atop the "Service Network" enables traditional point-to-point type integration between the Enterprise Applications and to other tiers such as the Platform tier and the Analytics tier. As more cloud and micro-service based architecture applications become part of the Council application landscape, the use of APIs as a primary integration approach should be expected.
ANALYTICS TIER	The analytics tier includes the Data Storage, Analytics, and Visualisation components required to enable Council to obtain actionable insights and business outcomes. While insights may come from a particular Smart City solution, they may also come from the aggregation of data across solutions.
MOBILITY TIER	The Mobility tier covers components and services required to provide mobile functionality to Council staff (devices, mobile device management, applications) and service mobile applications for use by the general public.

TIER	DESCRIPTION
PUBLIC TIER	The Public tier provides a safe gateway for Council to: • Provide Council services via an API Gateway to external parties • Provide data sharing capabilities to external parties (i.e. Open Data) For example, mobile applications may be developed by third parties based on Council services and data by accessing Council APIs provided through the Public tier.

Table 74. Overview of Platform Framework Tiers

The following table provides additional details on the network layers.

NETWORK LAYER	DESCRIPTION
PROXIMITY NETWORK	The Proximity Network is the local network/s that 'things' use to communicate locally. Covers both wired and wireless network technologies (e.g. Wi-Fi Mesh, Near field). The Proximity Network is separate to the External Network where integration between the enterprise and the public takes place.
ACCESS NETWORK	The Access Network enables 'things' in the Edge Tier to communicate with Council's Platform tier. Where possible this network layer will be enabled by the National Broadband Network as the backbone communication channel along with other technical components required to pass data between the networks tiers.
SERVICE NETWORK	This is Council's existing internal IP based network. Existing Council Applications communicate across this network using the Enterprise Service Bus and a Service Oriented Architecture (SOA) integration approach. As more cloud and micro-service based architecture applications become part of the Council application landscape, the use of APIs as a primary integration approach should be expected. The Platform tier communicates with the Enterprise tier through the "Service Network".
EXTERNAL NETWORK	This represents the network/s that reside outside of Council control that are required for communication/integration with Council partners and the public (e.g. the internet).

Table 75. Overview of Platform Network Layers

3.2.2. FEDERATED ARCHITECTURE GUIDING PRINCIPLES

In order for vendor solutions to form part of Council's Federated Smart City Platform Architecture, they will need to conform to the following set of guiding principles.

- Vendor devices in the Edge tier must be able to provide their data via Council's Access Network to the Platform tier such that it may be consumed by upstream components (e.g. by the Analytics tier to drive business insights or potentially exposed externally via the Public tier).
- The Vendor solution must be based on a Services based architecture that will interoperate with ICC's API and SOA frameworks and Enterprise and Analytics applications.
- Vendor solutions will leverage ICC's Active Directory to drive user access to front-end applications and allow Single Sign-On.
- The vendor solution must provide relevant events for consumption by Council's monitoring agents and Security Incident Event Management (SIEM) platforms.
- Where solution components are to be co-hosted in Council's private cloud, they must be compatible with Council's Strategic Architecture landscape. (e.g. servers, databases, operating systems, etc.)

3.2.3. IMPLEMENTATION CONSIDERATIONS

In addition to a defined set of Smart City Initiatives outlined in this Blueprint that will address specific issues for citizens and the Council as an organisation, a separate set of Smart City 'Foundation' initiatives/projects will be required to establish the Smart City Platform architecture.

FOUNDATION INITIATIVE	DESCRIPTION	SCHEDULING CONSIDERATIONS
EDGE TIER AND PROXIMITY NETWORK	• Select Edge Devices • Establish communications network for Edge Devices (e.g. Wi-Fi Mesh) • Place Edge Devices in the field	• To be performed ahead of the implementation of Smart City Initiatives or coupled with the pilot/implementation of a particular Initiative that involves sensors/video input.
EXTEND ACCESS NETWORK	• Confirm primary backbone communication channel for Smart City solutions (e.g. NBN). • Confirm architecture for how the Access Network connects the Edge Tier and the Platform tier (e.g. what Edge Gateway device will connect the sensor devices to the Access network? Who will own and manage those Edge Gateway devices?). • Confirm ownership and management of Access Network components. • Rollout of the Access Network.	• To be performed ahead of the implementation of Smart City Initiatives or coupled with the pilot/implementation of a particular Initiative that involves sensors/video input. • Note: Smart City Initiatives that do not require connectivity with applications in the Enterprise or Analytics tiers can be implemented ahead of the establishment of the Access Network. The Smart City Initiatives must meet the Guiding Principles defined in Section 3 of this document so that the data from the solution can be consumed by Council's Platform tier via the Access Network once available.
ESTABLISH PLATFORM TIER	• Design for the Platform Tier. • Confirm ownership and management of Platform Tier components. • Rollout of Platform tier.	• As above
ESTABLISH PUBLIC TIER	• Architecture Design for the Public tier. • Confirm ownership and management of Public tier components. • Rollout of Public tier.	• To be performed ahead of the implementation of Smart City Initiatives or coupled with the pilot/implementation of a particular Initiative that involves Open Data and/or exposing Council services to partners or the public.
ESTABLISH ANALYTICS TIER	• Architecture Design for the Analytics Tier. • Confirm ownership and management of Analytics Tier components. • Rollout of Analytics tier.	• To be performed ahead of the implementation of Smart City Initiatives or coupled with the pilot/implementation of a particular Initiative that involves analytics.
EXTEND MOBILITY TIER	• Establish Mobile Device Management • Define and enforce Device Security policies.	• In progress through BAU activity.

Table 76. Platform: Foundation Initiatives

3.2.4. FEDERATED SMART CITY ARCHITECTURE EXAMPLE

As an example of the Federated Architecture approach, the following steps outline how a 'Smart Parking' solution may be approached:

- Council may evaluate and select a Smart Parking solution from a vendor that will meet the guiding principles outlined in Section 3.
- The vendor solution may be comprised of a set of sensors or video cameras, application/s for processing the data (e.g. video analytics) that may be hosted and managed by the vendor in the cloud (i.e. SaaS); and web and mobile front ends to show the available car spaces to users and for operators to administer the system.

- Under the federated architecture outlined in Section 2.1, the series of Sensors/video cameras for the solution would be deployed at the targeted parking bays across Ipswich. These sensors would communicate via Wi-Fi back to a nearby edge router device (Proximity network) that would facilitate the communication of the data to the vendors SaaS based solution and also to Council's Smart City Platform tier via the National Broadband Network (Access network). This enables the vendor solution to operate natively but also allows the data to flow to Council for further use.
- The vendor SaaS solution may expose a service to provide a curated output of changes to available parking spots that can be used to trigger other internal or external events. For example, a full parking bay may trigger a change to a Smart Signage solution (potentially managed by a different vendor) to notify motorists that no spaces are available. Alternatively the raw sensor data may be ingested directly into the Platform tier.
- The parking data may be further analysed and visualised via Council's Analytics tier. For example the ability to look at parking bay vacancy rates and the ability to visually represent real-time and historical occupancy on a map.
- Parking data may be exposed to other organisations and the public via the Public tier. For example, in addition to a Council branded Parking App managed by the vendor that displays available parking bays in the Ipswich CBD, the set of parking data and other Council APIs may be exposed to students from USQ as part of a hack-a-thon event where the aim is to build a number of companion applications that are of value to the city and its citizens.
- Council may also choose to have the Smart City Platform send notifications to field staff using mobile devices to inform them of possible issues identified via the Smart Parking sensors (e.g. possible abandoned vehicle, vehicle improperly parked, etc.).

3.2.5. SMART CITY PLATFORM ARCHITECTURE

The Smart City Platform Architecture is comprised of a number of defined tiers which communicate internally and externally via a number of network layers.

3.2.6. EDGE TIER

The Edge Tier, which contains most of the field technology, is made up of 5 main component types:

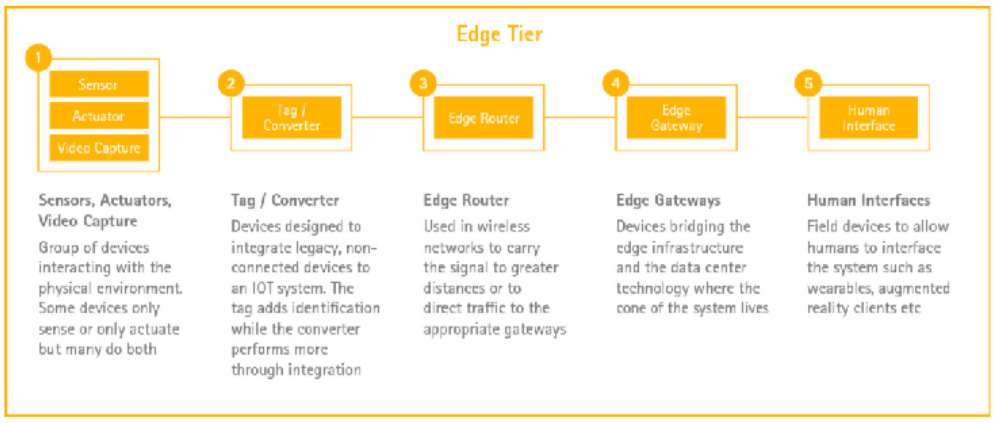


Figure 45. Edge Tier Component Types

The Edge Tier contains 5 connectivity patterns for devices.

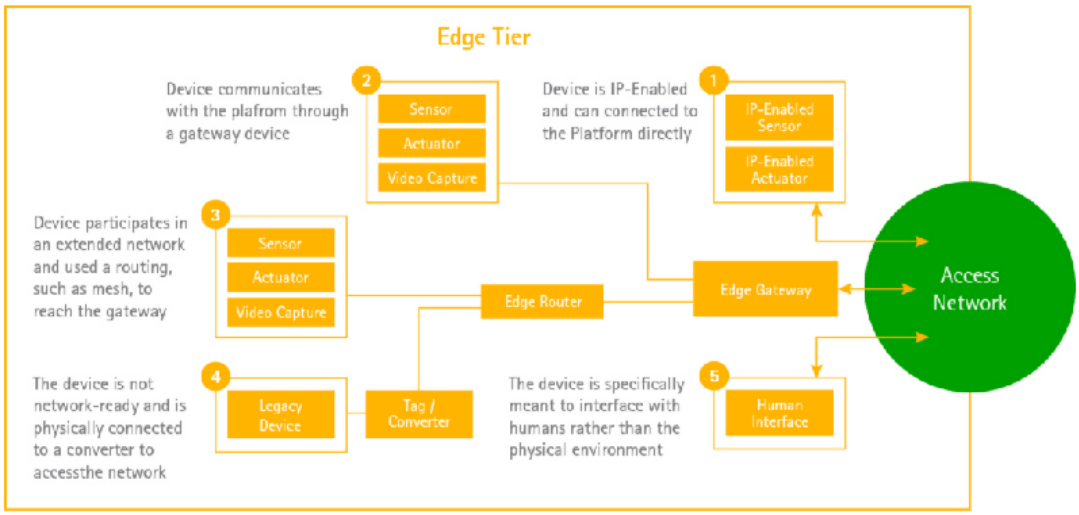


Figure 46. Edge Tier Connectivity Patterns

Edge Sensors (including video capture devices), Actuators, and Converters are typically 'lightw8' in terms of technical services and focus primarily on the capture and transmission of data for downstream consumption.

Devices such as Edge Routers and Edge Gateways are typically 'smarter' and provide common services such as Data Flow Control, Network Routing, Edge Analytics, Edge Rules Engines, Data Pre-Processing, and Device Operations.

The following table outlines some of the key architecture services provided by devices such as Edge Routers and Edge Gateways in the Edge tier.

ARCHITECTURE SERVICE	DESCRIPTION
DATA FLOW CONTROL	Management of data flow so that the data can be handled at an efficient pace. Too much data arriving before a device can handle it causes data overflow, meaning the data is either lost or must be retransmitted. In a network, flow control can also be applied by refusing additional device connections until the flow of traffic has subsided.
NETWORK ROUTING	Virtual network routing which can be configured to increase capacity and performance.
EDGE ANALYTICS	A tool allowing analytics to be run in the edge tier to reduce the flow of information to the Platform tier. Such a tool might receive a temperature read every second but only send upstream the mean measure every minute.
DATA PRE- PROCESSING	Data Pre-Processing typically consists of compression, normalisation, data filtering, and cleansing. Pushing this function to the Edge is an operational risk and must be considered carefully as it can sometimes lead to problems. The best place to pre-process the data is in the Platform tier where the capability can be managed more effectively. However, in certain cases, some functions can be located in the Edge. Compression, for instance, if necessary originates here.
DEVICE OPERATIONS AGENTS	Agents that allow remote management of Edge devices including: • Remote deployment of firmware • Monitoring (e.g. uptime and performance) • Device Configuration (e.g. device IDs, IP addresses) • Logging • Power Management

Table 77. Platform: Key Architecture Services of the Edge Tier

3.2.7. PLATFORM TIER

The Platform Tier consists of the Data Ingestion Layer that reads data in from either the field or from external big data sources such as Social Media, and the Data Orchestration Layer that processes the data, applies business rules and triggers event processing.

The following diagram outlines the key technical services of the Platform Tier.

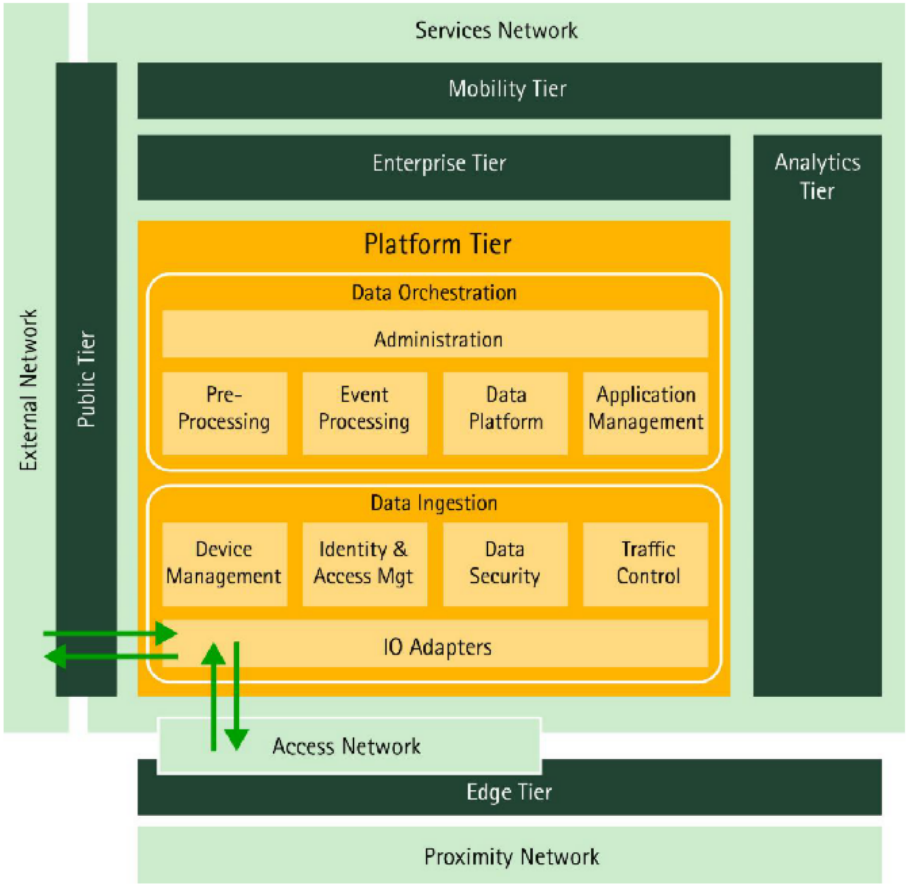


Figure 47. Council Smart City Platform Tier

The following tables outlines the key architecture services required in the Platform tier.

ARCHITECTURE SERVICE	DESCRIPTION
INGESTION LAYER	
IO ADAPTERS	I/O adapters are servers and technical capabilities designed to accept incoming and outgoing connections using relevant protocols.
DEVICE MANAGEMENT	Device Management is concerned with the ability to provision, manage, authorise, control and account for all the devices on the system.
IDENTITY & ACCESS MANAGEMENT	Identity and Access Management is concerned with the unique identification of devices as they come online and use, or contribute to, system resources.
SECURITY	Security is the set of functions and capabilities aimed at achieving the 3 key components of a secure system: Confidentiality, Integrity and Availability. All 3 components are concerned with the protection of information both at rest and in transit. • Confidentiality is concerned about ensuring that information is protected against unauthorised access.

ARCHITECTURE SERVICE	DESCRIPTION
	• Integrity is concerned about protecting information against unauthorised changes. • Availability is concerned about ensuring that people with authorisation are in fact able to access the information.
TRAFFIC CONTROL	The volume of data ingested by Internet of Things platforms can be significant and often a large percentage of the data received may be considered 'noise'. Traffic control capabilities prevent the ingestion of useless data or overuse of the platform beyond pre-set parameters. Those controls may be executed at the front by the adapters themselves or through filtering mechanisms in the orchestration layers.
ORCHESTRATION LAYER	
PRE-PROCESSING	Pre-processing is concerned with conditioning the data in preparation for the main processing step. It executes simple a repetitive tasks such as formatting the data to feed an expecting algorithm, converting it (e.g. from XML to JSON), augmenting it (e.g. add cached customer information to a device reading), etc. This process is often handled through both a streaming engine and a batch processing engine, depending on the needs and the expected output.
EVENT PROCESSING	Event Processing is the main activity that processes the incoming data. It must contain the following 3 components: • an input feed which may be implemented through message queues or NoSQL repositories; • one or more processing engines that hold rules logic and interpret the data; and • an output queue for applications to consume of the results.
DATA PLATFORM	The Data Platform is the set of all the technologies of data repositories and holding processes required in the Platform tier.
APPLICATION MANAGEMENT	Application Management refers to the set of capabilities required to manage and control a set of applications running in the Platform tier.
ADMINISTRATION	Typically a web portal exists to provide access to management functions for the Platform tier. Many of the different products often leveraged for Platform tier capabilities have their own unique web portals for administration.

Table 78. Platform: Key Architecture Services of the Platform Tier

3.2.8. ENTERPRISE TIER

The Enterprise Tier consists of the suite of Council Enterprise Applications and an Enterprise Service Bus that enables communication between them as well as controlling the flow of information to and from the Platform, Analytics, and Public tiers.

The following diagram outlines the key technical services of the Enterprise Tier.

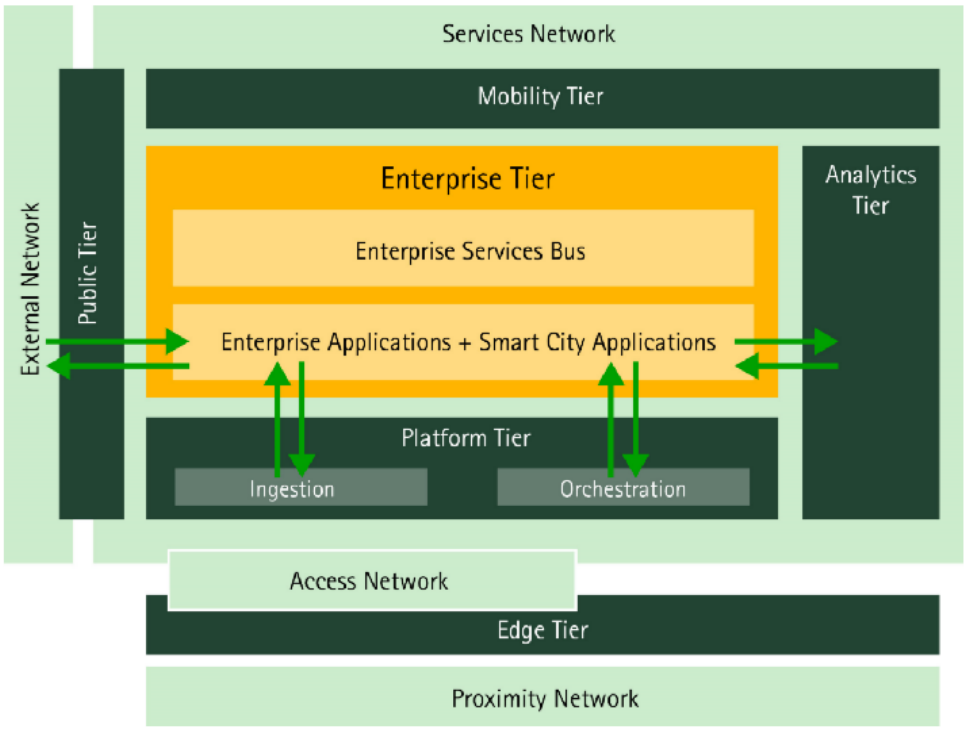


Figure 48. Council Smart City Enterprise Tier

Council currently utilise an Oracle based Enterprise Service Bus (ESB) to enable point to point file and message based integration between enterprise applications. As further Smart City applications become part of the landscape that may be cloud hosted and/or based on micro-services architectures, APIs will become more prevalent as a primary means of integration between applications and between the Enterprise, Platform, Public, and Analytics Tiers.

The Enterprise Tier exchanges information to and from the API and Analytics tiers as well as communicating with the Platform tier at 2 levels:

- At the Orchestration layer level where intelligent information will be pulled and shared.
- At the Ingestion layer where operational and raw data will be exchanged.

3.2.9. ANALYTICS TIER

In the Analytics Tier, information is ingested from both Enterprise systems and data processed by the Platform tier and is then stored in a Data Lake and/or a Data Warehouse. The data can then be interrogated by Analysis tools and either passed on for use by to Enterprise applications, exposed via the Public tier, or presented/displayed directly to Council users via specialised Visualisation technologies.

The following diagram outlines the key technical services of the Analytics Tier.

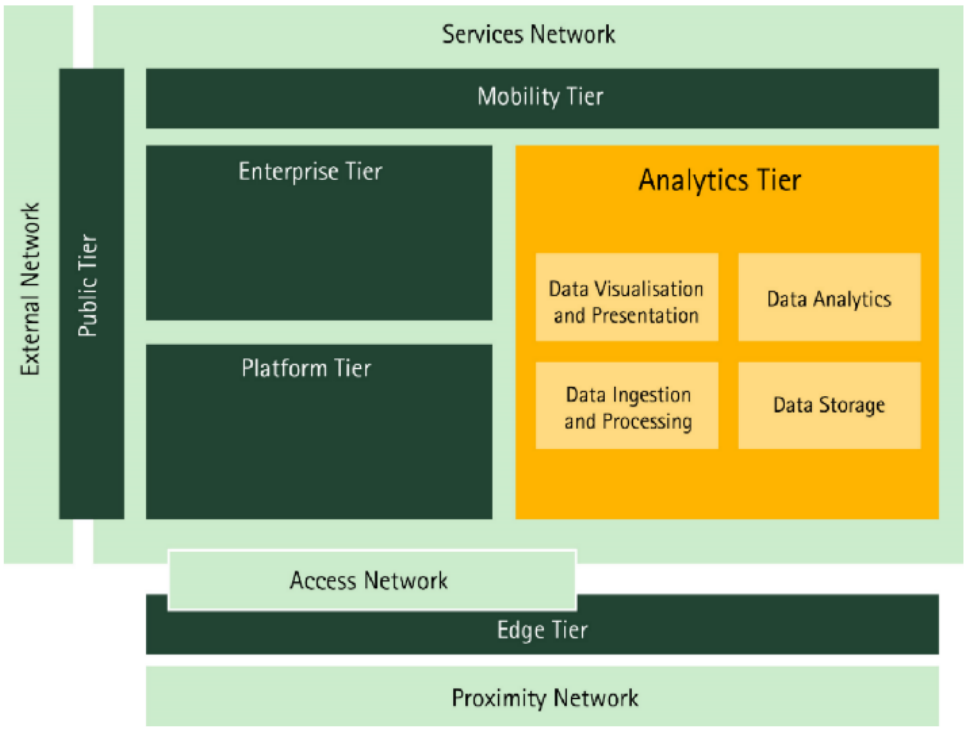


Figure 49. Council Smart City Analytics Tier

The following table outlines the key architecture services required in the Analytics tier.

ARCHITECTURE SERVICE	DESCRIPTION
DATA INGESTION AND PROCESSING	Batch and Streaming services to accept both structured and unstructured data from a variety of sources (e.g. relational databases, files, sensors/devices, social media).
DATA STORAGE	Data Storage refers to the physical storage of data (whether that be in relational or columnar database management systems, document stores, in-memory storage, distributed file-system), in a Data Warehouse and/or a Data Lake. • Data Warehouse – A logical representation of clean, vetted subject-oriented data that users at various levels can analyse from all relevant and possible angles to make decisions. • Data Lake – An easily accessible data repository for storing uncategorised pools of data "as-is" that may potentially be of interest for analytical interrogation.
DATA ANALYTICS	Includes tools for Data Modelling, Data Discovery/Mining, and Master Data Management. Also includes advanced analytics capabilities such as Machine Learning and Statistical Learning.
DATA VISUALISATION AND PRESENTATION	Self-service Business Intelligence (e.g. dashboards and drill-down reporting) as well as advanced visualisation such as geo-spatial visualisation and visual queries. Dedicated visualisation applications may also be built on top of the Analytics layer for specific functions.

Table 79. Platform: Key Architecture Services of the Analytics Tier

3.2.10. PUBLIC TIER

The Public tier offers a safe gateway for external resources to access Council data and services.

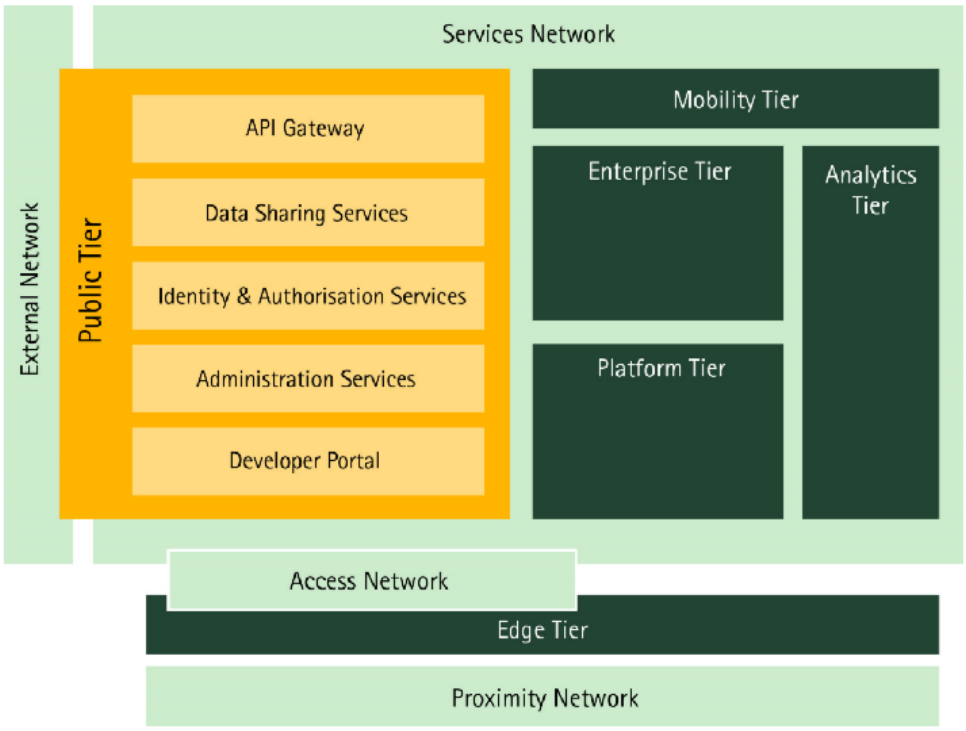


Figure 50. Council Smart City Public Tier

The following tables outlines the key architecture services required in the Public tier.

ARCHITECTURE SERVICE	DESCRIPTION
API GATEWAY	External Integration platform offering RESTful and/or other kind of services to external parties. The API gateway handles requests in one of two ways. Simple requests are simply proxied/routed to the appropriate service. More complex requests can be fanned out to multiple services.
DATA SHARING SERVICES	Includes services designed to collect, cache, and expose sets of data (either raw data sets such as those from a specific sensor, or analysed/processed data sets).
IDENTITY & AUTHORISATION SERVICES	Services designed to authenticate and authorise users of the services offered by Council.
ADMINISTRATIVE SERVICES	Services used for managing the API's and data services.
DEVELOPER PORTAL	A portal providing content to help the developer community leverage the Public tier, whether internal or external.

Table 80. Platform: Key Architecture Services of the Public Tier

3.2.11. MOBILITY TIER

The Mobility Tier offers a safe gateway for external resources to access Council data and services.

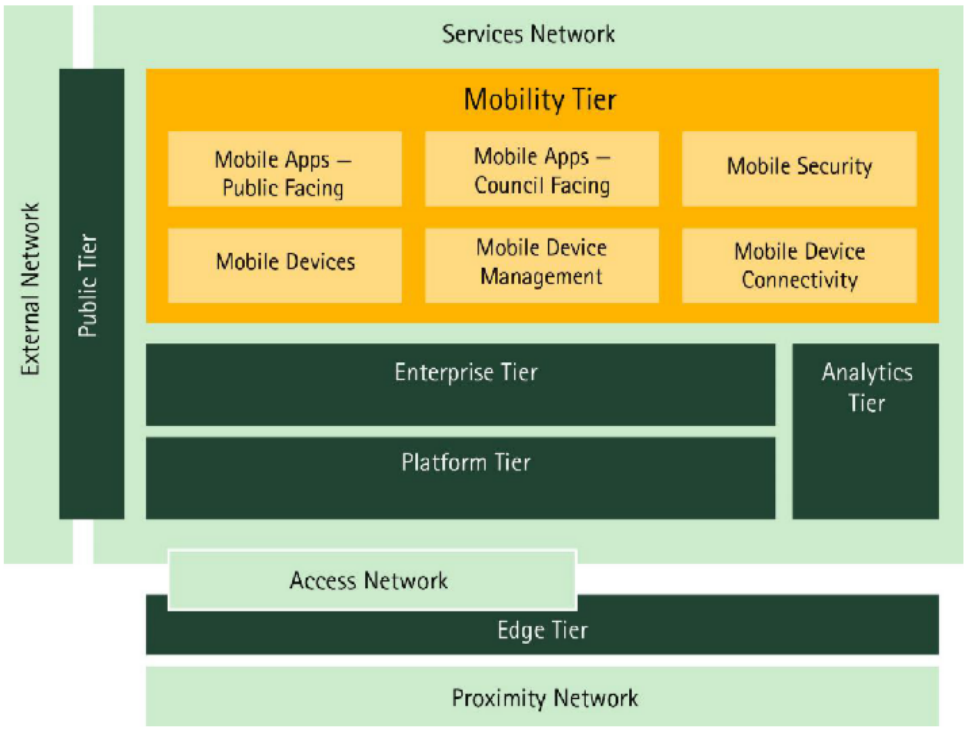


Figure 51. Council Smart City Mobility Tier

The following tables outlines the key architecture services required in the Mobility tier.

ARCHITECTURE SERVICE	DESCRIPTION
MOBILE DEVICES	Mobile Devices includes technology such as smartphones, tablets, and laptops.
MOBILE DEVICE CONNECTIVITY	For Field Worker application connectivity the following patterns should be considered: • Via the internet i.e. via APIs exposed/accessed through the External Network; • Through a dedicated private network that effectively extends Council's network to the field. Offline operation requirements must also be considered to determine if synchronisation functionality is needed.
MOBILE DEVICE MANAGEMENT	A Mobile Device Management function manages the administration of enterprise mobile devices including: • Enforcing policies on devices (such as compliance policies and network settings) • Adding and removing applications • Pushing messages • Remotely wiping data or entire devices • Distributing software updates
MOBILE SECURITY	Mobile security includes: • Device security (for Council devices) • Securing data at rest on the device (e.g. encryption) • Securing data in transit • Mobile Application security
WORKFORCE APPLICATIONS	This includes mobile applications for specific use by Council's Field-Based Workforce – e.g. scheduling and actioning of work requests, performing inspections, raising notifications/work requests in the field; in addition to mobile applications more general applications such as management reporting, time recording/reporting, HR functions, procurement, etc.

ARCHITECTURE SERVICE	DESCRIPTION
PUBLIC FACING APPLICATIONS	Applications developed based on Council services and data that are public facing.

Table 81. Platform: Key Architecture Services of the Mobility Tier

3.2.12. IMMEDIATE NEXT STEPS

The following diagram outlines the immediate next steps to establish the Smart City Platform capability:



Figure 52. Platform: Immediate Next Steps

Each of these activities are described in more detail below:

- Review options for extending the Access Network with telecommunication vendors - Discuss what network options exist including the provision and ownership of Edge Gateway devices to enable connection to future Smart City Proximity Networks.
- Draft key policies E.g. Open Data policy, Drones policy - Begin defining key technology related Policies relevant to the Smart City Platform such as those related to Open Data and Drones. Engage with other cities and other relevant enterprises (e.g. Utilities who use drones for asset inspection) who have already defined and implemented similar policies.
- Investigate options for the Data Sharing Platform component of the Public Tier – Consider already existing platforms for the hosting of open datasets - data.gov.au, NationalMap, Socrata. Engage with other cities who are already sharing open data.
- Assess vendor solutions for relevant tiers of the Smart City Platform – For each year 1 Project, identify the associated Smart City Platform tiers and the required and desired capabilities of those tiers. Use the resulting set of requirements to assess potential vendor solutions.
- Procure vendor solutions – Use Council procurement processes to select and procure the vendor solution/s for the relevant Smart City Platform tiers.
- Begin architecture design for the Smart City Platform tier/s – Once the technical solution has been decided upon, detailed architecture design work can commence – outlining key aspects of the technical architecture, data architecture, integration architecture, and security architecture.

3.2.13. ICT FORWARD PROGRAM OF WORK

During the rollout of Council's defined set of Smart City initiatives, a number of other ICT related activities and projects will also be occurring. These projects/activities will need to be taken into consideration for scheduling impacts and any technical dependencies.

ARCHITECTURE LAYER	ACTIVITY	DESCRIPTION
APPLICATION ARCHITECTURE	Enterprise Architecture Blueprint / Governance / Policies/ Procedures	Initiative to establish a set of Enterprise Architecture principles and associated policies and procedures to guide all ICT investments and decision making. The EA blueprint should also document the current state Application architecture.
	Core ERP Upgrade	Council's current Oracle based ERP solution will be due for a major upgrade during the timeframes of the Smart City program.
INTEGRATION ARCHITECTURE	Integration Blueprint / Governance / Policies / Procedures	Initiative to establish a set of principles and associated policies and procedures to guide the establishment of integration between ICT systems and between ICC and other organisations. The Integration blueprint should also document the current state Integration landscape (i.e. what interfaces currently exist).
DATA ARCHITECTURE	Data Blueprint / Governance / Policies / Procedures	Initiative to establish a set of principles and associated policies and procedures to guide the management of both structured and unstructured data across the organisation. The Data blueprint should also document the current state Data landscape (i.e. what data entities exist and which applications are they considered a 'Source of Truth' for each entity).
	Common Data Model	Initiative to establish a common dictionary of Data Entities to provide a standard definition for each entity and its associated attributes.
	Oracle Spatial (GIS) Rollout	Council is in the process of transitioning from a set of legacy GIS applications to the Oracle Spatial toolset.
	Weave Toolset Rollout	The Weave application provides mapping functionality and integration capabilities with Oracle Spatial and is being rolled out in conjunction with Oracle Spatial.
	Open Data Policy	Initiative to establish the policies required to release Council data to the public as 'Open Data'.
DEVELOPMENT ARCHITECTURE	Standardise Test Environments	Initiative to establish a common set of test environments for all core applications. Currently the number of environments is inconsistent across the landscape which can cause issues for ICT projects e.g. environments required for integration testing activities.
	Collaboration Tools	As part of the rollout of Windows 10, a number of Collaboration Tools will also be included such as Skype for Business (instant messaging, video conferencing)
	Process Modelling	To-date, only a subset of Council business processes has been defined and captured in a process modelling tool (Aris). Work is required to define and document the remaining business processes.
	Softphones Rollout	Initiative to replace current desktop phone technology to digital 'Softphone' based technology.

ARCHITECTURE LAYER	ACTIVITY	DESCRIPTION
RUNTIME ARCHITECTURE	Objective Content/Document Management Rollout	Council is in the process of moving from its legacy Enterprise Content Management solution (TechnologyOne) to Objective. This migration will complete during the rollout of the Smart City Program.
	Android Mobile Rollout	Council currently has a landscape of disparate mobile devices and operating systems. As devices are replaced through normal operations they will be replaced with Android based devices to standardise the mobile landscape.
	Establish Mobile Device Management	Establishment of a mobile device management (MDM) platform to manage ICC owned devices and enforce security policies, push applications, enable remote wiping of devices if lost, etc.
OPERATIONS ARCHITECTURE	Operations Governance / Policies / Procedures	Initiative to establish a set of principles and associated policies and procedures to guide the operation of the ICT landscape.
	Service Management Rollout	Council are transitioning from their current Service Management toolset (Remedy) to ServiceNow. This rollout will occur during the timeframe of the Smart City Program.
PLATFORM AND INFRASTRUCTURE	Windows 10 Rollout	New desktops and laptops provided through standard replacement processes will be upgraded to the Windows 10 operating system. This rollout will take place during the timeframe of the Smart City Program.
	Sofos Antivirus Rollout	Currently only a subset of Council servers include anti-virus software. Work is underway to standardise all Council servers. This work will occur during the timeframe of the Smart City Program.
	SQL Server 2008->2012 Rollout	Council is currently moving SQL Server 2008 to SQL Server 2012 as the preferred database technology. This migration will complete during the timeframe of the Smart City Program.
	Tablet/Laptop Rollout	As current desktops and laptops are replaced through standard processes they will be will be replaced with laptop/tablet hybrid devices. This rollout will take place during the timeframe of the Smart City Program.
	Future Data Centre	Initiative to renew the hosting and management arrangements for Council's core ICT infrastructure and applications. Any changes to the hosting location/s and/or support function for Council's infrastructure and applications will occur during the timeframe of the Smart City Program.
	Network Security Landscape refresh	A review is currently in progress of Council's Network and Security landscape as a number of components are nearing end of life. Recommendations from the review will then be assessed/implemented.
	Public WI-FI	Council has already rolled out Public Wi-Fi to the Springfield Robelle Lagoon. This rollout may continue to other locations over the timeframe of the Smart City Program.

Table 82. ICT Forward Program of Work

3.3. DATA CENTRE OF EXCELLENCE

As both the access to and generation of data increases, there is a need to create a robust set of operating capabilities which allow Smart City initiatives to attain the most value from their data, and ultimately transform the Council into a data-driven organisation. To do this, the Council will build these capabilities around a common centre of gravity; creating reusable, industrialised processes that support the key data management and advanced analytic needs of the sixteen initiatives.

This centre of gravity, referred to as the Data Centre of Excellence (CoE), allows the Council to:

- Be Rapid: By centralising core capabilities, ICC can minimise the Initiative-specific data and analytic build requirements needed to deliver and operate the Smart City implementation plan. ICC also benefits by the consistent use of rapid agile delivery methods to deploy data and analytics capabilities quickly and incrementally – helping the Council realise outcomes faster.
- Be Reliable: Centralisation of talent and technologies helps safeguard against inconsistencies in the way that core data and analytic capabilities are designed, implemented and industrialised. Founding initiatives on a basis of proven, consistent techniques will help the Council reduce delivery risk and increase the quality of Initiative results.
- Be Cost-Effective: The risk of avoidable effort duplication, which is so frequently inherent in parallel delivery, will be minimised for the Council by unifying data and analytics delivery within the CoE. This concentration of activities also helps the Council stretch the reach of in-demand specialised skillsets further throughout the organisation, whilst keeping analytics talent challenged, engaged and retained.
- Be Flexible: Establishing consistent, high quality data capabilities in the Data CoE also benefits the Council by supporting the flexibility to distribute these out across the organisation in the future. Some mature analytics organisations are realising the benefit of moving data analysis skills close to business operations – and once standardised, foundational processes have been put in place, the Council may wish to support more localised data activities.

The remainder of this section discusses how the Data CoE should be organised within the Council's broader organisation model, along with the capabilities, skills and enabling technologies required to best support the Council's Smart City initiatives.

3.3.1. THE DATA CENTRE OF EXCELLENCE ORGANISATION MODEL

3.3.1.1. SELECTING THE RIGHT ORGANISATIONAL STRUCTURE

Traditionally, data and information has been viewed by organisations as strategic technology assets. Today however, mature organisations who recognise the need to leverage their information to achieve business outcomes are treating data and insights as amongst their most valuable corporate assets. Indeed, over 60% of mature organisations demonstrate a high level of commitment to analytics by appointing either a Chief Analytics Officer or Chief Data Officer to a level of influence and responsibility necessary to govern such a critical asset. Whilst the best practice for a market leading governance model to control these corporate assets is still evolving, the common traits of analytically competitive organisations have been identified and form the basis for the Council's approach to the Data CoE.

Although there is a significant volume of organisation models and paradigms in the current market-place, we categorise the most frequent variants as per the following diagram:

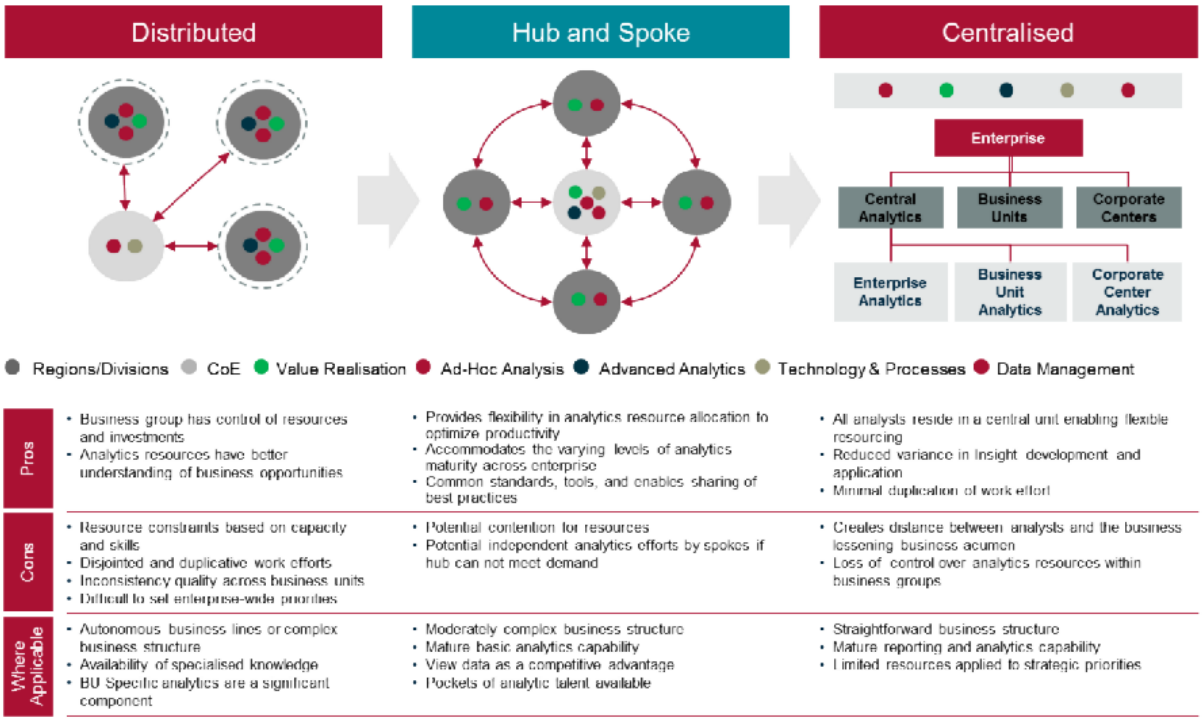


Figure 53. Data CoE Organisation Model – Governance Structure Comparison

- The Distributed Organisation structure is comprised of individual divisions or systems who control and manage their data independently to best serve their individual objectives. Divisions operate with complete autonomy, while attempting to maintain global standards to meet specific enterprise requirements. This model would allow Council divisions to operate with complete autonomy and rapid flexibility, however significantly inhibits their ability to prioritise and share high-quality data with either the Council, with Smart Data partners or through Open Data initiatives. It also constrains the capacity of the Council's analytic talent and increases overall effort to deliver and maintain data initiatives.
- The Centralised Organisation structure provides a single point of control and decision making for data and analytic initiatives, with divisions having little or no responsibility. This model would allow the Council to maintain high consistency and control over the creation, quality and sharing of data and creation of insights, however does so at the expense of lower business representation in decision making and innovation. It also typically increases the overall number of resources needed for governance and dedicated delivery.
- The Hub and Spoke Organisation structure is one in which there is a single point of control at the enterprise level for decision making, as well as data governance structures within divisions for local decisions. This model would provide the Council with the best of both worlds – enabling coordinated data accountability and governance to be set centrally and executed at the division level. It also supports more relevant decision-making with increased division representation and leads to lower incremental costs by maximising the use of current resources rather than having to hire new ones into dedicated division roles. This model can introduce the risk of slower decision-making and deployment (due to more distributed data ownership), which needs to be mitigated with appropriate processes.

To maximise on the benefits of the Data CoE and its ability to contribute high quality insights to the Smart City and Open Data initiatives, the Council should adopt the Hub and Spoke structure to organise Data CoE processes and people. Please refer to Section 3.1 for further details on how this structure fits within the broader Council organisation model.

3.3.1.2. CORE ROLES AND SKILLSETS

As discussed above, adopting a Hub and Spoke organisation model allows the Data CoE to provide the Council with flexibility in how data and analytics resources are allocated across the changing needs of Smart City initiatives. Resources will be deployed around "pod" teams, providing the mix of data scientists, analytics modellers, visualisation experts, data engineers, business analysts and business domain experts necessary to deliver on and sustain the Council's vision. To this end, the Council should structure the CoE around two key groups: Leadership and Delivery.

These teams are further described in the following table:

TEAM	DESCRIPTION	KEY ACTIVITIES
LEADERSHIP		
Data CoE Executive Committee	The Executive Committee provides the ultimate authority in defining scope of Data CoE work in support of Smart City initiatives, and for approving data governance strategies.	• Assess impact of data-related decisions within respective functional areas; • Make decisions that may impact the way the Council is run; • Represent Smart City initiatives and Council divisions; • Hold responsibilities for overarching decisions for the Data CoE activities; and • Build consensus for the Data Governance strategy across the executive community.
Data CoE Governance Council	A cross-functional, cross-entity leadership team to provide direction and oversight to the Data CoE. It establishes change management, data ownership, data quality metrics, governance processes, data policies and standards, and data methodologies	• Represent key business stakeholders across Smart City initiatives, Council divisions, and IT; • Arbitrate conflicts to limit escalation to the Executive Committee; • Define, communicate and review effectiveness of the Data Governance strategy across the Council ; • Enforce Data Policy and Standards; and • Assess impact of data related decisions within respective functional areas.
DELIVERY		
Data CoE Delivery Leadership	Delivery Leadership provides the Data CoE with collaborative leadership between the Data CoE, IT and division leads on data and analytics delivery decisions. It provides coordinated data accountability and governance that is established centrally and executed with individual Smart City level representation.	• Plan and manage Data CoE activities to support Smart City Initiative delivery; and • Manage the supply/demand of analytics projects and resources, and track value.
Data CoE Data Governance Office	The Data Governance Office provides a centralised function to meet the Council's needs for data governance and management capabilities in a disciplined and consistent manner.	• Validation of information and data ownership; and • Identification, implementation and alignment with the business of data strategies, policies, procedures and standards.
Data CoE Value Creation and Industralisation	The Value Creation and Industralisation team are responsible for collaborating with Smart City and Council stakeholders to validate, test and scale data-driven use cases that support Initiative outcomes. This team is made up of advanced data scientists, analytical modelers, and visualisation specialists collaborate with business experts to deliver output in a repeatable manner that focuses on quality, efficiencies and facilitates the decision making processes.	• Builds and curates the underlying data assets and architecture to enable business intelligence and advanced analytics capabilities; and • Build and validate use cases through proofs of value, and scale tested solutions for use by and embedding within Smart City initiatives

Table 83. Data CoE Organisation Model – Core Teams

The following diagram illustrates the full gamut of skills required within the Data CoE's five teams, in order to deliver and maintain the Smart City initiatives. To achieve the necessary collaboration between Council divisions, IT and the Data CoE, some of these roles can be filled by Council staff who are not considered to be full-time staff of the CoE. For instance the Council's lead Technical Architect plays a vital role in planning and designing delivery of data-driven initiatives, and it is expected that this role will be filled by the IT division.

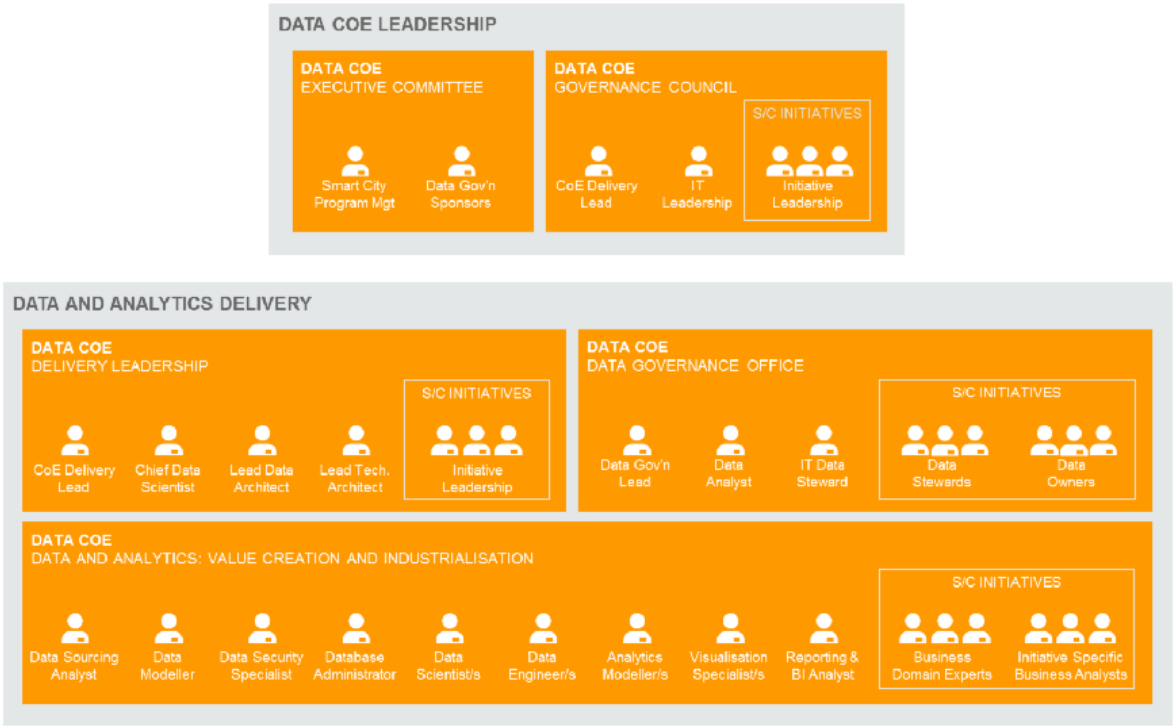


Figure 54. Data CoE Organisation Model – Core Team Roles

It is important to note that this presents the full range of skills expected to support all of the Council's Smart City initiatives: only a subset of them are required per individual Initiative. The Council's approach to sourcing these roles and skills should be heavily influenced by the Implementation Plan.

3.3.2. THE DATA CENTRE OF EXCELLENCE'S CAPABILITY MODEL

The data-driven capabilities required to support and deliver the Council's Smart City initiatives can be thought about as achieving 3 high-level functions:

- Transforming Data into Information by consolidating, preparing and managing internal and external data as a corporate, Council asset.
- Transforming Information into Insights by applying advanced analytical techniques to extract meaningful and actionable patterns and relationships from the underlying data.
- Transforming Insights into Outcomes by embedding or exposing insights into automatic and manual processes, enabling data-driven decision-making across Smart City initiatives.

To enable these high-level functions, the Council will require 3 core capabilities: Data Management and Integration, Advanced Analytics, and Visualisation and Outcome Measurement. The following diagram, the Data CoE Capability Model, illustrates this:



Figure 55. Data CoE Capability Model

- Data Management and Integration: The Data Management and Integration capabilities of the Data CoE provide the Council with the ability to coordinate the management, structure, and protection of high-quality internal and external data throughout its full lifecycle.
- Advanced Analytics: The Advanced Analytics capabilities of the Data CoE provide the Council with the ability to rapidly test and prove data-driven innovations, and to deploy and maintain these innovations at-scale to support Smart City operations.
- Visualisation and Outcome Measurement: The Visualisation and Outcome Measurement capabilities of the Data CoE provide the Council with the ability for its Smart City consumers to interact and extract meaningful insight from internal and external data, and to quantifiably assess the value delivered by initiatives.

The remaining sub-sections describe these 3 elements of the Data CoE Capability Model in further detail, outlining the capabilities, processes, best practices, people and enabling technologies associated with each.

3.3.2.1. ELEMENT 1 – DATA MANAGEMENT AND INTEGRATION CAPABILITIES

This section defines the Data Management and Integration capabilities of the Data CoE capability model. It provides an overview of the capabilities, details on their core processes, the roles and skills required to perform them, and the elements of the federated technology architecture necessary to enable them.

3.3.2.1.1. OVERVIEW

Establishing formal data processes is challenging due to the greater need for collaboration and the management of change between different divisions and teams. Nonetheless, data governance and common data integration capabilities are the drivers behind the sustainable realisation of data-driven initiatives.

The Data Management and Integration capabilities provide the ability for the Council to manage, structure, and protect both internal and external data throughout its full lifecycle. These robust capabilities will improve the quality of data and resulting decisions available for Smart City initiatives whilst reducing the time, effort and cost required to do so. They will enable the faster exchange and availability of data within the Council and for Open Data initiatives, and provide consolidated views around the core data-driven applications.

Supported by the right people and technology Enablers, these capabilities will define an enterprise data governance to manage data as a corporate asset, will define the roles to govern and own decisions about the data, will define operating processes to carry out policies and procedures, and will establish the necessary technology Enablers. The following sub-section explores the Data Management and Integration capabilities, people, technology Enablers and best practices.

3.3.2.1.2. CAPABILITIES

To meet the Data Management and Integration needs of the Council, 6 capabilities will together define how data assets will be managed, including the rules, policies, procedures, roles and responsibilities to ensure that the data is accurate, consistent, complete, available and secure:

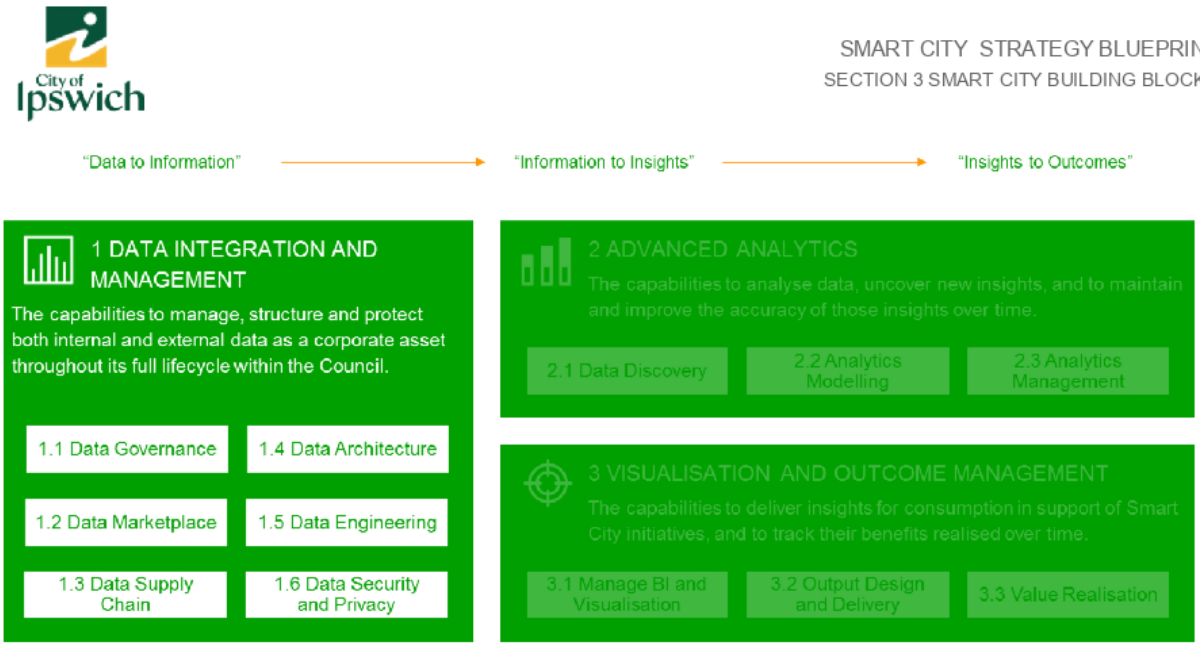


Figure 56. Element 1 – Data Integration and Management Overview

- 1.1 Data Governance: The objective of this capability is to combine and coordinate multiple parties within divisions and IT to ensure the consistent and high-quality use of data throughout the Council and its Smart City stakeholders. Through this capability, the roles, data standards and policies needed to ensure high quality, well-managed data are established.
- 1.2 Data Marketplace: The objective of this capability is to democratise data sources so that both Council resources and external parties can appropriately access data in support of Smarty City and innovation initiatives – specifically supporting the application of analytics, business intelligence and visualisation techniques, Open Data needs and for enabling Innovation and R&D Lab initiatives.
- 1.3 Data Supply Chain: The objective of this capability is to design and implement processes, polices, roles and tools required to support the Council's data over its lifecycle – from creation/sourcing, storage, movement, usage through to retirement. This includes definition of the master data management, reference data management and metadata management needs. Working together, these form one standardised, scalable data supply chain avoiding multiple custom distribution systems and processes per business application.
- 1.4 Data Architecture: The objective of this capability is to define, operate and maintain the logical and physical data models that supporting integrating, storing and providing access to data throughout its lifecycle. This includes the rules and processes for structuring data migration, storage, access, archiving and retirement.
- 1.5 Data Engineering: The objective of this capability is to develop and execute reusable processes that create engineered data sets, structured to support analysis and visualisation. This includes processes for filtering, tagging, parsing normalising, and enriching the data with transformed variables.
- 1.6 Data Security and Privacy: The objective of this capability is to develop, execute and manage data privacy, user access and data retention policies in conjunction with regulatory, legal and compliance requirements.

The following table describes these capabilities in greater detail, including benefits to the Council, identification of their core processes, and recommendations on ownership.

CAPABILITY	DESCRIPTION	BENEFITS TO THE COUNCIL	CORE ENABLING PROCESSES
1.1 DATA GOVERNANCE	The objective of this capability is to combine and coordinate the effort of multiple parties within divisions and IT to ensure consistent and high quality use of data. Through this capability, the roles, data standards and policies needed to ensure high quality, well-managed data are established. Primary responsibility for this capability will reside with the Council's Data Centre of Excellence.	Establishing strong data governance improves the information accuracy available to the Council and its Smart City stakeholders. This in turn improves decision-making by instilling confidence in the data and reducing incorrect or misinterpreted results. Good governance also provides clear points of accountability for managing this crucial enterprise asset, and improving it availability and accessibility for initiatives and innovation.	1.1.1 Identify and Maintain Data Owner / Data Steward: Identify and define data ownership (from within Council business teams) and data stewardship (from within IT) responsibilities, and train confirmed resources. 1.1.2 Implement Data Landscape and Business Rules: Define and analyse the source and scope of core data entities, define core data quality, security and privacy rules, perform data quality audits and establish metadata management operations. 1.1.3 Manage Operational and Data Quality KPIs: Define, implement and operate scorecards to identify data issues and track overall status of data quality management. 1.1.4 Detect and Resolve Data Governance Issues: Resolve or escalate data quality issues and build repository to support the minimisation and resolution of future issues.
1.2 DATA MARKETPLACE	The objective of this capability is to democratise select data sources so that both Council resources and external parties can appropriately access data for applying analytics, business intelligence and visualisation techniques, for supporting Open Data needs and for enabling Innovation and R&D Lab initiatives. Primary responsibility for this capability will reside with the Council's IT division.	This capability will increase the availability and timely access to Council data by external Smart City stakeholders. It supports the rapid provision of new data sources as they are created or sourced by the Council, supports a common search capability and an intuitive user experience that helps consumers discover and analyse data sources.	1.2.1 Manage Rapid Dataset Ingestion Framework: Enable the timely provision of new or updated data sources as they sourced or created by the Council, streamlining the governance, technology and security changes. 1.2.2 Manage Intelligent Dataset Search Capability: Establish and maintain the intelligent search capability over ingested data sources, included text-based search processes, visual capabilities to profile and discover data, and intelligent recommendation engines for data search results. 1.2.3 Manage Telemetry Services: Establish and maintain real-time audit and technical metadata management over data sources to provide constant cataloguing of dataset usage. Includes the ability to analyse consumer activity, dataset activity and data repository usage. 1.2.4 Manage Collaboration Services: Establish and maintain collaboration services to expand dataset availability, such as notifications on dataset changes, and consumer news feeds on upcoming dataset releases.
1.3 DATA SUPPLY CHAIN	The objective of this capability is to define and manage the procedures and tools that source and maintain the internal and external data required to support ICC's business outcomes, with appropriate quality, within a central, scalable architecture. These activities work together to design and build one	A well designed and consistently implemented data supply chain will improved standardisation across multiple disparate data sources, reduce the manual integration of data sources, and improve the scalability of the Council's overall data management architecture.	1.3.1 Evaluate and Prioritise Master Data Management Needs: Identify current data demands and gaps in enabling data, and prioritise that most critical to acquire. 1.3.2 Define Master Data Management Needs: Define standardised data definitions and values to support the uniform capture and storage of clean and reliable data, enabling a consistent understanding across disparate data sources.

CAPABILITY	DESCRIPTION	BENEFITS TO THE COUNCIL	CORE ENABLING PROCESSES
	standardised data supply chain instead of custom distribution systems and processes for each business application. Primary responsibility for this capability will reside with the Council's Data CoE.		1.3.3 Evaluate and Prioritise Data Capture Opportunities: Define and establish operational processes for ongoing data capture opportunities, and prioritise collection. 1.3.4 Source / Purchase Data: Locate the data internally or externally, determine the appropriate mechanism to ingest, and work with Procurement to purchase if needed. 1.3.5 Cleanse and Profile Data: Identify, design and implement data cleansing and profiling necessary to integrate and understand data. 1.3.6 Enrich and Harmonise Data Sources: Merge and harmonise data sources in preparation for loading in the Council's data storage. 1.3.7 Ingest Data: Create and execute data load functions to ingest within the Council's data storage.
1.4 DATA ARCHITECTURE	The objective of this capability is to define, operate and maintain the logical and physical data models for integrating data sources, storing data and providing access to data throughout its lifecycle – from exploration, industrialisation, archiving and retirement. This includes the rules and processes for integrating data sources, the associated storage requirements and the user access rights. Primary responsibility for this capability will reside with the Council's IT department.	Centralising and controlling data architecture across the Council will support definitions of one definitive system of record across multiple disparate data sources – reducing the opportunity for data inaccuracies, conflicts and mistrust. This will also reduce the manual effort expended integrating data sources by maximising the reuse of processes and data standards, and increase the scalability of the Council's data management capabilities.	1.4.1 Manage Enterprise Logical Data Model: Manage the total logical architecture of the enterprise, the movement from current to the desired future state, the multiple physical architectures and any necessary data disposition maps. 1.4.2 Manage Master Data: Manage reference data according to the needs established as part of the Data Supply Chain capability, and synchronise master data elements in the logical system. 1.4.3 Maintain Transactional Data: Manage stewardship and migration of data from various internal and external sources, and accommodate new sources as they are ingested by the Data Supply Chain capability.
1.5 DATA ENGINEERING	The objective of this capability is to develop and execute reusable processes that create engineered data sets structured to support modelling and data discovery, which have been filtered, tagged, parsed and normalised, and enriched with additional transformed variables. Primary responsibility for this capability will reside with the Council's Data CoE.	A well-engineered data set, based on centralised, repeatable processes improves the quality and breadth of data available for analysis and reduces the effort required to analyse and visualise data within Smart City initiatives.	1.5.1 Enrich and Harmonise Data Attributes: Extend Data Supply Chain activities by developing, executing and managing reusable processes to merge and join low-level data attributes. 1.5.2 Filter Data: Develop, execute and manage reusable processes to remove outliers, duplicates and filter other irrelevant data from across data sources. 1.5.3 Transform Variables: Develop, execute and manage reusable processes to calculate and create transformed variables of interest. 1.5.4 Update Data Repository: Develop, execute and managing reusable processes to record data engineering approach, business, rules and details on data that is eliminated, transformed and derived.

CAPABILITY	DESCRIPTION	BENEFITS TO THE COUNCIL	CORE ENABLING PROCESSES
1.6 DATA SECURITY AND COMPLIANCE	The objective of this capability is to develop, execute and manage data privacy, user access and data retention policies in conjunction with regulatory, legal and compliance requirements. It provides the protection of critical data assets across the Council's Smart City initiatives. Primary responsibility for this capability will reside with the Council's IT department.	Well managed data security and compliance processes provide the Council with continuous integrity (by guarding against improper modification or destruction), confidentiality (by preserving restrictions on access and disclosure) and availability (by ensuring timely and reliable access) of its data. Working together, they will reduce the exposure of data assets to risks and damage.	In order to secure and protect its data, the Council must provide the governance, processes and technology to identify and authenticate users, provision access rights, monitor and review user access, safeguard backups and authorise user access. Based on the needs of the initiatives, the Council will also need to manage the physical location of data, mask or encrypt some data fields, encrypt both in-transit and at-rest data, gather consent from data owners and be able to provide copies or remove personal data upon request. This abilities will be enabled by a combination of the following processes: 1.6.1 Plan and Manage Conceptual Security Architecture: Analyse security requirements against business requirements, compliance rules and regulations, and organisational policies, assess existing security capabilities to create a set of approved security services for integration with the Data CoE, and design a conceptual security architecture to capture the desired end state. 1.6.2 Manage Data Protection: Protect the confidentiality, integrity, and privacy of Big Data through classification, obfuscation, tokenization, encryption and data loss prevention. 1.6.3 Manage Data Impacts on Infrastructure Security: Extend network and platform security technologies to explicitly monitor and defend data repository and data marketplace processes. 1.6.4 Manage Data Impacts on Identity and Access Management: Extend the identity lifecycle of enforcing and reporting on access control, authentication and authorisation at the network, operating system, data store, and application layers to accommodate data security needs. 1.6.5 Manage Data Impacts on Application Security: Harden applications, assess and mitigate vulnerabilities and integrate supporting enterprise and infrastructure services to accommodate data security and privacy needs. 1.6.6 Manage Data Impacts on Cyber Security: Extend real-time security monitoring to detect, analyse, report and respond to threats, security incidents and compliance violations across data and systems.

Table 84. Data CoE Capability Model – 1 Data Management and Integration Capabilities

The below list contains the core best practices and considerations relevant to the Council when defining, designing and establishing the Data Management and Integration capabilities[5]. These represent the core guiding principles that relate to moving the Council to the next phase of Smart City delivery – a more detailed set of principles should be considered as part of this phase and during product selection.

BEST PRACTICES AND CONSIDERATIONS	
1.1 DATA GOVERNANCE	
Establish Clear and Accountable Leadership	• Data governance should have executive sponsorship from the highest levels of the organisation. Executive sponsors must be involved, take ownership, and champion the capability. • Data governance capabilities should have real authority and accountability, including the ability to resolve business issues, review project data issues, and settle disputes. • There should be one central group responsible for the Council's entire data governance, reflective of a partnership between divisions, Smart City initiatives and IT – headed by a central data governance steering committee.
Manage Operations as Formal Processes	• Data governance should be viewed as a long-term, on-going program rather than a project, and be regularly reviewed, updated, and enhanced. • Data governance processes should be formally applied to all Smart City initiatives consistently, and must be formally documented and updated as required. • There should be a formal data governance change management and issue escalation process.
Define Clear Roles and Responsibilities	• Data Owners should be responsible for the creation of the data and the enforcement of enterprise business rules including data policies and standards. To be effective, they should be leaders in their division, and their responsibilities should be a fundamental part of their job description. They should report within their division and also have a link to the Council's data governance leadership. • Data Stewards do not own the data; instead they are the caretakers of the data who come from within divisions and are accountable for the management of data assets. To be effective, they should be Subject Matter Advisors in their process, function or domain, and their responsibilities should be a part-time to full-time art of their job description. They should report to the Council's data governance leadership with a dotted line in the business division. • Internal and External Data Consumers (or data users) are beneficiaries of the increased business insight and operational excellence that data governance enables and should be considered the "customer" of the capability. The Data Consumers must provide requirements around data usage and usability.
Communicate Closely with Governance	• There should be a clear and timely communication method for data governance capabilities, between Data Owners, Data Stewards, executive sponsors and other relevant stakeholders. • Data governance capabilities should continually revisit training to ensure people understand how to perform their activities, incorporating real life, tailored and relevant situations.
Measure Compliance and Governance Results	• There should be a clearly defined set of data quality and governance metrics associated with each Smart City Initiative to monitor compliance with these policies and standards. • Metrics should be owned by the Data Stewards, collected and reported frequently, and continuously reviewed and reprioritised to suit the Council's needs. • Metrics should be defined in terms of baselines, targets and acceptable variables.
Enable with Tightly Integrated Technology	• Technology should be established to enable dissemination of data governance guardrails (such as roles and responsibilities, processes, and metrics) in a coherent, consistent, structured, and easily accessible fashion to the relevant stakeholders. • Where possible, data governance tools and technologies should interop with the federated technology tiers to provide an integrated, accessible, and transparent data landscape. Further information on the technology requirements for this capability can be found in Section 3.3.2.1.4 Technology Details.

[5] Please note that recommendations on implementation and roadmap planning will be outlined in the Smart City Implementation Plan deliverable.

BEST PRACTICES AND CONSIDERATIONS

1.2 DATA MARKETPLACE

Use Data Markeplace for Supporting Open Data

- Data Marketplace capabilities should focus on moving the Council away from initial data discovery processes (which focus on ingesting data on an as-needed for fast iterative pilots) to an integrated data marketplace that supports Open Data initiatives (which focus on integrating all systems to systems together such that data can be captured and consumed by all relevant consumers).

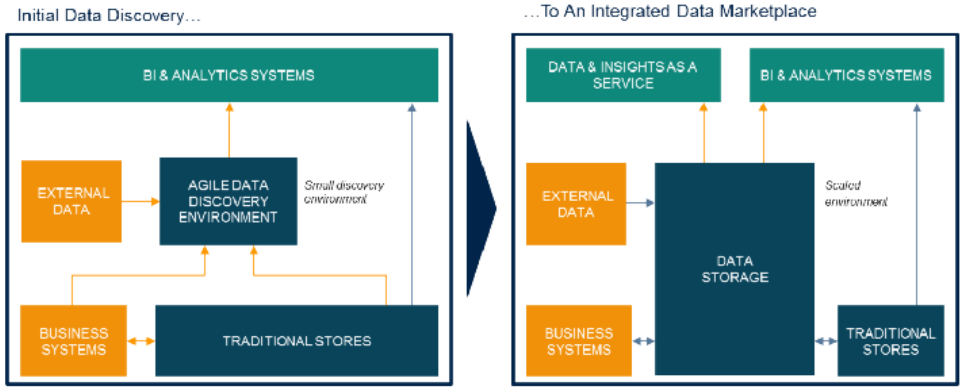


Figure 57. Data Marketplace Best Practice Model

Master Data Management is Vital for Open Data and Smart City Initiatives

- Data governance and Council leadership should demonstrate strong commitment and buy-in to MDM processes. Change should be managed and communicated formally to establish and sustain the processes.
- Master Data Management (MDM) should be centralised across the Council, providing one clear global master data process and one clear way of managing and owning data. These processes should not operate as stand-alone; instead they should integrate tightly with the Council's Smart City initiatives to complement and support existing governance.
- A common language for data should be established, communicated and used consistently by all individuals across the Council and its Smart City partners.

1.3 DATA SUPPLY CHAIN

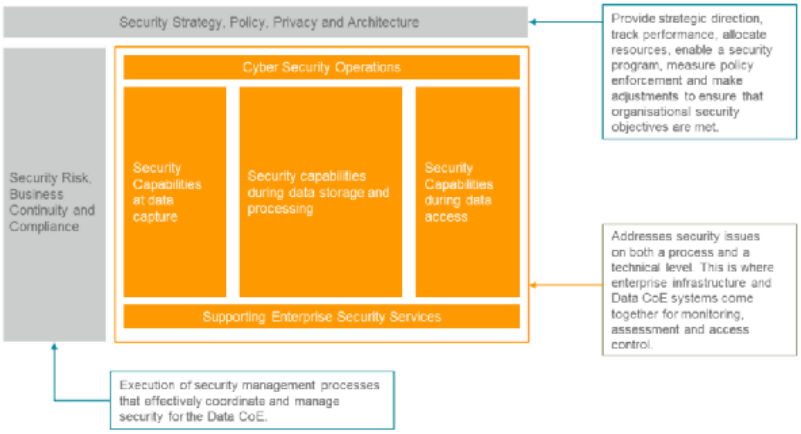
Control with Clear Data Policies and Data Standards

- There should be a single set of Data Policies that ensure the integrity, consistency and sharing of the enterprise's data resources. Policies should provide both the high-level and detailed rules and procedures that the Council will use to manage its data assets. Data Policies should include adherence of data to business rules, enforcing authentication and access rights to data, compliance with laws and regulations, and protection of data assets.
- Data Standards should define the precise criteria, specifications, and rules for the definition, creation, storage and usage of data within the Council. Data standards should include basic items such as naming conventions, number of characters, and value ranges; they may also dictate specific quality measures, retention rules, and backup frequency.
- The Data Policies and Data Standards must be clear, timely, and regularly updated. They should be easy to understand, regularly communicated and readily available to the users. Development and changes to the Data Policies and Data Standards should be reviewed and agreed with all involved or impacted parties.
- Following the Council's Data Policies and Data Standards should not be considered optional, and should be monitored and enforced. Exceptions should be approved via a change process.

1.5 DATA ENGINEERING

Numerical and Categorical Data Should Be Represented Consistently

- Any inconsistencies in the way numerical data is represented should be transformed into a unified approach, to avoid inaccurate interpretations when further preparing and analysing the data. Processes should be created to cater for systems that have inherently different ways of structuring data (such as structuring a citizen's address over 3 lines or 4 lines) or, from a technical

BEST PRACTICES AND CONSIDERATIONS	
	perspective, of storing data (such as storing a citizen's date of birth as a text field or as a date field). • Any inconsistencies in the way category-based data is represented should also be transformed into a unified approach. Processes should be created to cater for systems that have inherently different ways of representing category-based values (such as the codes used to represent "yes/no" indicator flags) or, from a technical perspective, of storing data (such as storing "yes/no" indicators as a text field or as a "1/0" flag numeric field). • To support consistent and non-biased analysis during the modelling activities, it is vital that empty fields are transformed such that they are consistently represented to avoid the risk of incorrect assumptions leading to inaccurate manipulation of the data. Methods for representing missing data can, if applied incorrectly, significantly reduce the accuracy of analysis results, and therefore should not be pre-emptively prescribed. They are likely to include some combination of mean substitution, dummy variable adjustment or imputation using statistical techniques. • Multi-source data should be carefully normalised, to ensure that potentially valuable indicators of behaviour are not incorrectly excluded from any stage of the analysis. Data should be normalised by: – Periodicity, looking at the age of data values and time period they represent; – Aggregation, looking at the time period they are bundled into; and – Reference, looking at the reference data that the system uses, for instance as lookup values.
Noisy Data Should Be Carefully Smoothed	• Unusual and atypical fluctuations in isolated pieces of data may represent corrupt or meaningless data that can ultimately have a negative impact on analysis. Statistical techniques should be carefully applied to determine the correct replacement values for this noisy data.
Duplicates Should be Identified and Treated	• Records containing identical sets of data and confirmed as representing the same information should be identified and either: • Deleted if they offer no additional or unique data; or • Merged into one consolidated record.
1.6 DATA SECURITY AND PRIVACY	
Include Data in the Conceptual Security Architecture	• A comprehensive conceptual security architecture should provide a detailed description of how systems and processes come together to satisfy security requirements, and describe the hierarchy of control objectives, controls and specific technical implementations of controls selected to meet the security requirements. IT • It should define a collection of operational roles, processes, metrics and governance and be supported by a security strategy, architecture and risk services as shown:  Figure 58. Conceptual Security Architecture Best Practice Model • The security architecture should embrace both technical and process-based security capabilities that collectively cover data capture, data storage and process, and data access.

BEST PRACTICES AND CONSIDERATIONS	
Understand Data Sensitivity, Usage and Access Considerations	• The sensitivity of data captured, created or sourced by the Council must be identified and mapped to the governing compliance regulations, legal agreements and relevant Data Policies. • Processes and enabling technologies should support the ability for specific dataset elements to be excluded from integration activities at-scale. Similarly, they should support the ability for specific dataset elements (structured or unstructured) to be masked or encrypted at-scale before any processing is conducted. • Access and usage of data should be restricted based on its approved usage types and by the approved, appropriate consumers. Processes and enabling technologies should support the ability to respond to the Council's data velocity, such that data can be securely handled at a fast pace across many different systems and access nodes.
Support Rapid Responses	• Governance, processes and enabling technologies should support the ability to rapidly grant and revoke access to data. Granting access quickly and accurately allows the Council and its Smart City partners to benefit from accessible, available data while revocation protects it from unauthorised access.

Table 85. Data CoE Capability Model – 1 Data Management and Integration Best Practices

3.3.2.1.3. PEOPLE

The sub-section above provides an overview of the core roles and skillsets required to support the full gamut of the Council's required Data CoE capabilities. The following diagram highlights the subset of roles that will need to play a key role in the Data Management and Integration capabilities. This information will help with the Council to define the responsibilities of each role, and to evaluate the relevant sourcing options.

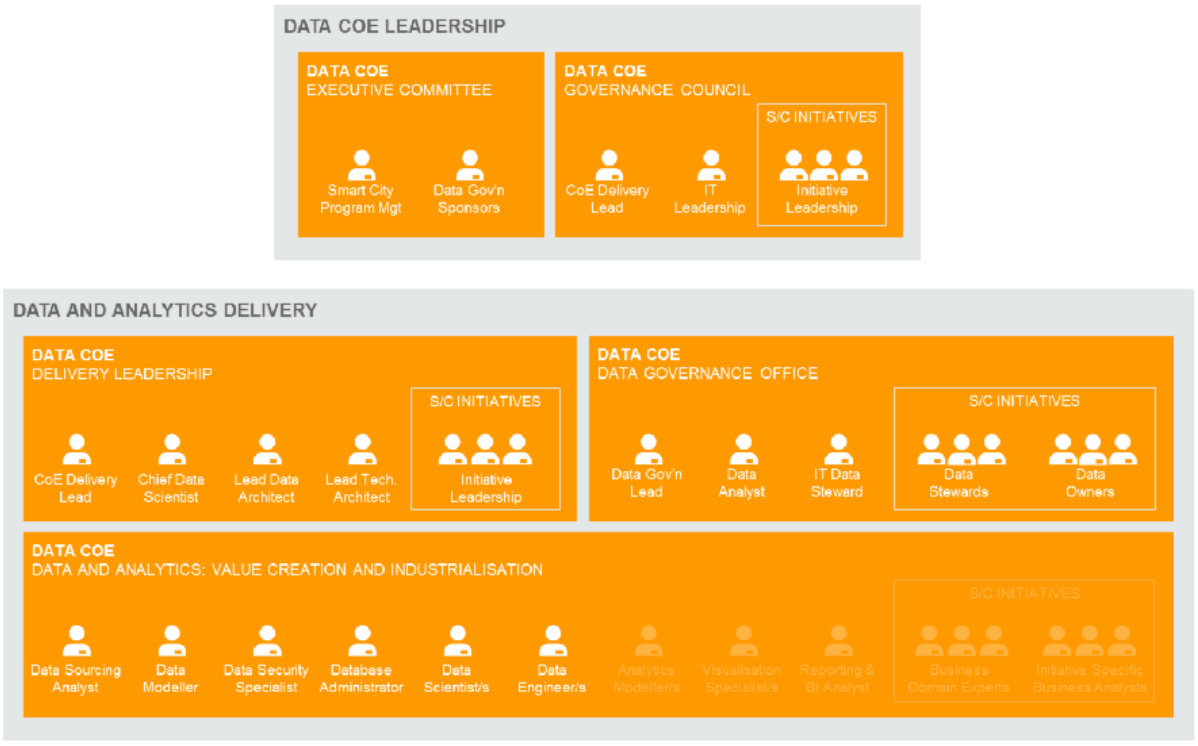


Figure 59. Data CoE Capability Model – 1 Data Management and Integration: Core Team Roles

3.3.2.1.4. TECHNOLOGY DETAILS

Section 3.3 provides an overview of the federated technology architecture required to support the full gamut of the Council's Smart City initiatives. Of those tiers, the following are required to support these capabilities:

- Platform Tier: Specifically the Data Ingestion and Data Orchestration layers, and
- Analytics Tier: Specifically the Data Storage, and Analytics and Visualisation layers.

3.3.2.2. ELEMENT 2 – ADVANCED ANALYTICS CAPABILITIES

This section defines the Advanced Analytics capabilities of the Data CoE capability model. It provides an overview of the capabilities, details on their core processes, the roles and skills required to perform them, and the elements of the federated technology architecture necessary to enable them.

3.3.2.2.1. OVERVIEW

Key to the success of the Council's Smart City program is the ability to strike a balance between rapid innovation of data-driven initiatives, and delivery of scaled, industrialised solutions. For this reason, the Advanced Analytics capabilities provide the ability to quickly uncover patterns, relationships and complex insights from engineered sets of data, which can then be embedded or exposed to support data-driven decision-making.

Identification of the strongest, most accurate indicators of behaviour is a complex task. There are many different data discovery and advanced analytical techniques that have been widely proven to identify high accuracy predictors when applied to different types of data. Each technique is based around unique algorithms and therefore can often achieve very different results (in terms of accuracy, robustness to variation and even usability) depending on the unique characteristics and behaviours of the underlying data. It is important not to make premature assumptions about which is the most appropriate technique. For this reason, the Council should structure capabilities around the fundamental activities being conducted rather than the technique being applied. These 3 activities are Data Discovery, Advanced Analytics and Analytics Management.

In this way, the Data CoE can apply a wide range of different advanced analytical techniques, the results of which can then be compared against each other, and even in some cases combined, to reveal the most accurate and useful model. We call this the model with the strongest predictive power.

3.3.2.2.2. CAPABILITIES

To meet the Advanced Analytics needs of the Council, 3 capabilities will together define how data will be analysed, how new insights will be uncovered, and how the accuracy of those insights will be maintained and improved over time

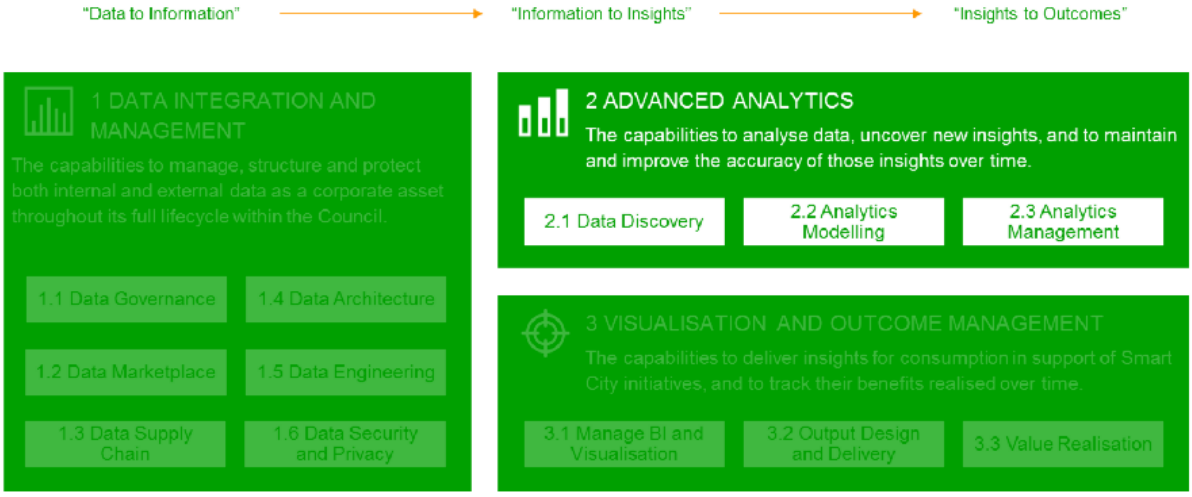


Figure 60. Element 2 – Advanced Analytics Overview

- 2.1 Data Discovery: The objective of this capability is to uncover patterns and relationships within engineered sets of internal and external data, using exploratory data analysis techniques. The complex

insights identified by this capability are typically descriptive in nature (for instance, identifying complex relationships between individuals, unearthing patterns in infrastructure maintenance schedules, or finding unintuitive relationships between building energy usage).

- 2.2 Analytics Modelling: The objective of this capability is to extend Data Discovery by uncovering complex insights from engineered data sources. In the context of the Smart City initiatives, these insights will typically focus on finding predictive indicators of future outcomes and for understanding how optimised results can be achieved across multiple variables. They will also focus on the application of complex techniques for advanced interpretations, such as object recognition, video processing and contextual analysis of unstructured text.
- 2.3 Learn and Refine: The objective of this capability is to monitor, interpret and improve performance of data-driven insights across the Smart City initiatives through ongoing feedback and learning from actual results. This involves the use of feedback loops between Smarty City initiatives and the Analytics Modelling capability. It also provides the ability to monitor core KPIs, to interpret them within the context of the value that they deliver, and to forecast the impact of their change on the Council.

The following table describes these capabilities in greater detail, including benefits to the Council, identification of their core processes, and recommendations on ownership.

CAPABILITY	DESCRIPTION	BENEFITS TO THE COUNCIL	CORE ENABLING PROCESSES
2.1 DATA DISCOVERY	The objective of this capability is to uncover patterns and relationships within engineered sets of internal and external data, using analytical and data discovery techniques. The complex insights identified by this capability are typically descriptive in nature (for instance, identifying complex relationships between individuals, unearthing patterns in infrastructure maintenance schedules, or finding unintuitive relationships between building energy usage). Primary responsibility for this capability will reside with the Council's Data CoE.	Data discovery techniques can quickly identify valuable patterns and relationships within engineered data sets – which can form the basis of Smart City insights or be fed into the more advanced Analytics Modelling capability. Centralisation of this capability allows for robust and consistent techniques to be applied as new datasets are onboarded or as new answers are sought from existing datasets – improving the reliability, accuracy and comprehension of Smart City insights. It also supports an innovative environment of continuous learning and rapid delivery, as data scientists expand their skillsets and reusable processes together.	2.1.1 Determine Data and Insight Discovery Plan: Identify and plan the analytical and data discovery techniques that will be used to uncover relationships and insights in the specific engineered dataset. This process can be conducted in isolation by the Council's Data CoE or in collaboration with divisions. 2.1.2 Identify Patterns: Identify the patterns, relationships, causes, effects, and other insights lurking in the engineered data set through both quantitative and qualitative techniques. An overview of these techniques can be found in the next table. 2.1.3 Validate Technical Accuracy: Apply statistical and analytical techniques to validate the identified patterns and findings, including comparing the results to known insights, or by applying trained models against isolated test segments of the datasets. An overview of these techniques can be found in the next table. 2.1.4 Evaluate Results with Stakeholders: Communicate findings with division stakeholders to evaluate implications of results in context of the Smart City Initiative actions and objectives. Document the approach, learnings, methodologies, and any issues for repeatability and continuous learning.
2.2 ANALYTICS MODELLING	The objective of this capability is to uncover complex insights from engineered data sources. In the context of the Smart City initiatives, these insights will typically focus on finding predictive indicators of future outcomes and for understanding how optimised results can be achieved across multiple variables. It will also focus on the application of complex techniques for advanced interpretations, such as object recognition, video processing and contextual analysis of unstructured text. Primary responsibility for this capability will reside with the Council's Data CoE.	Advanced analytical modelling is an extremely powerful capability, supporting the ability to predict future results, optimise Smart City outcomes, identify objects within video and images, and interpret unstructured text. These insights will power decision-making within Smart City initiatives, transforming Ipswich to an insight-driven organisation. Similarly to the Data Discovery capability, centralisation of this capability allows for robust and consistent techniques to be applied as new datasets are onboarded or as new answers are sought from existing datasets. These techniques are extremely advanced and their application requires highly-skilled talent. Centralisation of this capability therefore extends the Council's ability to apply these skills across multiple	2.2.1 Build Model: Build advanced analytical models over engineered datasets and/or including the learnings from the Data Discovery capability, to address the Insight Discovery Plan developed in Data Discovery. Techniques will typically be focused on finding predictive indicators of future outcomes, for understanding how optimised results can be achieved across multiple variables, or for achieving very advanced interpretations. An overview of these techniques can be found in the next table. 2.2.2 Assess Model Accuracy: Apply statistical and analytical techniques to validate the technical accuracy and performance of the model in terms of such indicators as accuracy, robustness and generality. The performance of different models can also be compared to each other to identify the strongest performer, using a champion/challenger approach. An overview of these techniques, including the champion/challenge approach, can be found in the next table. 2.2.3 Launch Model and Generate Results: Launch the model for real-time or batched execution in a production environment. This may include a set of activities for managing system change to support embedded insight generation within Smart City processing, or simply for exposing the results within the Council's visualisation results (and typically depends on the results of the Insights Management capability).

CAPABILITY	DESCRIPTION	BENEFITS TO THE COUNCIL	CORE ENABLING PROCESSES
		divisions and Smart City initiatives. It also supports a highly responsive, iterative approach to data and analytics activities.	2.2.4 Assess Degradation and Update Model: Assess existing models (which have been released into use) to identify when performance starts to degrade. Models that retain validity will enter a refresh/refine set of activities to incorporate changes in data. Models that no longer reflect necessary to relevant insights will enter a retire set of activities.
2.3 LEARN AND REFINE	The objective of this capability is to monitor, interpret and improve performance of data-driven insights across the Smart City initiatives. This involves not only monitoring core KPIs but also interpreting these KPIs within the context of the Smart City initiatives that they support, and forecasting the impact of their change on the Council. Primary responsibility for this capability will be shared between the Council's Data CoE and the divisions responsible for the insight-driven actions.	Intelligent monitoring of insight performance, both from an accuracy perspective and in terms of Smart City Initiative efficacy, allows the Council to proactively sustain and exceed outcomes over time. Centralisation of this capability helps the Council to maximise the benefit from such investments, while supporting a consistent approach to visualisation and KPI interpretation.	2.3.1 Performance Target Setting: Define and agree performance and accuracy targets for analytical models between Smart City Initiative stakeholders and data scientists. These define the thresholds beyond which Initiative outcomes may be impacted and model performance needs to be managed (by the Analytics Modelling capability). 2.3.2 Develop and Deliver Scorecards: Define and execute ongoing delivery scorecards that measure (potentially using the BI and Visualisation capability activities) and interpret the impact of analytical model performance on one or more Smart City initiatives. 2.3.3 Identify Performance Management Improvements: Review analytical model performance against targets and identify process, tool, and/or data sources opportunities for improvements. (Note accuracy performance of analytical models will be performed within the Analytics Modelling capability). This includes the ability to forecast the impact of model performance changes using simulations and "what if" techniques. 2.3.4 Attribution Analysis: Track and analyse the efficacy of analytical insights in the context of individual Smart City initiatives and time-based change in behaviours or outcomes that can be linked to these insights.

Table 86. Data and Analytics Capability Model – 2 Advanced Analytics Capabilities

The below list contains the core best practices and considerations relevant to the Council when defining, designing and establishing the Advanced Analytics capabilities[6]. These represent the core guiding principles that relate to moving the Council to the next phase of Smart City delivery – a more detailed set of principles should be considered as part of this phase and during product selection.

BEST PRACTICES AND CONSIDERATIONS	
2.1 DATA DISCOVERY	
Perform Univariate Analysis	• A thorough analysis of individual data attributes will provide a quantitative assessment describing how attributes relate to each other and to what extent they can be used as an indicator of non-compliant behaviour in existing customers. The exact analysis techniques should only be selected after a strong understanding of the underlying data is obtained, however the following outlines the common techniques that the Council should have the ability to apply, to visualise, and to interpret: • Summary Statistical Analysis: This technique, also known as descriptive statistics, provides a high-level understanding of the data attributes and their behaviours. Examples of this technique include measures such as the mean, median, standard deviation and range. • Data Profiling: This technique provides a more detailed view of the typical values which can be assumed by a data attribute. • Frequency Distribution: This technique provides insight into non-numeric values, also known as categorical variables, and how often they occur with a particular data attribute. • Correlation Analysis: This technique is the process whereby each data attribute is examined individually to identify to what extent, if any, they are related to or mimic values within other data attributes.
Exploratory Analysis Should Incorporate Business Insights	• Interpretation of data characteristics can be grossly misdirected without the insights of business and domain expertise, leading to poor model accuracy and unreliable insights. The Council divisions and Smart City domain experts should work collaboratively with the Data CoE to direct interpretation of data discovery results. • Data visualisation techniques encompasses all of the above univariate analysis techniques, and more, into one highly accessible, visually-interpretable form. Visualisation is powerful method through which power insights can be easily recognised, interpreted and communicated.
2.2 ANALYTICAL MODELLING	
Data Reduction Should be Consistently Applied Before Modelling	• Whilst it is useful to have a wide range of insights available with the ABT, further analysis may reveal some of the source data or calculated variables as being of little or no predictive value, sufficiently unreliable that it cannot be smoothed into meaningful values, or redundant when compared with other variables (also known as being "strongly correlated" to other variables) and therefore providing no unique information. Such data will not provide useful insights during more in-depth analysis and, as such, risks increasing the duration of model development. Such data should be removed prior to any advanced modelling initiatives, in order to produce a more targeted dataset for analysis.
Data Should be Segregated into Testing and Training Data	• Before modelling commences, approximately 30% of the engineered data set should be selected and excluded from analysis allowing the remaining 70% to be used for training the models. This will ensure that sufficient test data can be used to evaluate a model's technical performance, which has not previously been seen or analysed by the model in any way.

Table 87. Data CoE Capability Model – 2 Advanced Analytics: Best Practices

3.3.2.2.3. PEOPLE

The sub-section above provides an overview of the core roles and skillsets required to support the full gamut of the Council's required Data CoE capabilities. The following diagram highlights the subset of roles that will need to play a key role in the Advanced Analytics capabilities. This information will help with the Council to define the responsibilities of each role, and to evaluate the relevant sourcing options.

[6] Please note that recommendations on implementation and roadmap planning will be outlined in the Smart City Implementation Plan deliverable.

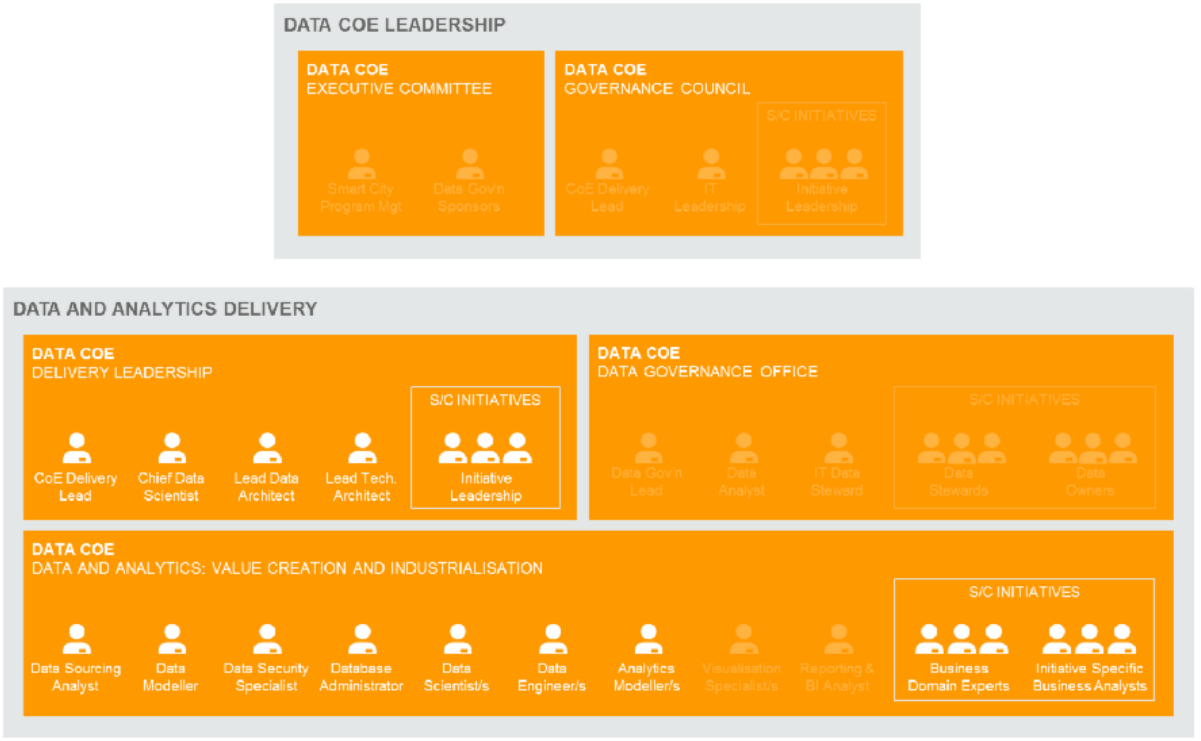


Figure 61. Data CoE Capability Model – 2 Advanced Analytics: Core Team Roles

3.3.2.2.4. TECHNOLOGY DETAILS

Section 3.3 provides an overview of the federated technology architecture required to support the full gamut of the Council's Smart City initiatives. Of those tiers, the following are required to support these capabilities:

- Analytics Tier: Specifically the Data Storage, and Analytics and Visualisation layers.

3.3.2.3. ELEMENT 3 – VISUALISATION AND OUTCOME MEASUREMENT CAPABILITIES

This section defines the Visualisation and Outcome Measurement capabilities of the Data CoE capability model. It provides an overview of the capabilities, details on their core processes, the roles and skills required to perform them, and the elements of the federated technology architecture necessary to enable them.

3.3.2.3.1. OVERVIEW

To meet the Data Management and Integration needs of the Council, 6 capabilities will together define how data assets will be managed, including the rules, policies, procedures, roles and responsibilities to ensure that the data is accurate, consistent, complete, available and secure:

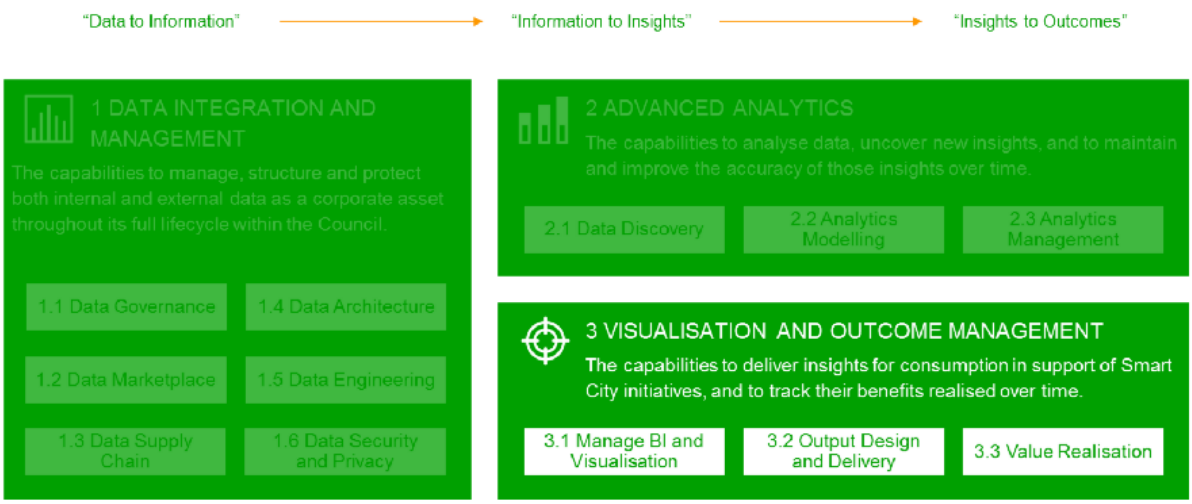
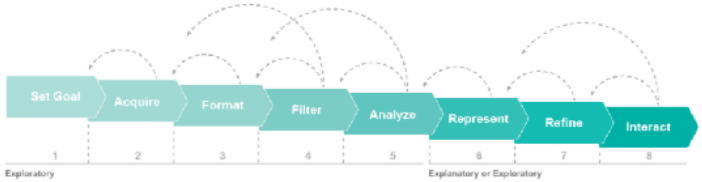


Figure 62. Element 1 – Visualisation and Outcome Measurement Overview

The following table describes these capabilities in greater detail, including benefits to the Council, identification of their core processes, and recommendations on ownership.

CAPABILITY	DESCRIPTION	BENEFITS TO THE COUNCIL	CORE ENABLING PROCESSES
3.1 MANAGE BI AND VISUALISATION	The objective of this capability is to establish and manage business intelligence and visualisation solutions for consumption by Smart City divisions to enable smarter decisions. These solutions will encompass not only pre-built dashboarding and reporting solutions but also enable self-service solutions which places data interrogation abilities in the hands of business stakeholders. Primary responsibility for this capability will be shared between the Council's Data CoE and the divisions responsible for the insight-driven actions.	A centralised approach to delivering BI and visualisation solutions supports a highly-responsive, agile and iterative approach to delivery between division stakeholders and data specialists. Furthermore, a self-service approach to visualisation supports a "citizen data scientist" approach for the Council, distributing the analytics IQ outside of only the Data CoE.	The BI and Visualisation capability is an agile, highly-iterative set of activities which accommodate the ability to identify and respond to new findings and feedback. This iterative set of activities can be grouped into two high level categories, Exploratory and Explanatory, as illustrated below.  Figure 63. Capability 3 Activity Details – 3.1 Manage Visualisations
3.2 OUTPUT DESIGN AND DELIVERY	The objective of this capability is to enable access to the analytics insights in way that suits the consuming Smart City Initiative/s. This may be through a visualisation dashboard, BI report, embedded within an enterprise application or exposed to the public as open data. Primary responsibility for this capability will be shared between the Council's Data CoE and the divisions responsible for the insight-driven actions.	Centralisation of this capability extends the Council's ability to apply visualisation skills across multiple divisions and Smart City initiatives. It also allows insights and learnings to be catalogued in a central repository which can be referenced and re-used to present results holistically rather than individually. Furthermore this approach allows a course of action to be recommended, forecasting and tracked to help measure value to the Council. In this way, the CoE delivers a competitive advantage through the production of timely, relevant and actionable insights and recommended actions to support decision-making in high value areas	3.2.1 Synthesize Insights: Select and summarise core insights, collaborate with division and Smart City stakeholders to draw connections and potential implications, and construct recommendations for sharing. 3.2.2 Create and Organise Supporting Narrative: Collaboratively review the Smart City Initiative/s impact by these insights and refine insights to ensure they support the outcome in a compelling and actionable manner. Storyboard presentation of these insights to build a compelling case for action, and ensure they are supported by quantitative and/or qualitative data. 3.2.3 Package Insights for Business Validation: Package insights in a consumable format for the divisions and stakeholders (which may require support from the BI and Visualisation capability). 3.2.4 Publish Insights: Publish insights across a combination of the Public, Enterprise and Analytics tiers of the Council's architecture (depending on the needs of the consuming initiatives).

CAPABILITY	DESCRIPTION	BENEFITS TO THE COUNCIL	CORE ENABLING PROCESSES
3.3 VALUE REALISATION	The objective of this capability is to support establish transparency and collaboration between the Data CoE and the Council divisions regarding Initiative performance. The capability will establish, maintain, execute, and communicate dashboards that allow interpretation of Centre value and ROI. Primary responsibility for this capability will be shared between the Council's Data CoE and the divisions responsible for the insight-driven actions.	By measuring value realisation metrics and linking them to Smart City outcomes, the Council is afforded a clear, standardised view on the success and impact of key initiatives. Close collaboration on this capability, and widespread communication of the results promotes a transparent partnership between the Centre, IT and divisions across the Council.	3.3.1 Review Results with Division Stakeholders: On an ongoing basis and agreed-upon frequency, review the quantitative and/or qualitative value realised per Smart City Initiative with division stakeholders. 3.3.2 Compare Actual with Expected Results: Compare the actual outcomes and measured results of the Smart City initiatives against the quantitative targets and/or qualitative success criteria. 3.3.3 Document Learnings: Identify and document learnings from the results analysis and public to inform future decision-making (for instance, if targets are not being met, the Data CoE may need to advise a different course of action or revise future targets). 3.3.4 Generate Value Realisation Report: Use the BI and Visualisation capability to generate and record the total quantitative and qualitative value realised by the project. Aggregate the results into a master dashboard that illustrates the total Smart City value delivered by the Data CoE and ROI to the Council. 3.3.5 Publish Results: Use the Output Design and Delivery capability to drive awareness of value realisation dashboards across the Council. 3.3.6 Monitor Ongoing COE Performance: Executing ongoing value realisation measurement processes against the Data CoE and solicit collaborative feedback on the impact of Smart City initiatives across Council divisions. 3.3.7 Identify Value Realisation Improvement Opportunities: Review Data CoE performance against targets and identify process, tool, and/or data sources opportunities for improvements. (Note accuracy performance of analytical models will be performed within the Analytics Modelling capability).

Table 88. Data and Analytics Capability Model – 3 Visualisation and Outcome Measurement Capabilities

3.3.2.3.2. PEOPLE

The sub-section above provides an overview of the core roles and skillsets required to support the full gamut of the Council's required Data CoE capabilities. The following diagram highlights the subset of roles that will need to play a key role in the Visualisation and Outcome Management capabilities. This information will help with the Council to define the responsibilities of each role, and to evaluate the relevant sourcing options.

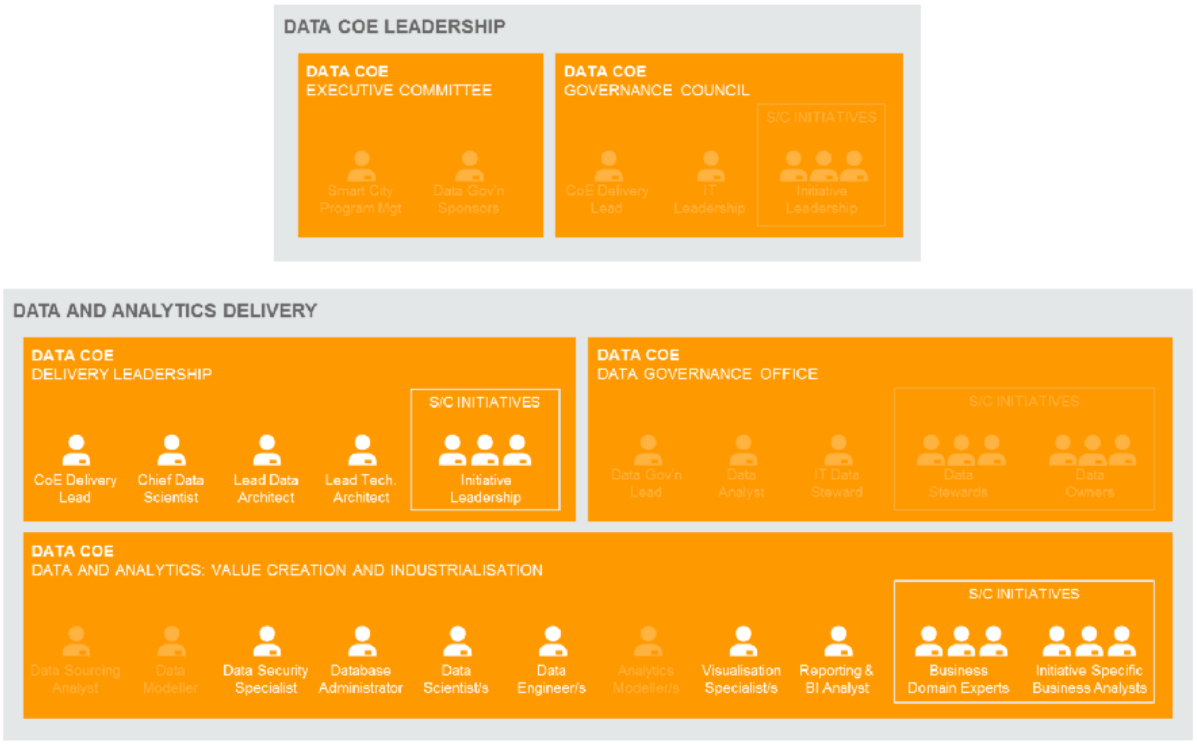


Figure 64. Data CoE Capability Model – 3 Visualisation and Outcome Management: Core Team Roles

3.3.2.3.3. TECHNOLOGY DETAILS

Section 3.3 provides an overview of the federated technology architecture required to support the full gamut of the Council's Smart City initiatives. Of those tiers, the following are required to support these capabilities:

- Analytics Tier: Specifically the Analytics and Visualisation layers.

3.3.3. ENABLING OPEN DATA

As part of their Smart City initiatives, the Council are looking to establish open data capabilities that help create, encourage and foster a new ecosystem of innovation both within the community and for its benefit. As discussed in Section 2 of this document, these capabilities can help to promote transparency and openness in Council activities whilst facilitating co-creation amongst citizens and local businesses.

In order to maximise the benefit from what the Australian Government calls the "…lifeblood of a robust democracy and productive economy", the Council will need to address a number of core challenges associated with managing open data sources. By better understanding these barriers, the Council can inform the design of robust capabilities. (Please see Section 2 for further details on the related barriers associated with Initiative 09 5D Model and Open Data):

- Privacy and Security Concerns: Citizens and organisations may share concerns about the improper use of data that relates to their lifestyle, their characteristics, and the activities of themselves and their families – not only in terms of data privacy but also criminal safety. Additionally, local business and organisations may have concerns

about exposing information from which confidential information can be inferred or determined. Without addressing these concerns, the community may have a negative reaction to open data initiatives and the innovation which stems from it.

- Disparate, Non-Standardised Datasets: A lack of standardisation can mean that open data sets contain widely different data, aggregated against incompatible time periods and using inconsistent units of measures. Left unaddressed, the open community will either have to invest more effort and cost in parsing, cleansing and preparing data prior to attempting to use it, or introduce the risk of a lower quality, lower accuracy result.
- Lack of Expertise and Collaboration: Leaders of generating companies, grid companies and consuming companies involved in Smart City initiatives from around the world have expressed concerns about their data being included in open data initiatives. Many such companies are early in their journey of analytics maturity, and have not yet started to reap the benefits of embedding data-driven insights within decision making. Without helping key stakeholders recognise the business case for open data, and the value this may represent to not only Ipswich's citizens but also to the companies themselves, the Council risks maximising the support for open data initiatives from within the programs.

3.3.3.1. CURATING A COMPELLING OPEN DATA CATALOGUE

Ongoing curation of a useful, comprehensive and compelling open data catalogue is crucial to the community's ability to be engaged and to innovate. The Council should define a clear criteria that helps to consistently and rapidly assess data sets such that they can rapidly be added to the catalogue, where appropriate. The following list provides a sample of the key characteristics upon which such an assessment can be based:

- Accessibility: Open data sources should be approved for a wide range of users to access the data. For instance traffic data may rate highly on this scale, whereas residents' home addresses may receive a low score.
- Structured: The data is structured and is in a format that is conducive to discovery and analysis. For instance, geocoded location data is highly structured and machine-readable, and will rate highly on this scale, whereas unstructured forum comments may receive a low score.
- Cost: Data can be accessed free or at negligible cost. For instance, data generated and owned by the Council may rate highly on this scale, whereas data purchased from a data broker on small-to-medium enterprise activity may receive a low score.
- Rights: Limitations on the use, transformation, and distribution of data are minimal. For instance, IoT data created by the Council may have unlimited usage rights and rate highly on this scale, whereas proprietary data generated by a third party may receive a low score.

It is recommended that the Council establish a centralised scoring capability that enables rapid, consistent assessment of datasets against these and other relevant characteristics, to help sustain a valuable, innovative open data catalogue. This scoring capability measures how suitable data sources are for inclusion in the open data catalogue, or in other words, the liquidity of the data.

3.3.3.2. MAPPING TO THE DATA COE CAPABILITIES

By employing the right combination of capabilities and skillsets, the Council can establish suitably robust techniques to address the challenges associated with managing open data sources. The following view of the Data CoE capability model illustrates those functions that are required to support an open data Initiative.

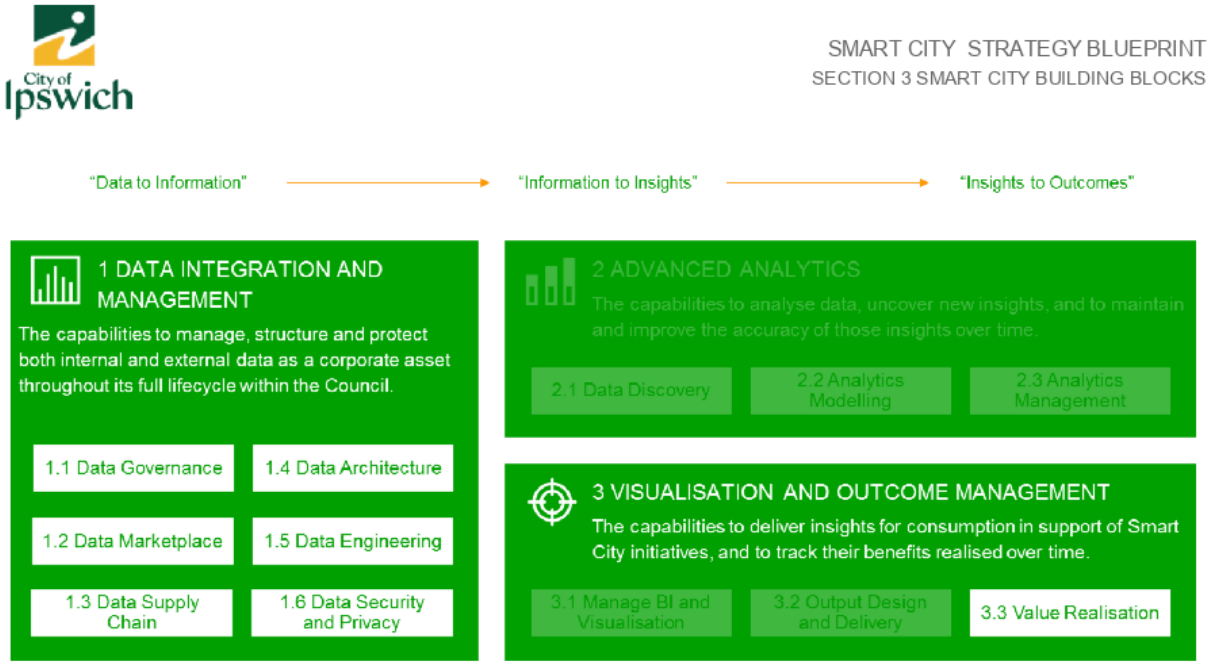


Figure 65. Enabling Open Data: Illustrating the Necessary Data CoE Capabilities

The following sub-sections describe how each of these capabilities will support the specific needs of enabling open data within the Council.

3.3.3.2.1. ELEMENT 1 DATA INTEGRATION AND MANAGEMENT

The following list describes those Data Integration and Management capabilities which will support establishment and management of the Council's open data framework. A full description of these capabilities can be found in the preceding section:

- 1.1 Data Governance: This capability helps the Council ensure that business-specific owners are clearly established for the open data set catalogue, and that they have the necessary authority to respond to related issues as they occur. This benefits open data initiatives by providing accountable owners that can manage, maintain and improve the usefulness of public datasets. The Council may choose to establish this at the individual data source level (for instance, an owner for each type of IoT data to be shared), or at higher conceptual data model level (for instance, an owner for all data relating to city infrastructure).
- 1.2 Data Marketplace: This capability allows the Council to ingest new or changed sources of data and to rapidly analyse and evaluated them in terms of their usefulness and appropriateness as public data sets. This benefits open data initiatives by reducing delays between when new or changed data sources are made available to the Council, and when they are identified as relevant to the open community.
- 1.3 Data Supply Chain: This capability allows the Council to managing the standardisation of data representation over multiple disparate data sources, the cleansing of noisy or irrelevant data which would otherwise degrade future analysis, and the consolidating of records around key data genomes (such as people, assets, or infrastructure). This benefits open data initiatives by improving the quality of the Council's open data quality, reducing the effort associated with preparing data for use (by both the Council and the open data community), and improving the usefulness and accuracy of innovations based on this data.
- 1.4 Data Architecture: This capability defines and maintains conceptual and logical data models of the open data catalogue, along with the relevant metadata. A widely recognised barrier to benefit of open data initiatives is the difficulty for the community to search and locate specific sets of information, and in understanding the business context of the information. This Data Architecture capability therefore benefits open data initiatives by improving the Council's ability to communicate, advertise and publish the catalogue of open data across tem community. The following diagram illustrates one approach to conceptual data modelling which may provide a useful basis for future design.



Figure 66. An Example of Conceptual Data Types

- 1.5 Data Engineering: This capability allows the Council to quickly and easily filter, tag, parse, normalise and transform source data to help improve its quality and the consistency of data representation. By providing a centralised capability to complete these actions, the Council can improve the quality of the open data catalogue using centralised, reusable procedures.
- 1.6 Data Security and Privacy: This capability allows the Council to develop, execute and manage data privacy, user access and data retention practices consistently and in accordance with regulatory, legal and compliance requirements. This will benefit open data initiatives by providing a consistent and well-governed approach to addressing the security and privacy concerns of the Council, its Smart City stakeholders and the broader community.

3.3.3.2.2. ELEMENT 3 VISUALISATION AND OUTCOME MANAGEMENT

The following list describes those Visualisation and Outcome Management capabilities which will support establishment and management of the Council's open data framework. A full description of these capabilities can be found in the preceding section:

- 3.3 Value Realisation: This capability allows the Council to establish, maintain, execute and communicate the value across the open data catalogue. By providing transparent, user-friendly visualisation techniques, owners of open data sets can baseline expected usage, compare actual outcomes and measured results, document learnings, and use quantitative findings to support improvements in the value realised. This benefits the open data initiatives by allowing clear, standardised assessment of their impact in way that promotes continuous, agile improvement.

3.4. OTHER CONSIDERATIONS FOR THE SMART CITY PROGRAM

3.4.1. PROGRAM SUSTAINABILITY

As outlined in the "Technical Report on Smart sustainable cities: a guide for city leaders"[7] by Silvia Guzmán (Chairman, ITU Focus Group for Smart Sustainable Cities within the United Nations specialized agency for information and communication technologies), the following pathway can be utilised to transform cities into more sustainable, smart, robust and resilient living environments, taking into account as well disaster resistance, reduced emissions, protection against crime and ensuring cybersecurity:

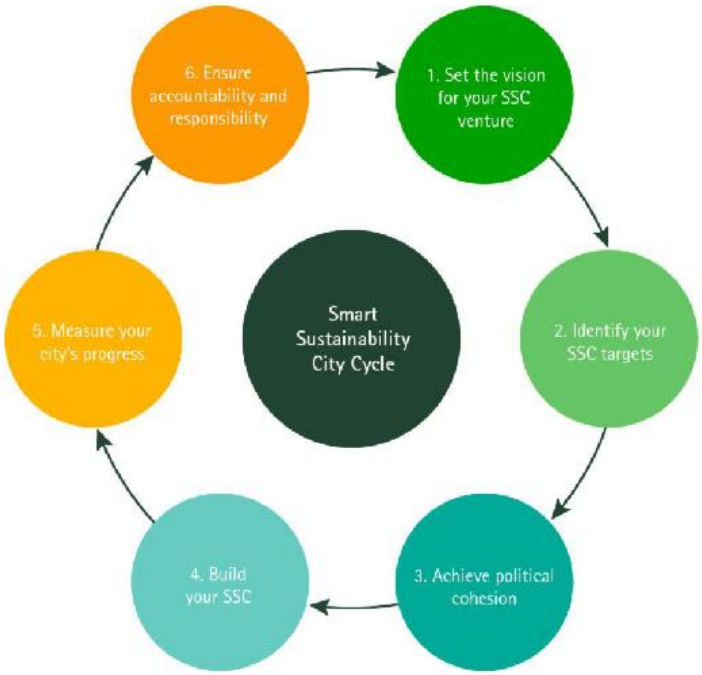


Figure 67. Pathway for a Sustainable Smart City (Silvia Guzman)

While this is one of many models for creating a sustainable Smart City , key is to adopt a model that is "bought into" by the executive team - one which can be utilised across the whole organisation to continuously improve, motivate and guide the actions of the city in an ongoing sense post the life of the Smart City Program.

3.4.2. TECHNOLOGY OBSOLESCENCE

According to Moore's law, the number of transistors in a dense integrated circuit doubles approximately every two years, which has allowed technology to progress from mainframe computers all the way down to the Arduino microcontroller. The ability to create ever smaller pieces of technology has given rise to the Internet of Things, where every object can be connected to the Internet through a small sensor.

Moore's law is also representative of the fast pace of change in the world of technology. According to a study done by Rackspace, the cloud management company, in 2015, "66% of surveyed IT managers agree the rapid pace of technological change is making decisions about IT investment more difficult than 10 years ago." Even more striking,

[7] https://itunews.itu.int/En/6276-A-guide-for-city-leaders.note.aspx

the study found that "as a result of this rapid pace of change, 62 per cent of IT decision makers have invested in hardware or software that has never been used by the organisation."

Similarly, in the world of smart cities, which depends highly on the Internet of Things and other digital advancements, and which rests on the power of innovation – technology obsolescence is part of the game. Ensuring that a Smart City moves forward effectively means:

- A willingness to commit to new technology deployments regardless of the looming obsolescence; any chance to improve a service substantially for citizens should be implemented if the business case supports it
- Building technologies in a way that is future proof, which means interoperable, flexible, scalable, embeddable and redundant; much of this rests of using open technologies that follow open standards and protocols

Smart cities need to get comfortable with the rapid pace of change and embrace it. There is no way around it, so the only alternative is to get better at riding its waves.

3.4.3. TECHNOLOGY STANDARDISATION

According to research done by Machina Research, a leading research organisation for the Internet of Things (IoT), Machine-to-Machine (M2M) and big data, "smart cities could waste USD $341 billion by 2025 on non-standardized IoT deployments".

Smart cities house a broad range of industry verticals within it, representing a microcosm of the broader Internet of Things space. Machina Research explains that "open standards are imperative for the development and deployment of IoT applications and services, where defining a best working practice will ensure stakeholders can maximize the opportunities presented by this rapidly evolving market." Smart cities, like other IoT use cases, relies on the idea that exponential value will be derived from correlating data from across the city, especially from very different sectors. This vision will not come to fruition if standards are not defined.

Standardization, which leads to Interoperability, realizes cost savings by:

- Ensuring government is not locked into a particular vendor
- Reduced need for expensive and large system integrations
- Quicker and simpler processes for new applications (due in part to replication of schemes and code)
- Easier data monetisation
- Increased number of devices connected
- Increased speed and breadth of adoption of Smart City applications
- Greater attraction and opportunities for application developers
- Acceleration of tech innovation

Overtime, the IoT and big data spaces will consolidate technologies, standards and protocols. Smart cities need to be smart at selecting the technologies they source and the vendors they partner with.

3.4.4. URBAN PLANNING

As the UN-Habitat Executive Director, Dr. Joan Clos, explains, "Urban planning brings access to a dignified life adding that it was an engine for development as well as an incentive for development. It is an important source of development and a tool for reducing inequality."

Smarter cities plan more and plan more smartly. This makes urban planning a critical component of becoming a Smart City. Urban planning helps avoid things like congestion, inefficiencies, insecurity and segregation, especially in the context of Ipswich's large growth.

There is also an opportunity to capitalise on this growth. For example, it can improve what Boyd Cohen calls "collision density" between urbanpreneurs (or urban entrepreneurs) to increase innovation in the city. Or, it can ensure that all future developments come with built-in solar roofs, to maximize the resource self-sufficiency of the city.

As part of Ipswich's Smart City vision, especially with regards to growth, areas like energy, transport, and workforce management are highly impacted by urban planning. Planning and developments (both brownfield and Greenfield) will dictate how energy-efficient the city will be, how sustainable transport will be in the city and how easy it is for Council and other utility providers to manage for the city.

The Department of Planning and Development will be at the forefront of Ipswich's Smart City vision. They will need to help set policies for smart infrastructure, including safe city cameras and sensors, edge devices, smart lighting and smart buildings. Furthermore, they will need to help implement policies for new developments (such as meeting the established energy efficiency and renewable energy targets and setting new ratios for electric vehicle charging stations in parking spots), and help ensure the developments meet these policies through planning assessments and approvals.

Ipswich's Smart City Vision sets very high expectations for what our Smart City will look like in the future, and the planning and development team will lead the way.

3.4.5. SISTER CITIES

In the world of creating smarter cities, working with other cities is the "smarter" thing to do, as many cities are working on the same problems and trying to capitalise on the similar opportunities, whether it is to create a common data warehouse across all government agencies or integrating all transportation systems to work with one unified customer payment card.

A great example of this is the G7, or group of seven, in the US, where Chief Information Officers from 7 cities come together on a regular basis to exchange and share ideas and lessons learned. These 7 cities are leading the way in becoming smart cities: Boston, Chicago, Los Angeles, New York, Philadelphia, San Francisco and Seattle. Adel Ebeid, CIO for the City of Philadelphia, thinks that it is crucial not to reinvent the wheel, and that "profiting from others' successes and mistakes is vital in an era when government IT executives are under pressure to accomplish more with fewer resources".

Furthermore, the group is working together on projects that would benefit all of their cities. In the last few years, for example, they launched cities.data.gov, an open data platform that publishes standardized data from all member cities. They leveraged the same resources to speed up time-to-market and can now get exponential value from seven times more data that can be correlated.

There are 3 key considerations for selecting sister cities that will lead to successful outcomes:

- Cities that can work together towards a common outcome that would benefit both cities (following in line with the G7 or SEQ Council of Mayors objectives)
- Cities that have parallel issues and opportunities; for Ipswich this could mean cities that are also pivoting from a manufacturing-based economy or that are growing dramatically
- Cities that have complementary abilities and assets; for Ipswich this could mean cities with more universities that can be tapped into or cities with a strong digital economy to gather lessons learned

3.4.6. COLLABORATIVE KNOWLEDGE NETWORKS

Following in the vein of sharing lessons learned and best practices across sister cities, it is imperative for smart cities to do this systematically.

In their book "Governing by Network: The New Shape of Government", Professor Stephen Goldsmith and William D. Eggers, explain that "Cross-sector knowledge sharing can help develop new knowledge, flesh out solutions to daily

problems, enhance learning across the network, and build trust and aid in learning from each other's successes -- and mistakes."

Ideally, this cross-sector knowledge sharing should happen in a sustained fashion, which requires underlying technical infrastructure. Things like virtual communities, extranets, webinars, or electronic bulletin boards allow people to share information regardless of geographic and organisational boundaries.

3.4.7. LEAN PRINCIPLES AND CREATING A CULTURE OF ENCOURAGEMENT

Following the approach of a lean start-up enables organisations to "Be more innovative. Stop wasting people's time. Be more successful."

Following lean principles ensures the success of any new product or service, as once it is widely distributed, it will already have customers on board.

As described by Eric Ries, author of the now famous "Lean Start-up" book, "The fundamental activity of a start-up is to turn ideas into products, measure how customers respond, and then learn whether to pivot or persevere."



Figure 68. Lean Principles (Eric Ries)

Following lean principles means a new way of working – a way of working with more questioning, more prototyping and more testing, all done more quickly. Curiosity:

- Pushing curiosity and inquisitiveness in current and future employees
- Fostering a culture of learning and questioning
- Giving employees space to prototype, tinker and learn
- Driving employees to test their ideas, products and services with customers directly
- Being Ok with employees pivoting when metrics are not being hit

A Smart City creates a culture for learning, experimentation, collaboration and acceptance.

As described in the book "Start-up Nation", by Saul Singer and Dan Senor, which describes Israel's impressively successfully innovation ecosystem, Israel has created a culture of starting up. They have created a culture that allows people to question each other and even question authority, something which Israelis learn during compulsory military service. They have created a culture that embraces the opportunity to pursue an idea. A Smart City fosters similar traits in their people – to always question and to always pursue what they believe in.

At its core, a Smart City creates a culture of encouragement.

This is the only way to create a culture of innovation.

3.4.8. PLACE BRANDING

Like any company or organisation, places also have brands. A country, region, city or any other destination has a brand. As described in Place Brand Observer, a think blog for the topic of place branding, "Place branding is about influencing people's perception, the image they hold of a particular place, be it a city, region, country or tourist destination." Places compete for people, talent, resources and capital – especially as resources diminish and populations grow. To remain relevant or become more relevant, cities need to leverage their brand to get access to better talent and capital and the resources they need.

Place branding impacts a city's reputation and therefore their ability to attract talent and capital. This reputation is based on both emotional and rational factors, including things like first-hand experiences of visitors and citizens, what the city communicates outward, media coverage, stereotypes about the people or the place, the strength of the economy and the effectiveness of government. Studies demonstrate that places with stronger reputations attract more tourists and foreign investment, have a higher skilled workforce and enjoy better diplomatic and trade opportunities.

According to David Adam, founder of Global Cities, a marketing agency for cities and places, "The biggest factors that add value to brand are in the actions that the city leaders take, how we then describe and share that experience is important to ensure the brand benefits." So, while a city needs to have strong assets and amenities, including emotional, physical, financial, leadership, cultural and social appeal – a large part of the reputation and perception of a city is defined by the way the city broadcasts them.

Ipswich aims to become a stronger community, with great talent, capital and resources. Overtime, Ipswich residents and visitors should think that the city has a strong appeal. To achieve that, the city must work on building a strong reputation through a clear, researched, designed and defined brand. Building a strong brand and reputation takes time and long-term thinking.

A great resource to leverage is CEO's for Cities' Branding Your City report, which also talks about how to measure the success of the city brand, monitoring efforts with target audiences, and showing the impact that the brand is having on other areas (such as economic activity, tourism, etc.).

3.4.9. DIGITAL EQUITY

Part of the push with Smart Cities is leveraging digital technologies to improve the city and help the city grow. But as this happens, and as cities continue to grow in population, more and more people are being left behind, from the economically disadvantaged to the elderly. These levels of economic and digital inequity, have far-reaching consequences for the community.

What is the point of installing Wi-Fi across the city, if citizens do not know how to use it or do not have the devices needed to access it? How do we move towards a digital economy if the citizens do not have the knowledge to start digital companies or digitise existing companies?

Smart Cities are cities that can smartly bring everyone along on their growth and advancement journey.

A Smart City must make every effort to close the digital divide. The city's efforts must be directed to the right target audiences, much use the right channels to reach these audiences and must engage these audience in the right ways. A Smart City should make every effort to put together the right strategies to address the digital divide, ensuring all of our citizens are brought on this journey to becoming a smarter city. Only then will the city truly be smart.

3.4.10. EDUCATIONAL ADVANCEMENT

According to the Global Partnership for Education organisation, "Education reduces poverty, boosts economic growth and increases income. It increases a person's chances of having a healthy life... In sum, education is one of the most important investments a country can make in its people and its future."

Many studies show that high quality education programs, especially in early childhood, deliver a strong return on investment and positively contribute to the economy. According to the US National Governors Association, "Economic

growth in the 21st century will be driven by our nation's ability to both generate ideas and translate them into innovative products and services."

Currently, worldwide, there is a mismatch between demand and supply in both STEM (science, technology, engineering and mathematics) jobs and in jobs requiring middle-skills (more than a high school diploma but less than a 4-year college degree). There are more qualified STEM graduates and yet also more unfilled STEM positions. There is a gap between students with middle skills and the types of middle skill jobs available. There is a great opportunity here to bridge these gaps, transforming Ipswich's ability to compete regionally, nationally and internationally, and to generate well-paying jobs for the residents of Ipswich.

Addressing these gaps requires a strong ecosystem that brings schools, government, employers and non-profits together to create a holistic and common strategy. It requires systemic cross-sector collaboration to ensure that we align the skills of graduates with the jobs that need to be filled; this needs to be done in a way that plans for the future – looking at the jobs that society will require tomorrow.

- Businesses need to be more disciplined about the way they source their talent, in much the same way they apply rigor to their supply chain.
- Educational providers need to partner with these businesses, to jointly craft the right courses and curricula that will develop the skills they are looking for.
- Governments need to incentivize businesses to invest in skills development, in innovation and in providing job opportunities for middle skill and STEM graduates.

It is the policymakers' responsibility to foster collaboration among all these groups, bringing together the city's educational providers, startups, small and medium sized businesses and large companies to start the conversation.

Together, these partners should create an ecosystem map to better understand the players, connections and gaps in the educational and employment space for Ipswich. Then, the partners can collaboratively create a vision and a strategy that helps address these gaps, by leveraging the connections and working with all the players. Finally, the partners will need to translate the vision and strategy into actions, spanning the entire educational lifecycle, from early childhood education through upskilling and life-long learning.

Together, an education and industry partner ecosystem can create Ipswich's future talent pipeline.

REFERENCES

References for Section 1.1 Context

The following sources were referenced for this section of the document:

- https://www.navigantresearch.com/blog/urban-population-growth-drives-the-need-for-smart-cities
- http://www.uitp.org/news/europeanairpollution
- http://www.itworld.com/article/2696507/networking/how-the-internet-of-things-could-become-a-critical-part-of-disaster-response.html
- http://i.unu.edu/media/ehs.unu.edu/news/4070/11895.pdf
- http://www.ifrc.org/Global/Publications/disasters/WDR/WDR2010-full.pdf
- http://media.swissre.com/documents/Swiss_Re_Mind_the_risk.pdf
- https://www.accenture.com/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_6/Accenture-PoV-How-Smart-are-Smart-Cities-FINAL.pdf
- http://files.informatandm.com/uploads/2016/3/accenture_cities.pdf
- https://www.accenture.com/t20150625T053821__w__/in-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_12/Accenture-Building-and-Managing-Intelligent-Cities-in-India_v2.pdf
- http://www.forbes.com/sites/danielrunde/2015/02/24/urbanization-development-opportunity/#20fc98762779
- http://www.ipswich.qld.gov.au/business/business_in_ipswich/digital_economy_and_broadband

References for Section 1.3 Defining the Future

The following sources were referenced for this section of the document:

- Education: http://smartcitiesCouncil.com/article/dissecting-iso-37120-why-education-may-be-most-important-smart-city-indicator-all

- References for Section **3.1.4** Standards and Interoperability

The following sources were referenced for this section of the document:

- Standards definition - http://www.iso.org/iso/home/standards.htm
- European Standards Organisations, Smart and Sustainable Cities and Communities Coordination Group, January 2015
- http://smartcitiesCouncil.com/taxonomy/term/551
- Interoperability - http://smartcitiesCouncil.com/article/dont-leave-interoperability-chance-it-will-cost-you-big-time
- ISO 37120:2014 - http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=62436
- BSI Standards Publication, PD 8100:2015 – Smart Cities overview – Guide

References for Section 3.1.4 Polices and Regulations

The following sources were referenced for this section of the document:

- The Impact of Regulation on innovation in the United States: A cross-industry literature review – Luke A. Stewart

- Regulatory Reform and Innovation – Organisation for Economic Co-operation and Development – http://www.oecd.org/sti/inno/2102514.pdf
- Impact of Regulation on Innovation – https://www.nesta.org.uk/sites/default/files/the_impact_of_regulation_on_innovation.pdf

References for Section Error! Reference source not found. **Considerations**

The following sources were referenced for this section of the document:

Technology Obsolescence

- Rackspace study - http://finance.yahoo.com/news/rapid-pace-technological-change-makes-111952736.html
- Wired article - http://www.wired.com/insights/2013/03/how-to-combat-tech-obsolescence/
- Moore's Law - https://en.wikipedia.org/wiki/Moore%27s_law
- Arduino - https://www.arduino.cc/en/Main/ArduinoBoardUno
- Future-proof - https://en.wikipedia.org/wiki/Future_proof#Principles_of_future-proofing

Technology Standardisation

- Machina Research - https://machinaresearch.com/news/smart-cities-could-waste-usd341-billion-by-2025-on-non-standardized-iot-deployments/

Urban Planning

- UN Habitat - http://unhabitat.org/urban-planning-important-for-development-and-inequality-reduction-dr-clos-tells-minurvi/
- Urban Times article - https://urbantimes.co/2013/07/ten-reasons-cities-need-urban-planning/
- Boyd Cohen's collision density theory - http://www.fastcoexist.com/3058924/what-makes-a-thriving-and-interesting-city-something-called-collision-density

Sister Cities

- G7 CIO group - http://www.govtech.com/pcio/Gang-of-7-Big-City-CIOs-Forges-Ahead-Despite-Turnover.html
- G7 open data project - http://www.data.gov/cities/

Collaborative Knowledge Networks

- Governing by network - http://www.govtech.com/magazines/pcio/Governing-by-Network-CIOs-and-the.html
- Lean Principles and Creating a Culture of Encouragement
- Lean Startup official website - http://theleanstartup.com/
- Lean startup principles - http://theleanstartup.com/principles
- Israel Startup Nation - http://www.forbes.com/sites/giovannirodriguez/2015/03/23/israel-unpacked-the-next-move-for-start-up-nation/#663ab2987355

Place Branding

- Reputation rankings - http://placebrandobserver.com/country-reputation-sweden-tops-2016-reptrak-ranking/
- City branding - http://placebrandobserver.com/interview-david-adam-city-branding-smart-cities-urban-development/
- City Brands Index - http://placebrandobserver.com/2015-city-brands-index-reputation-ranking-anholt-gfk-roper/
- Place and reputation - http://placebrandobserver.com/theory/place-image-reputation/

- Branding Your City - http://miplace.org/sites/default/files/CEOsforCities_BrandingYourCity.pdf
- Mississauga case study - http://placebrandobserver.com/how-to-develop-city-brand-strategy-example-mississauga/
- About Placebrand Observer - http://placebrandobserver.com/about/

Educational Advancement

- Global Partnership for Education official website - http://www.globalpartnership.org/education
- Universal Pre-K - http://nieer.org/publications/why-cities-are-making-preschool-education-available-all-children
- Accenture POV on middle skills - https://www.accenture.com/us-en/insight-bridge-gap-rebuilding-americas-middle-skills
- The Global STEM Paradox - http://globalstemalliance.org/media/filer_public/09/82/0982aa73-f0c4-443a-b5d6-e64f3edc0b9a/gsa_stem_paradox_whitepaper-trademark_verison_9-25-15.pdf
- National Governors Association on STEM - http://www.nga.org/cms/home/news-room/news-releases/page_2011/col2-content/main-content-list/stem-education-key-to-innovation.html

References for Section 2.2 Initiative 01: Innovation Lab

The following sources were referenced for this section of the document:

- Fire Station 101 Official Website - http://firestation101.com.au/
- Fire Station 101 Council announcement - http://www.ipswich.qld.gov.au/about_Council/media/articles/2015/work-underway-at-fire-station-101
- Boyd Cohen's FastCo article - http://www.fastcoexist.com/3047795/the-3-generations-of-smart-cities
- 5P Model - http://www.ubmfuturecities.com/author.asp?doc_id=526721
- San Francisco's SuperPublic - http://cityinnovate.org/superpublic/
- Paris's SuperPublic - http://superpublic.fr/en/
- Copenhagen Solutions Lab - http://cphsolutionslab.dk/
- City Digital - http://www.citydigital.uilabs.org/

References for Section 0 Initiative 02: Digital Skills

The following sources were referenced for this section of the document:

- Udacity - https://www.udacity.com/us
- Microsoft YouthSpark - https://www.microsoft.com/about/philanthropies/youthspark/
- Microsoft TEALS - https://www.tealsk12.org/
- Microsoft DigiGirlz - https://www.microsoft.com/en-us/diversity/programs/digigirlz/hightechcamp.aspx
- General Assembly - https://generalassemb.ly/about
- Udemy - www.udemy.com
- Chicago Youth-Led Tech program - http://www.smartchicagocollaborative.org/work/education/youth-led-tech/
- San Jose Opportunity Youth Academy - http://www.siatechschools.org/schools/california-charter-schools/san-jose-charter-school/

References for Section 2.4 Initiative 03: Build and Learn Fair

The following sources were referenced for this section of the document:

- Kids and the Maker Movement - https://www.noodle.com/articles/6-fun-ways-kids-can-join-the-maker-movement
- Adelaide Mini Maker Faire Report - http://www.makerfaireadelaide.com/wp-content/uploads/Adelaide-MMF-Final-Report.pdf
- Business Impact of Maker Faire - http://westfaironline.com/78639/column-the-unexpected-business-impact-of-maker-faire/
- Maker Faire Official Website - http://makerfaire.com/
- Makerspaces in Schools - http://makerspacesaustralia.weebly.com/makerspaces-in-schools.html
- Official Maker Faire Playbook - https://users.757.org/~telmnstr/pics/MakerFairePlaybook.pdf
- Case Study: Vancouver Mini Maker Faire - http://makezine.com/2013/10/23/why-emily-organized-a-mini-maker-faire-and-how-you-can-too/
- Adelaide Maker Faire Sponsorship Package - https://drive.google.com/a/cornell.edu/file/d/0BzWF69cYEPkcSlFvUWw1aEVBN1E/view
- Vancouver Maker Education Initiative - http://www.vancouvermakerfoundation.org/events-and-programs/young-makers/
- Vancouver Maker Foundation - http://www.vancouvermakerfoundation.org/events-and-programs/
- Maker Ed's Young Makers Program - http://makered.org/youngmakers/about-young-makers/
- Maker Faire and Young Makers Program - http://www.edutopia.org/blog/education-maker-faire-young-makers-program
- Adelaide Maker Faire - https://www.makerfaireadelaide.com/
- East Bay Mini Maker Faire 2010 P&L - https://docs.google.com/spreadsheets/d/1kAlXnSdWoCVHT2uwxbGVdBTzRJX7FzXPweMgIfHfJx4/edit?hl=en&authkey=CMWs6LEC&pref=2&pli=1#gid=0
- East Bay Mini Maker Faire 2011 Production Schedule - https://docs.google.com/spreadsheets/d/1nJ6F-CI9IHK31UWDeHTxULWmhDI4ad6-x3F4tqBkTMc/edit?hl=en&authkey=CJW0kf0O&pref=2&pli=1#gid=0

References for Section 0 Initiative 04: Eco-Village

The following sources were referenced for this section of the document:

- Ecovillage definition: https://en.wikipedia.org/wiki/Ecovillage
- Number of new dwellings – "The Population and household Future of Ipswich"; Heidi Duncan
- Solar Penetration: http://statements.qld.gov.au/Statement/2016/4/20/queensland-solar-reaches-new-record
- Solar 1GW generation at SEQ: http://reneweconomy.com.au/2015/queenslands-energex-passes-1gw-mark-for-rooftop-solar-98735
- Batteries - http://www.energymatters.com.au/residential-solar/battery-storage/
- Microgrid definition: https://building-microgrid.lbl.gov/microgrid-definitions
- Reposit Power: http://www.repositpower.com/
- Benefits from microgrids: http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/Attachment%20A%20-%20Microgrid%20Benefits%20by%20Category.pdf
- Currumbin Ecovillage: https://theecovillage.com.au/

- Fujisawa Sustainable Smart Town: http://fujisawasst.com/EN/
- Illinois Institute of Technology Microgrid project: http://www.iitmicrogrid.net/microgrid.aspx
- Commonwealth Edison Chicago Microgrid project: http://www.chicagotribune.com/bluesky/ct-comed-smart-grid-bronzeville-bsi-20160126-story.html
- Lana'i Microgrid project: http://energy.gov/sites/prod/files/2014/12/f19/lanai_renewable_energy_microgrid.pdf
- Fort Collins Microgrid project: https://building-microgrid.lbl.gov/fort-collins
- University of California San Diego: http://sustain.ucsd.edu/highlights/microgrids.html
- Berkeley Lab Microgrid project showcase: https://building-microgrid.lbl.gov/examples-microgrids

References for Section 2.6 Initiative 05: Smart Buildings

The following sources were referenced for this section of the document:

- Queensland penetration of Solar Roofs - http://reneweconomy.com.au/2016/qld-energy-minister-says-rooftop-solar-will-soon-be-biggest-generator-45057
- Australia Renewable Energy Agency - http://arena.gov.au/funding/investment-focus-areas/residential-and-commercial-buildings/
- Brisbane City Council Sustainability - http://www.citysmart.com.au/projects/
- Seattle 2030 - http://www.2030districts.org/seattle
- Architecture 2030 - http://architecture2030.org/
- International Living Future Institute - http://living-future.org/
- Living Future Institute Australia - http://living-future.org/australia
- Bullitt Centre - http://www.bullittcenter.org/
- Green Building Council Australia - http://new.gbca.org.au/

References for Section 2.7 Initiative 06: Smart Lighting

The following sources were referenced for this section of the document:

- LED Street Lighting Research Project, Remaking Cities Institute, Pittsburgh, Pennsylvania
- Street lighting and Smart Controls Program, SLSC, Institute of Public Works Engineering Australasia
- The timing is right for connected Public lighting within Smart Cities, October 2012
- Lighting the Regions - http://lightingtheregions.com.au/
- San Francisco Smart Lighting - http://sfwater.org/index.aspx?page=933
- San Diego Smart Lighting - http://www.gelighting.com/LightingWeb/na/images/33808-GE-LED-Roadway-Lighting-San-Diego-Sales-Slick_tcm201-67210.pdf
- Los Angeles Smart Lighting - http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/ebrahimian_glow_longbeach2013.pdf

References for Section 2.9 Initiative 07: Sports Facilities

-
- Example smart sports facilities - http://cleantechnica.com/2015/02/01/sports-arena-stadiums-solar-power/

References for Section 2.9 Initiative 08: Electric Vehicle Ecosystem

The following sources were referenced for this section of the document:

- Trials conducted to date - http://www.driverless-future.com/?cat=29
- Congestion from autonomous cars - http://thoughts.arup.com/post/details/455/will-driverless-vehicles-cut-congestion
- Congestion from autonomous vehicles - http://cleantechnica.com/2016/01/17/autonomous-cars-likely-increase-congestion/
- Benefits from EVs - https://www.nerdwallet.com/blog/loans/electric-hybrid-gas-how-they-compare-costs-2015/
- Driverless electric bus trial in Perth - http://www.abc.net.au/news/2016-02-09/driverless-electric-bus-to-be-trialled-wa-rac/7152650
- Driverless electric bus trial in the Netherlands - https://www.theguardian.com/technology/2016/jan/28/driverless-bus-trial-in-netherlands-will-be-first-on-public-roads
- Electric bus trial in Adelaide - http://onestepoffthegrid.com.au/all-electric-bus-unveiled-in-melbourne-heading-to-sydney-on-one-charge/
- Autonomous car trial in Adelaide - http://www.theaustralian.com.au/life/driverless-cars-closer-as-adelaide-test-shows-how-it-would-work/news-story/0900db30291b3ff1dd7d80253b829c19

References for Section 2.10 Initiative 09: 5D Model and Open Data

The following sources were referenced for this section of the document:

- Open and Agile Smart Cities - http://oascities.org/about/
- Queensland Open Data Institute - http://queensland.theodi.org/home/projects/smart-cities/
- Queensland Globe - https://www.business.qld.gov.au/business/support-tools-grants/services/mapping-data-imagery/queensland-globe
- CityZenith projects - http://cityzenith.com/

References for Section 2.11 Initiative 10: Drones Program

The following sources were referenced for this section of the document:

- Australia RPA Guidelines - https://www.rpastraining.com.au/casr-101-uav-drone-legal-or-illegal
- Queensland Office of the Information Commissioner - https://www.oic.qld.gov.au/guidelines/for-government/guidelines-privacy-principles/applying-the-privacy-principles/privacy-and-drone-technology

References for Section 2.12 Initiative 11: Smart Park

The following sources were referenced for this section of the document:

- Urban furniture - http://www.mobility-trends.com/index.php/tag/street-furniture
- Urban city trends - http://popsop.com/2013/12/what-a-smart-city-of-the-future-will-look-like-learn-7-trends-in-urban-living-for-2014/
- Fugro Roames drones program - http://www.cio.com.au/article/599132/fugro-roames-recruits-drones-help-scan-power-lines/
- Sunshine Coast drones program- http://www.abc.net.au/news/2016-04-14/drones-to-help-queensland-researchers-study-coastal-behaviour/7328046
- Gold Coast drones program - http://www.goldcoastbulletin.com.au/lifestyle/beaches-and-fishing/drones-to-lead-charge-in-keeping-gold-coast-beachgoers-safe/news-story/8a7b87d2065b6f5a472d9035da340f75
- Federal government drones program - http://www.smh.com.au/federal-politics/political-news/government-spends-up-to-3bn-on-triton-drones-to-monitor-north-coast-20140313-34o7n.html

- Boston's Complete Streets - http://bostoncompletestreets.org/about/
- Qatar Smart Parks - http://www.constructionweekonline.com/article-39035-60-smart-public-parks-set-for-qatar/

References for Section 2.13 Initiative 12: Safe Precinct

The following sources were referenced for this section of the document:

- Mankato safe downtown - http://www.mankatofreepress.com/news/local_news/technology-bright-lights-patrols-keep-downtown-safe/article_fb15cb45-9131-51a1-9f66-b1e32adf6a26.html
- Singapore Safe City Test Bed - https://www.accenture.com/ph-en/success-singapore-government-safe-city-test-bed
- Chicago Array of Things - https://arrayofthings.github.io/

References for Section 2.14 Initiative 13: Social Media

The following sources were referenced for this section of the document:

- Aspen Institute's research - http://www.aspeninstitute.cz/en/article/4-2014-how-the-internet-and-social-media-are-changing-culture/
- Efe Sevin's research - http://placebrandobserver.com/branding-cities-in-the-age-of-social-media/
- Social media's impact on brand - http://www.prnewswire.com/news-releases/new-study-social-media-has-outsized-impact-on-sales-and-brand-perception-132005923.html
- City branding and social media - http://placebrandobserver.com/branding-cities-in-the-age-of-social-media/
- Examples of city uses of social media - http://www.slideshare.net/BrandingPlaces/minsk-presentationkakaiya
- Boyd Cohen's article on urbanpreneurship - http://www.fastcoexist.com/3060084/world-changing-ideas/proactive-strategies-for-cities-to-embrace-and-amplify-urbanpreneurs
- Queensland Police example humorous posts - http://bmag.com.au/your-brisbane/brisbane-extra/2016/01/13/27-times-the-queensland-police-won-social-media/
- Iceland's social media campaign - http://icelandwantstobeyourfriend.com/
- Iceland's social media campaign explanation - http://www.takktakk.com/presents/icelandwantstobeyourfriend/
- YouGov - https://today.yougov.com/

References for Section 2.15 Initiative 14: Health Living Lab

The following sources were referenced for this section of the document:

- Jiff official website - https://www.jiff.com/
- Jiff article - http://www.wearables.com/jiff-healthcare-technology-enterprise-benefits-platform/
- Jiff article - http://fortune.com/2015/03/13/wearables-employer-healthcare-costs/
- London South Bank University Health and Wellbeing Institute overview - http://www.lsbu.ac.uk/business/expertise/health-wellbeing-institute
- London South Bank University Health and Wellbeing Institute brochure - https://www.lsbu.ac.uk/__data/assets/pdf_file/0009/69309/health-wellbeing-institute-brochure.pdf
- CSIRO health page - http://www.csiro.au/en/Research/Health
- CSIRO app for cardiac patients - http://www.csiro.au/en/Research/BF/Areas/Digital-health/Improving-access/Online-rehab

- Fjord and Kiqplan - https://www.fjordnet.com/conversations/fitbug-kiqplan-designed-by-fjord-aims-to-get-you-fitter-healthier-and-happier/
- Health clinical trials including UCSF - http://mobihealthnews.com/content/21-clinical-trials-are-using-fitbit-activity-trackers-right-now
- Detroit health partnership - http://www.henryford.com/body.cfm?id=46335&action=detail&ref=2353

References for Section 2.16 Initiative 15: Application Studio

The following sources were referenced for this section of the document:

- HBR's Design Thinking Comes of Age - https://hbr.org/2015/09/design-thinking-comes-of-age
- HBR's Embracing Agile - https://hbr.org/2016/05/embracing-agile&cm_sp=Article-_-Links-_-End%20of%20Page%20Recirculation
- Mayor's Office of New Urban Mechanics - http://newurbanmechanics.org/
- Boston's New Urban Mechanics project portfolio - http://newurbanmechanics.org/portfolio/
- San Francisco Mayor's Office of Civic Innovation - http://innovatesf.com/
- United States Digital Services agency - https://www.usds.gov/

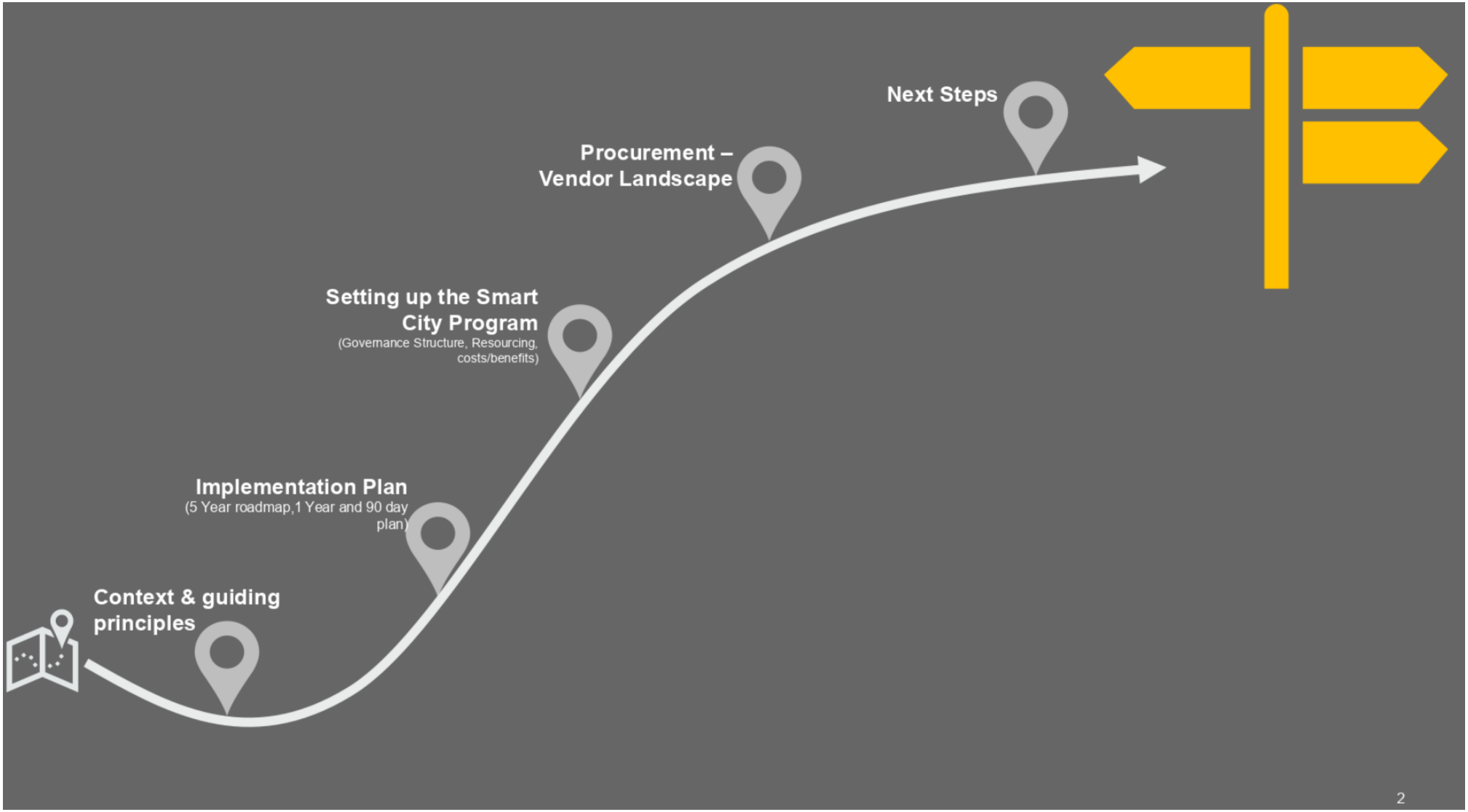
References for Section 2.17 Initiative 16: Digital Platform

The following sources were referenced for this section of the document:

- NYC 311 - http://www1.nyc.gov/311/
- Boston.gov - https://pilot.boston.gov


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FARE LEAGUE
Smart City Blueprint Project
Implementation Plan
08 August 2016

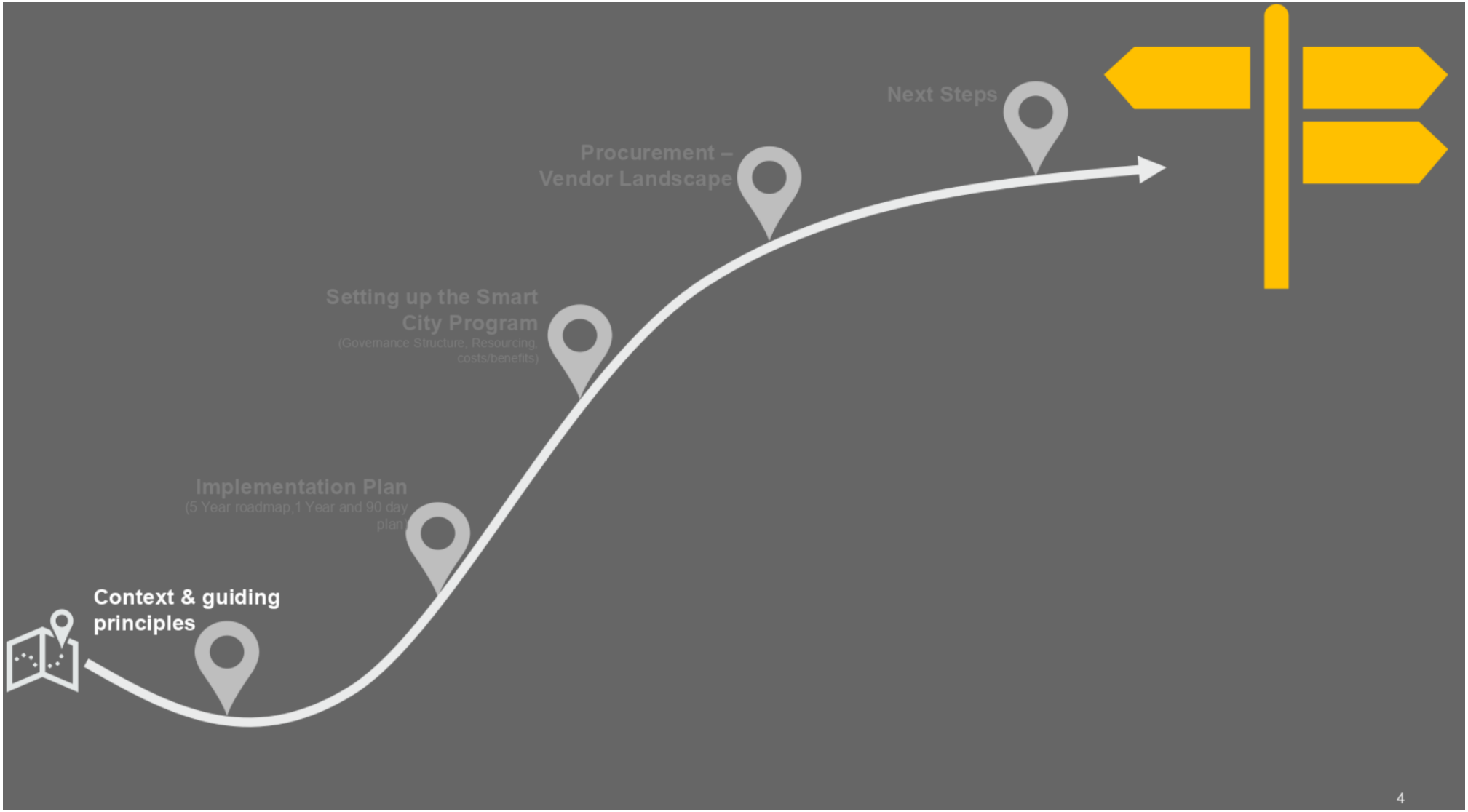
Item 15.7 / Attachment 6.



Brief explanation of the deck

Section	Sub - Section	Brief Description
Context & guiding principles	Guiding tenants for implementation Plan	Overall cardinal principles that underpin the roadmap and implementation Plan
Implementation Plan and five year roadmap	Five year roadmap	Provides an overview of the five year roadmap, the planned outcomes over the five year period and the key principles in developing the roadmap
	One year plan	Explains the next level of detail for the first year, along with the expected outcomes
	100 day plan	Provides a high level view of the first 100 day plan. The detailed plan is available in a separate Excel version
	Typical Initiative Definition	This section provides a brief overview of the type of activities that will form part of each initiative depicted in the 5 year roadmap and one year plan
	Implementation methodology	This section provides a description of the two most commonly used methodologies to implement technology projects i.e. Waterfall and Agile methodology
Setting up the Smart City Program	Governance Structure	Provides a recap of the discussions and meetings held with the PCG and EMT on the appropriate governance structure for the Smart City program
	Key Program role definitions	The section highlights the key roles required as part of the Smart City program
	Benefits	The section provides an overview of benefits tree and benefits mapping. The detailed benefits description and comparable benefits are available in a separate document
Procurement approach & partners	Strategic Choices	Explains the strategic choices that the Council needs to make to set up the Smart City platform
	Vendor Profiles	Details the potential vendor landscape for each initiative and platforms (as an initial consideration by the Smart City program)

Item 15.7 / Attachment 6.



Context



A **Vision for the Ipswich Smart City** has been defined and adopted by the Council



A **Blueprint document** has been developed and agreed with Council for implementation



The Blueprint has shortlisted **sixteen initiatives** as priority initiatives to be implemented over five years



Key enablers such as **governance, procurement** etc. are outlined in the Blueprint that indicate how initiatives will be implemented



Existing Smart city initiatives have been documented in the Current State Assessment for consideration as part of the implementation plan



The intent of this document is to create an **actionable implementation plan** to be adopted by Council

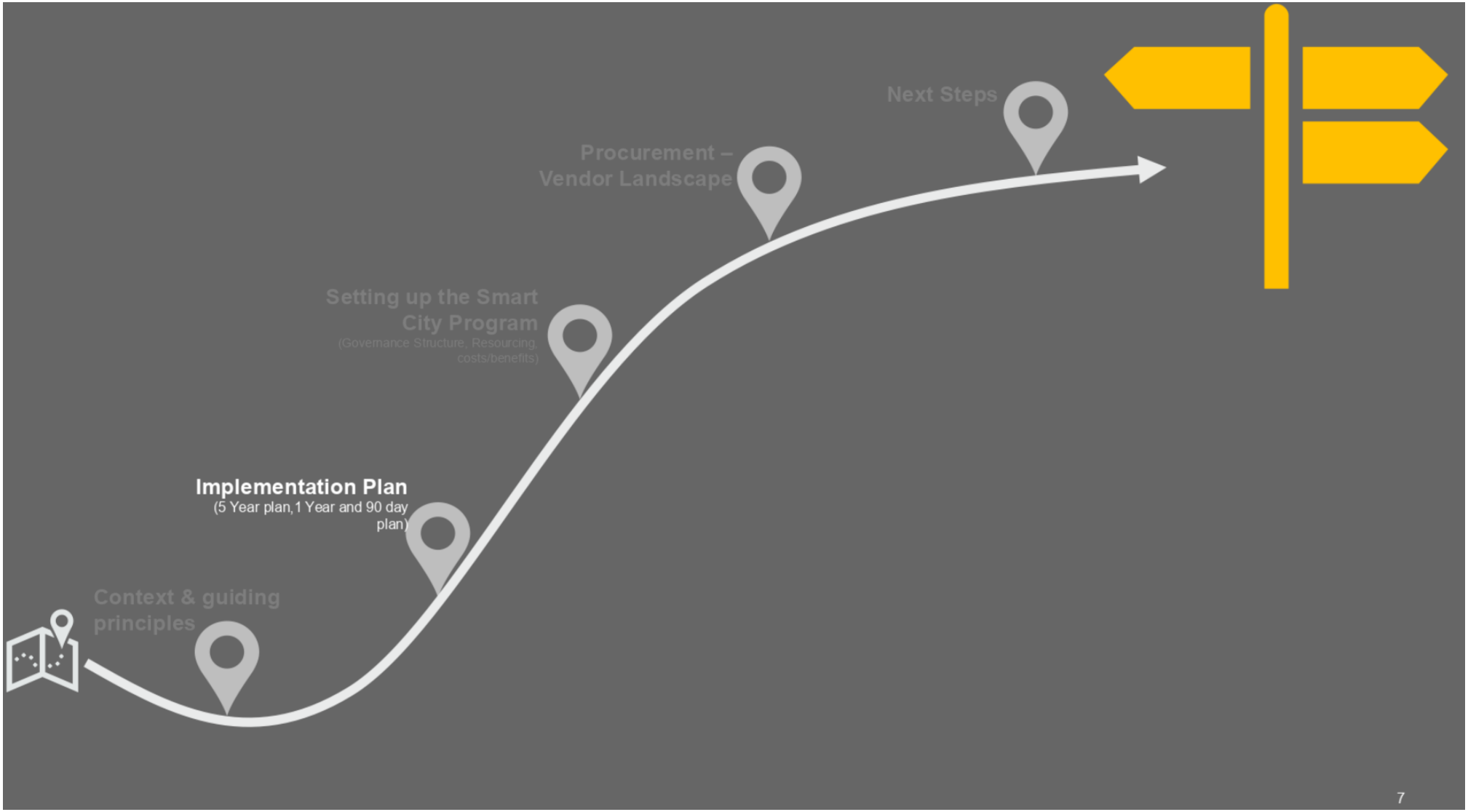
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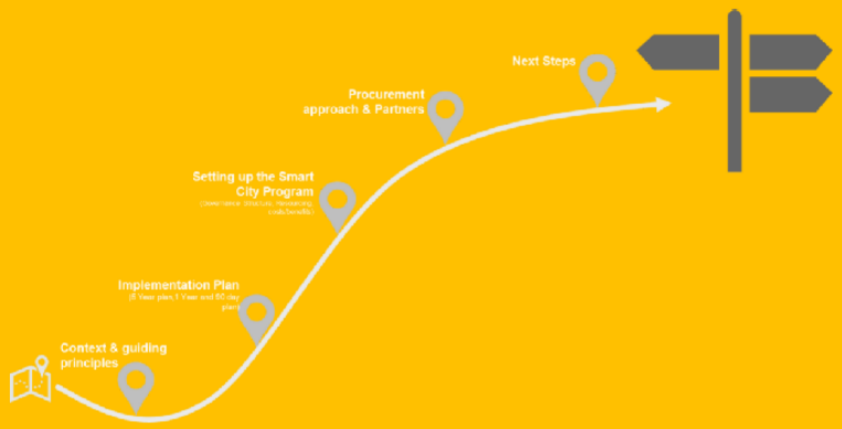
Guiding tenants for Implementation Plan

- The implementation plan will take the approach of an integrated program model. Under this model cross-functional project teams will be established to deliver initiatives and outcomes. These project teams will comprise resources from multiple divisions across Council and may include other city stakeholders in delivering the identified outcomes
- All initiatives will move through a structured stage gate process from scope definition and business plan determination to implementation and benefits realisation.
- The Smart City program will have the full endorsement and commitment of Council leadership (i.e.Councillors, CEO COOs
- The current and future “smart” projects that are implemented as part of BAU which have a linkage to Smart City initiatives and platform will be integrated through a defined governance model within the Smart City program
- The implementation plan encompasses all stakeholders across the city and is not restricted to Council
- The implementation plan and approach will leverage on the existing capabilities within Council to deliver initiatives
- Council will strive to develop partnerships (such as partnerships with industry, university, other government agencies, community stakeholders) and collaborate to deliver the identified initiatives
- The Smart City implementation plan will operate within the same legal and regulatory confines as Council

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Item 15.7 / Attachment 6.





Five Year Roadmap

- Translation of the Smart City blueprint into an overall five year roadmap
- The roadmap runs from September 2016 to June 2021

8

Five Year Roadmap – Principles(1/2)

The principles have underpinned the formulation of the five year roadmap

- The implementation plan has been created based on the signed off Smart City Blueprint. Any changes to the Blueprint document will warrant changes to the implementation plan
- The overall roadmap covers a five year period starting from September 2016
- The roadmap has been built to line up with the financial Years and budgeting cycles of the Council
- The plan assumes the implementation team will be staffed with the right level of capability and resources required. Any change to this assumption may impact delivery timelines
- The roadmap has been broken down into three major sections – Initiatives, Enablers and Platforms - in line with the Blueprint
- The duration of each initiative depicts the estimated elapsed time in executing the initiative and the associated cost will be spread across the duration
- The roadmap has been developed to leverage existing capabilities and smart initiatives within the Council to prioritise initiatives that will deliver quick wins for the Council
- The roadmap takes into account high level dependencies between initiatives and platforms (for example, the public tier is built to support Smart Lighting)

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Five Year Roadmap – Principles(2/2)

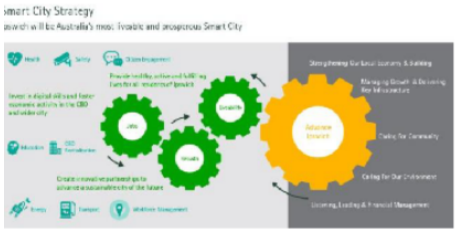
The principles have underpinned the formulation of the five year roadmap

- Platform components will always be built in line with specific requirements for one or more initiatives
- A pilot of the platform capabilities will be established early in the roadmap to prove technology and integration capabilities as well as program delivery capability
- Following the pilot, platform components at a Council level will be built after a critical mass of requirements is achieved (i.e. common platforms across initiatives will only be built when a clear business need has been established with tangible benefits accounted)
- It is assumed that once initiatives are completed they will be transitioned to BAU (except for trials)
- Only the key BAU projects planned have been considered in developing the five year roadmap. Further refinement can be done against the detailed project plan for each year
- The roadmap assumes a start of September 2016 with the key resources in place to execute the 100 day plan. Any delays in start date will accordingly have a downstream impacts on the five year roadmap.

Item 15.7 / Attachment 6.

Five Year Roadmap – City Outcomes

The year 2019 will act as the point of inflection (i.e. tipping point) in the city's Smart City transformation Journey



Aug 2016

July 2017

- Program & Perf. Management
- Financial/Commercial & Vendor Management setup
- Strategic Comms. setup
- Skills and Capabilities setup
- Policies / Standards setup
- Funding setup
- Open data policy and platform
- Pilot Platform

Quick Wins & Build the Basics

- Drones Program
- Application Studio
- 1st Build and Learn Fair
- Open Data platform
- Pilot Project to showcase Smart City

July 2018

- Public Tier
- Data Centre of Excellence

Towards building a sustainable city

- Smart Lighting
- Sports Facilities
- Smart Buildings targets & standards
- Autonomous Bus & Eco-village partnerships signed
- Enhanced online services (part of Digital Platform)

July 2019

- Analytics Tier
- Platform Tier

Revitalised CBD and a city in transformation

- Social Media campaign
- Safe Precinct
- Smart Parks
- Smart Buildings (Council CBD bldg.)
- External service integrated with Council Digital platform

July 2020

- Integrated Smart City Platform (includes public tier, analytics tier and platform tier)

Vehicles of Continuous innovation set up

- Innovation Lab
- Eco-village trial
- Health Living Lab
- Digital Skills
- Advanced digital citizen engagement (as part of digital platform)

July 2021

- All enablers and platforms transitioned to Business as Usual operation

Achieve the Vision Create the next wave

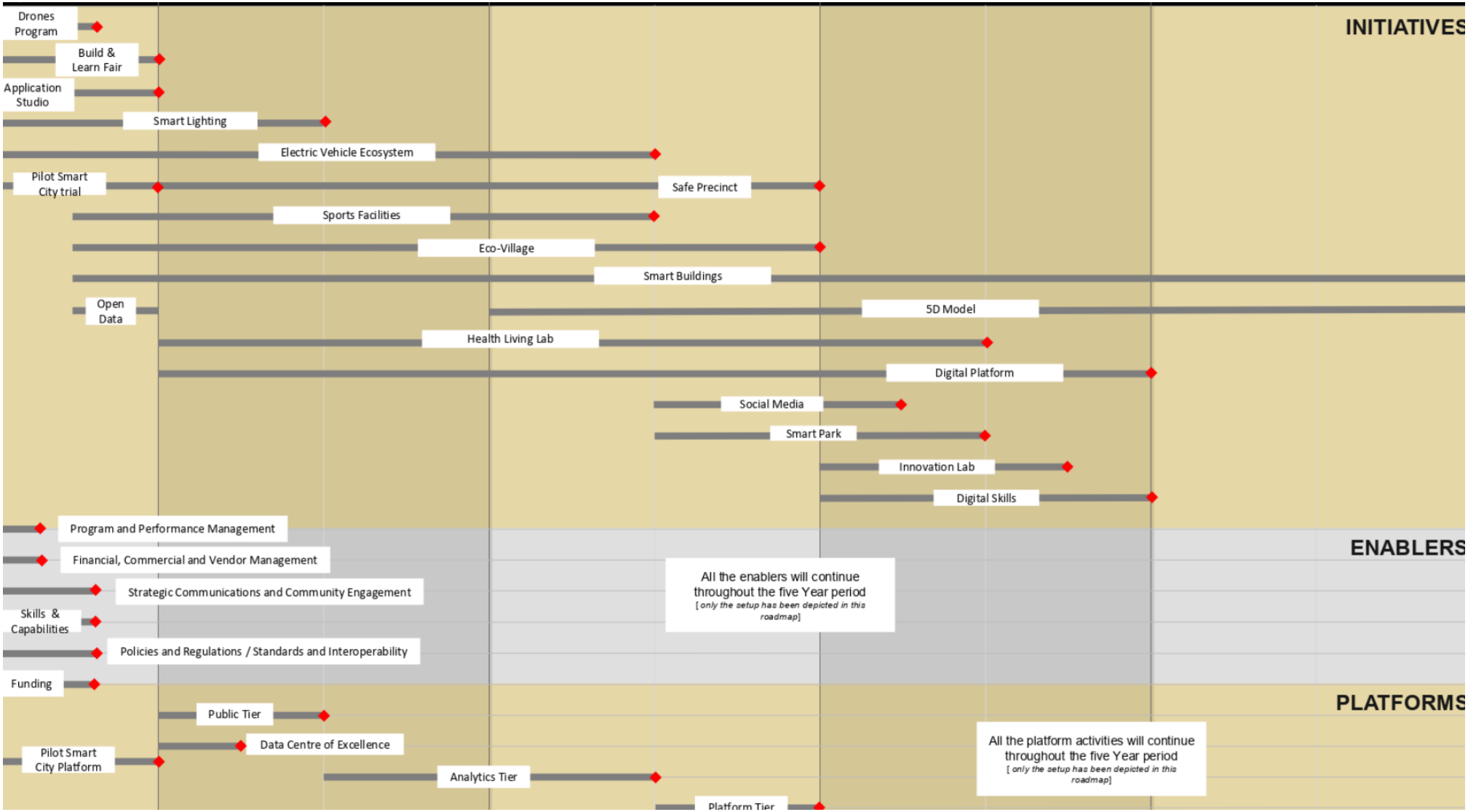
- 5D Model
- Next 5 Year strategy & plan

Jobs
Livability

Note: The initiatives represented under each year refers to when they have been implemented/delivered to the city.

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Item 15.7 / Attachment 6.



5 Year Roadmap – Detailed Outcomes by Year

	Sep – Jun 2017	FY18	FY19	FY20	FY21
	Quick Wins and Build the Basics	*Towards building a sustainable city*	*Revitalised CBD and a city in transformation*	*Vehicles of Continuous innovation set up*	*Achieve the Vision Create the next wave*
Initiatives	• Drones program launched • First Build and Learn fair completed • Application Studio launched (1 -2 apps) • Open data policy and platform in place for Council • Smart lighting partnership agreement signed	• EV conversion for Council started • Smart buildings targets and standards launched • Sports facilities upgrade completed • One stop shop for online services established for all citizens • Smart lighting trial completed • EV autonomous bus trial partnership agreement signed • Healthy living lab partnership agreement signed • Eco-Village partnership agreement signed	• Social media strategy and campaign launched • Safe precinct completed • Smart part trial completed • EV autonomous bus trial completed • Digital platform integrates with external service providers	• Innovation lab launched* • Digital skills launched • Healthy living lab lighthouse program completed • Digital platform completed and transitioned to BAU	• 5D data model launched • Smart Buildings completed and launched • Next 5 Years blueprint and implementation plan
Enablers	• Program & Perf. Mgmt setup • Financial/Commercial & Vendor Management setup completed • Strategic comms setup completed • Skills setup completed • Policies / Standards setup completed • Funding setup completed	• Enablers are in place and continues to operate during the life of the program			
Platforms	• Pilot Platform	• Public tier launched • Data Centre of Excellence launched	• Analytics tier launched • Platform tier launched	• The full platform suite is in place and continues to operate during the life of the program	

**Innovation lab may be brought forward in the event of significant external innovation opportunity materialises*

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Five Year Roadmap – Dependencies

The dependencies that have been assumed in developing the five year roadmap

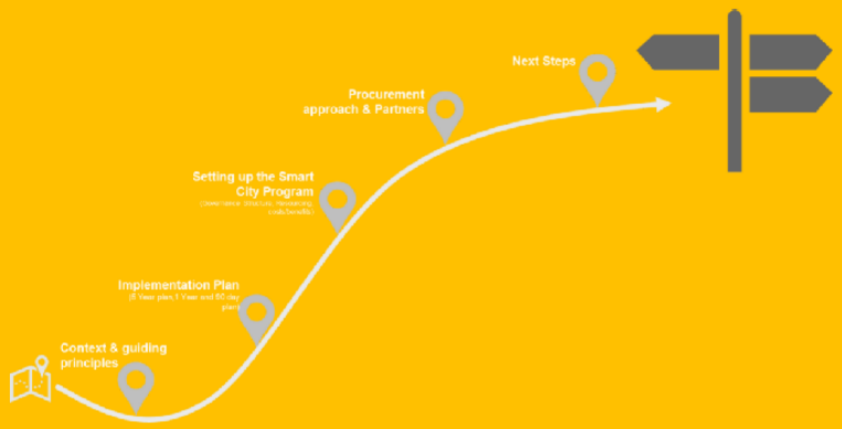
Smart City Initiatives

- Smart Lighting is already underway (depends on developments to date)
- Electric Vehicle Ecosystem (Autonomous Bus) is already underway (depends on developments to date)
- Electric Vehicle Ecosystem (EV Council Conversion) depends on fleet procurement guidelines (ex: asset depreciation) and will likely need to start with a new fiscal year
- Safe Precinct depends on Smart Lighting and Smart Park
- Sports Facilities depends on the development of the new bicycle criterium track
- Smart Buildings needs to overlap with the development of the new Council building and with the revitalisation of the CBD
- Eco-Village depends on new greenfield master developments timelines
- Social media depends on the revitalisation of the CBD

Smart City Platform

- Public Tier depends on the Open Data Platform
- Data Center of Excellence depends on Smart Lighting
- Analytics Tier depends on Safe Precinct
- Platform Tier depends on Smart Park

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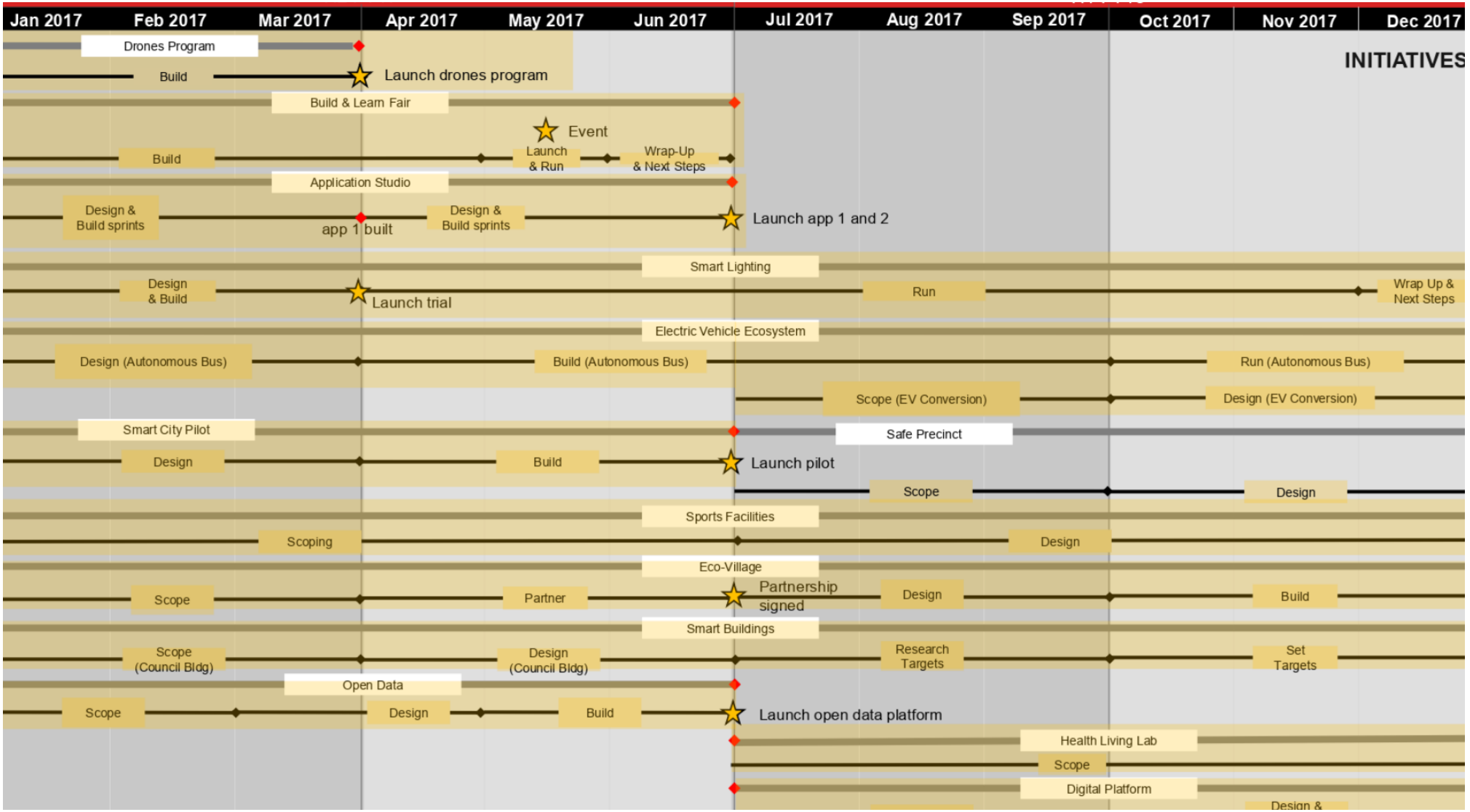


One Year Plan

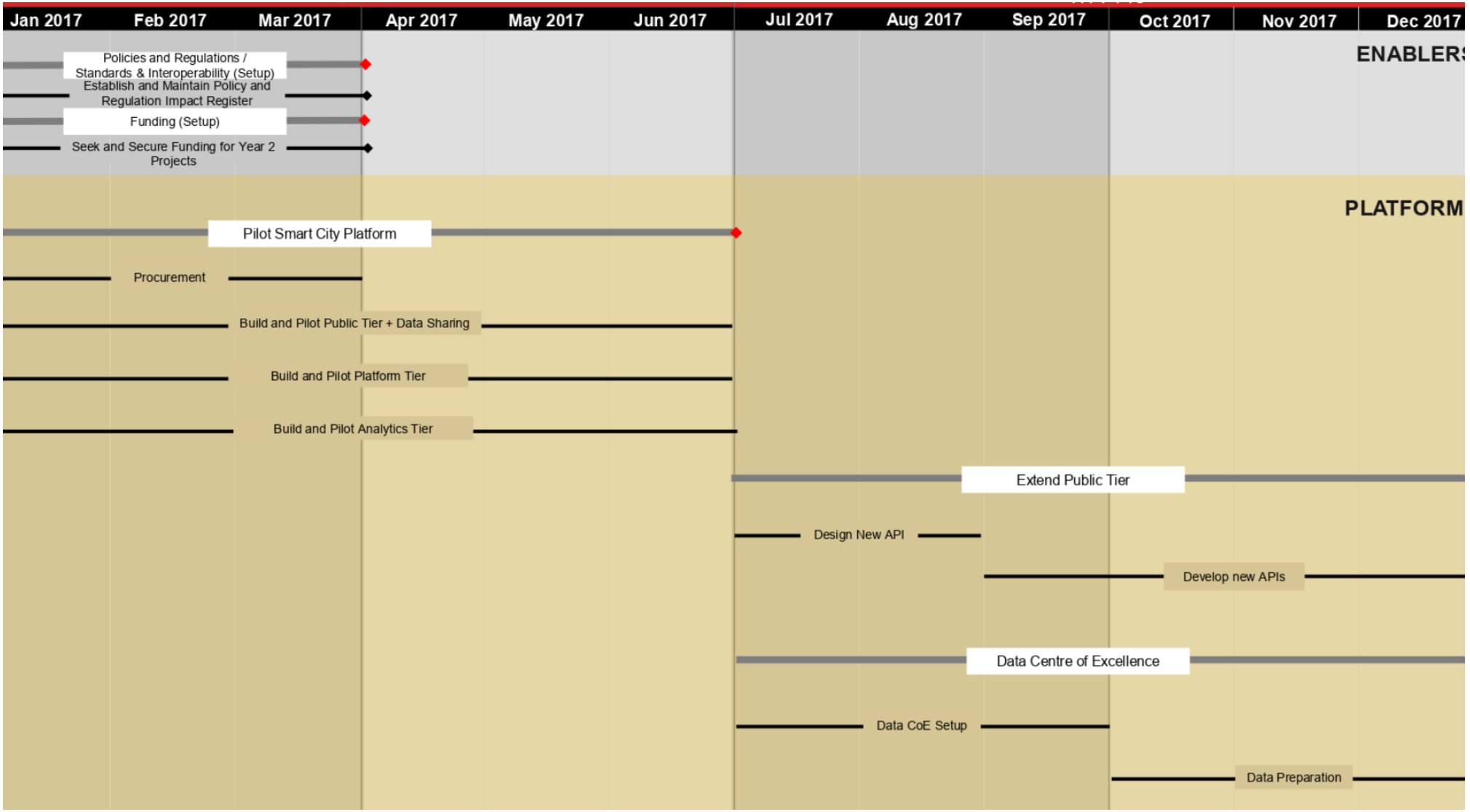
- Drill down from the five year roadmap to the one year plan
- The one year plan considers the duration of January – December 2017

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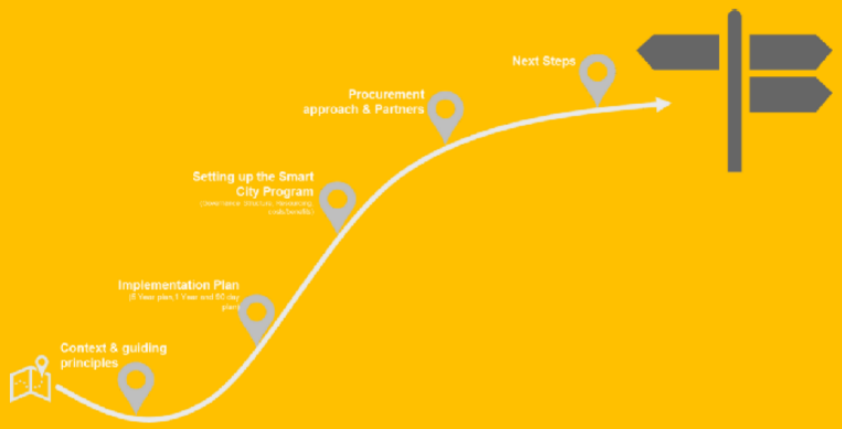
Item 15.7 / Attachment 6.



One Year Plan – Outcomes

	Jan – Jun 2017	Jun – Dec 2017
	Quick Wins and Build the Basics	*Towards building a sustainable city*
Initiatives	• Drones program launched • First Build and Learn fair completed • Application Studio launched (1 -2 apps) • Open data policy and platform in place for Council • Smart lighting partnership agreement signed	• Smart lighting trial completed
Enablers	• Program & Perf. Mgmt setup • Financial/Commercial & Vendor Management setup completed • Strategic comms setup completed • Skills setup completed • Policies / Standards setup completed • Funding setup completed	• Enablers are in place and continues to operate
Platforms	• Pilot Platform	• Public tier launched • Data Centre of Excellence launched

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100 Day Plan

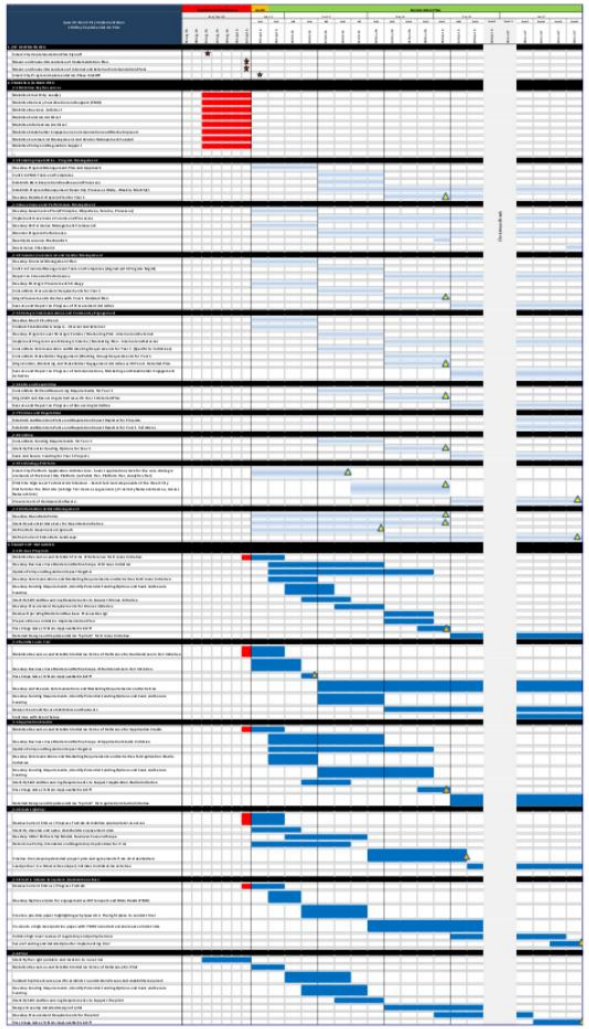
- **Detailed activity plan for the first 100 days of Smart City Program start** (note: detailed plan in separate Excel document)
- **The 100 day plan assumes a start in September 2016 and finishes by December 2016**

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100 Day Plan – Detailed Plan

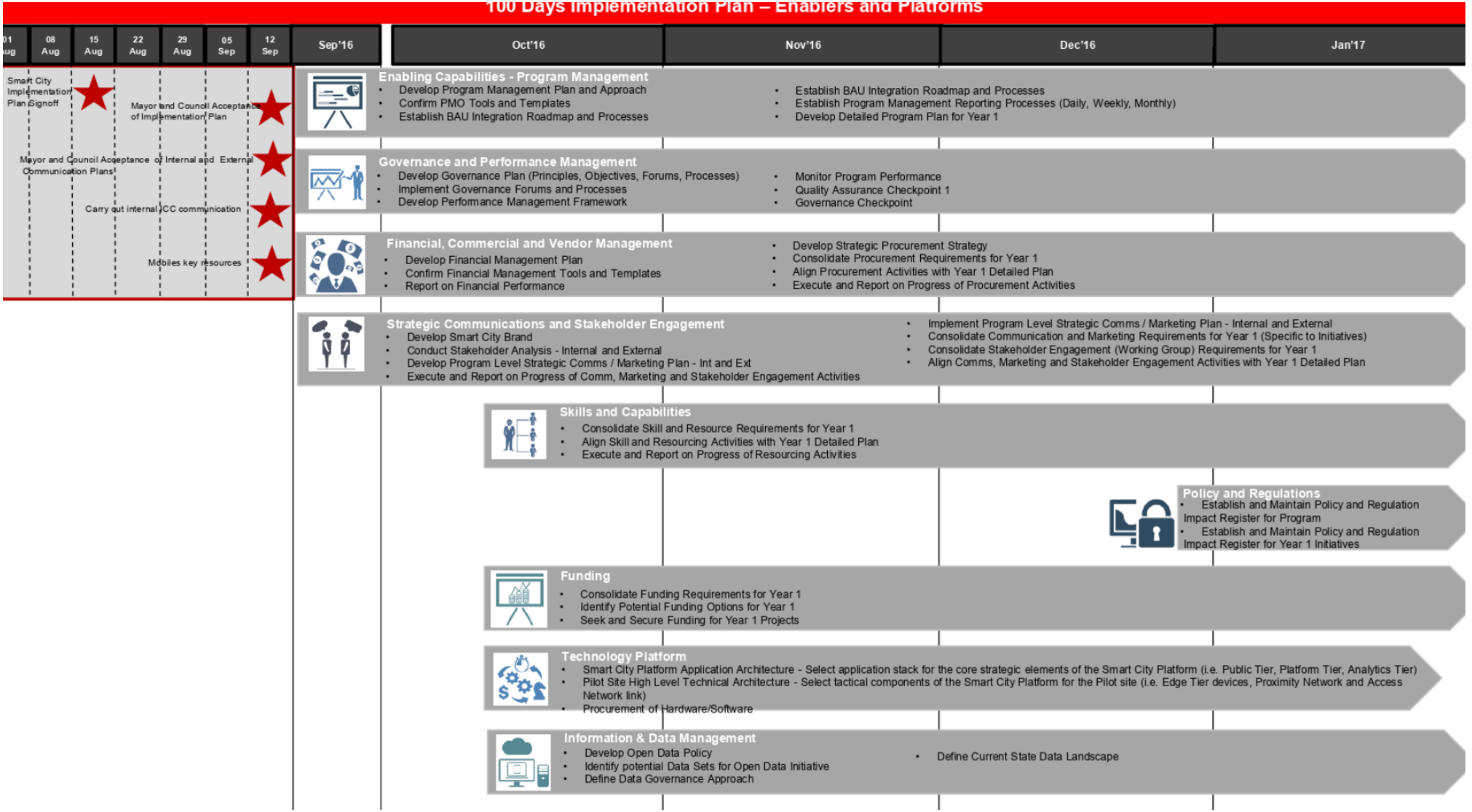
- The Detailed 100 Day Plan (right) outlines the key activities to be undertaken to mobilise the program and commence project activities for the first five initiatives to be delivered in Year 1. The following slides summarise the key activities and outcomes in the 100 Day Plan.

Note: The plan in detail is available in a separate Excel document.



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Item 15.7 / Attachment 6.



100 Days Implementation Plan

Sep'16	Oct'16	Nov'16	Dec'16	Jan'17

12 Sep'16

Drones Program



- Mobilise Resources and Establish Terms of Reference for Drones Initiative
- Develop Business Case Model and Define Scope of Drones Initiative
- Update Policy and Regulation Impact Register
- Develop Communications and Marketing Requirements and Activities for Drones Initiative
- Develop Funding Requirements, Identify Potential Funding Options and Seek and Secure Funding
- Identify Skill and Resourcing Requirements to Support Drones Initiative
- Develop Procurement Requirements for Drones Initiative
- Review Operating Model and Business Process Design
- Prepare Drones Initiative Implémentation Plan
- Pass Stage Gate / Obtain Approval & Kick-Off
- Detailed Design and Implementation "Sprints" for Drones Initiative

Build & Learn Fair



- Mobilise Resources and Establish Initiative Terms of Reference for Build and Learn Fair Initiative
- Develop Business Case Model and Define Scope of Build and Learn Fair Initiative
- Pass Stage Gate / Obtain Approval & Kick-Off
- Develop and Execute Communications and Marketing Requirements and Activities
- Develop Funding Requirements, Identify Potential Funding Options and Seek and Secure Funding
- Design: Seek and Secure Exhibitors and Sponsors
- Continue with Event Setup

Application Studio



- Mobilise Resources and Establish Initiative Terms of Reference for Application Studio
- Develop Business Case Model and Define Scope of Application Studio Initiative
- Update Policy and Regulation Impact Register
- Develop Communications and Marketing Requirements and Activities for Application Studio Initiative
- Develop Funding Requirements, Identify Potential Funding Options and Seek and Secure Funding
- Identify Skill and Resourcing Requirements to Support Application Studio Initiative
- Pass Stage Gate / Obtain Approval & Kick-Off
- Detailed Design and Implementation "Sprints" for Application Studio Initiative

Smart Lighting



- Review Current Status / Progress To-Date & mobilise appropriate resources
- Identify, develop and agree stakeholder engagement plan
- Develop Initial Partnership Model, Business Case and Scope
- Determine Policy, Standards and Regulatory implications for trial
- Finalise trial, develop detailed project plan and agreements from all stakeholders
- Lead partner (i.e. Master Developer) initiates mobilisation activities

Electric Vehicle Ecosystem (Autonomous Bus)



- Review Current Status / Progress To-Date
- Develop high level plan for engagement with Transport and Main Roads (TMR)
- Create a position paper highlighting why Ipswich is the right place to conduct trial
- Co-create a high level position paper with TMR to conduct autonomous vehicle trials
- Initiate high level review of regulatory and policy barriers
- Secure funding and detailed plan for implementing trial

Smart City Pilot



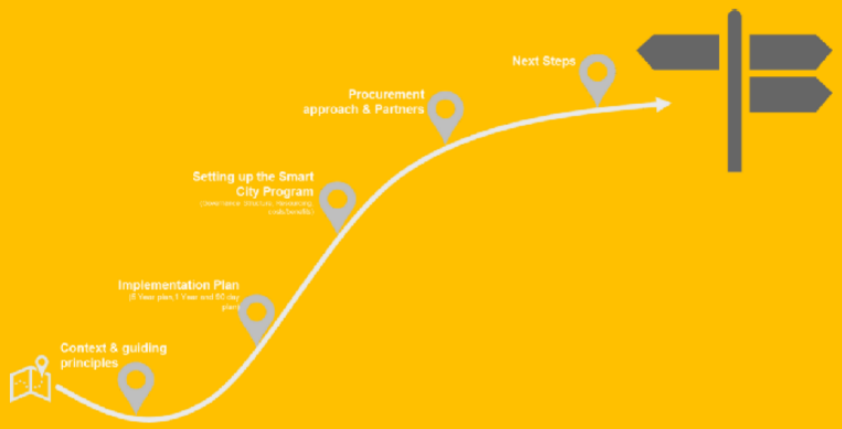
- Identify the right problem and location to run a trial
- Mobilise Resources and Establish Initiative Terms of Reference for Pilot
- Conduct high level survey with residents to understand issues and capability required
- Develop Funding Requirements, Identify Potential Funding Options and Seek and Secure Funding
- Identify Skill and Resourcing Requirements to Support the pilot
- Design: Develop detailed design of pilot
- Develop Procurement Requirements for the pilot
- Pass Stage Gate / Obtain Approval & Kick-Off

100 Day Plan – Outcomes

	Sep 2016	Oct 2016	Nov 16	Dec 16
	Setup of program office for Smart City	*Tools, Templates and governance structures in place*	*Key enablers analysed and actions identified*	*Detailed 1 Year plan agreed and approved*
Initiatives	• Drones ToR completed • Build and Learn fair approved • Smart lighting partnership discussion kicked off	• Build and learn fair license obtained	• Drones Program business case, ownership model and policy changes completed • Build & Learn Fair plan completed • Electric Autonomous Bus POV completed	• Drones Program procurement and business process redesign completed • Build & Learn Fair exhibitors and sponsorships locked in and marketing campaign launched • Smart Lighting policies drafted • Electric Autonomous Bus partnership agreement signed
Enablers	• Program Office ToR completed • Strategic Comms for Smart City Blueprint – External completed • Smart City program office staffed	• Program office tools and processes launched • Financial reporting templates in place • Skills and capabilities for 3-5 Years plan completed • Policies and Regulations implications for enablers evaluated	• Procurement and Partnership plans completed • Strategic Communications overall and 1-Year plan completed • Skills & Capabilities detailed 1-Year plan completed • Funding high-level 1-Year requirements completed	• Overall 1-Year detailed program plan developed • Procurement and Partnership plan implemented • Smart City Blueprint external document marketing completed • Strategic Communications content and channels completed • Skills & Capabilities secondment plan completed • Policies & Regulations policy changes implemented and 3-Year plan completed

*Platform components not initiated during first 100 days

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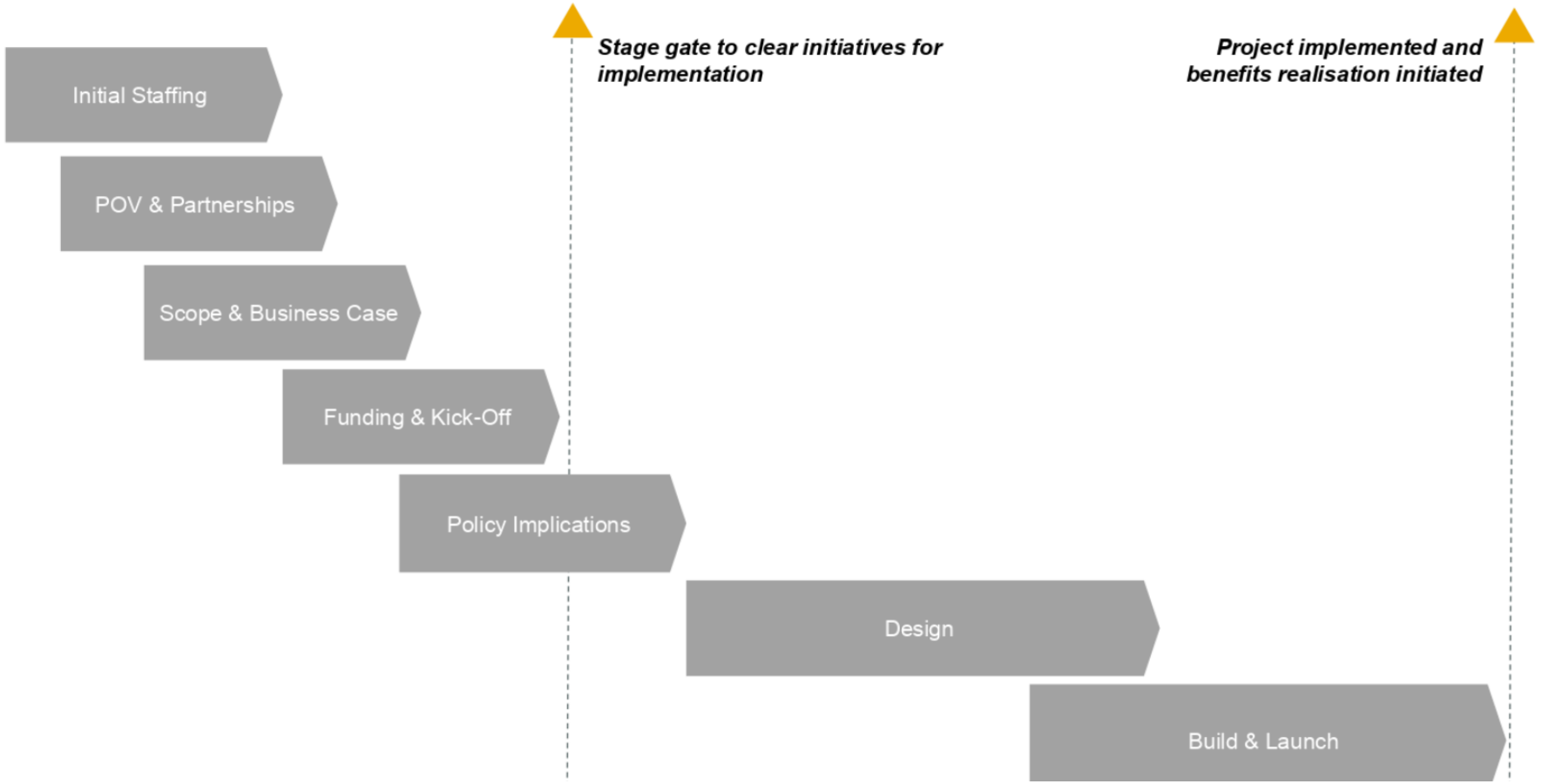
Typical Initiative Definition & Implementation Methodology

- Provides an overview of the key activities involved in executing each initiative
- Also, an overview of Waterfall and Agile methodologies which will typically be utilised for technology implementation projects

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Overview of typical activities within each Initiative

The roadmap and plan have detailed out an elapsed time to execute each initiative. The depiction below provides a view of the activities to be undertaken within each initiative



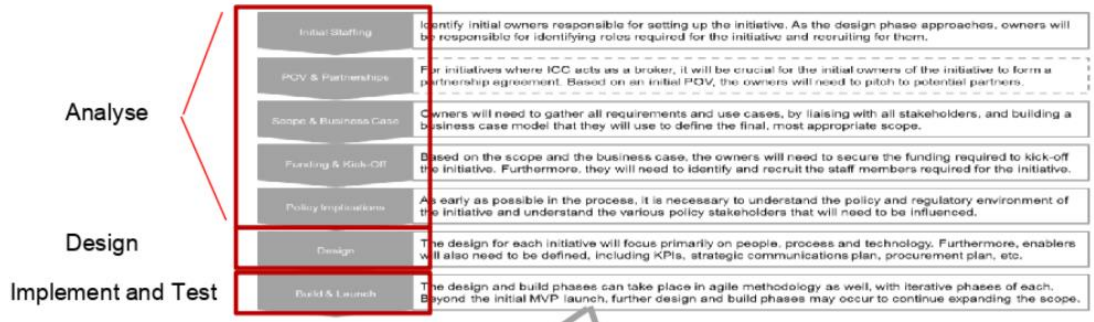
High-level Description of Activities

Initial Staffing	Identify initial owners responsible for setting up the initiative. As the design phase approaches, owners will be responsible for identifying roles required for the initiative and recruiting for them.
POV & Partnerships	For initiatives where ICC acts as a broker, it will be crucial for the initial owners of the initiative to form a partnership agreement. Based on an initial POV, the owners will need to pitch to potential partners.
Scope & Business Case	Owners will need to gather all requirements and use cases, by liaising with all stakeholders, and building a business case model that they will use to define the final, most appropriate scope.
Funding & Kick-Off	Based on the scope and the business case, the owners will need to secure the funding required to kick-off the initiative. Furthermore, they will need to identify and recruit the staff members required for the initiative.
Policy Implications	As early as possible in the process, it is necessary to understand the policy and regulatory environment of the initiative and understand the various policy stakeholders that will need to be influenced.
Design	The design for each initiative will focus primarily on people, process and technology. Furthermore, enablers will also need to be defined, including KPIs, strategic communications plan, procurement plan, etc.
Build & Launch	The design and build phases can take place in agile methodology as well, with iterative phases of each. Beyond the initial MVP launch, further design and build phases may occur to continue expanding the scope.

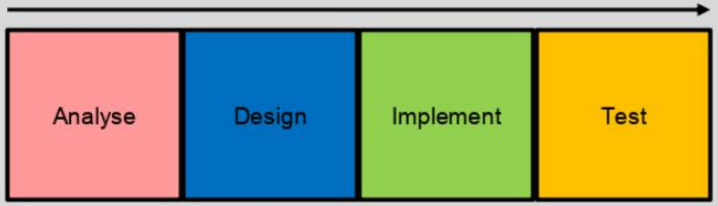
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Implementation Methodology

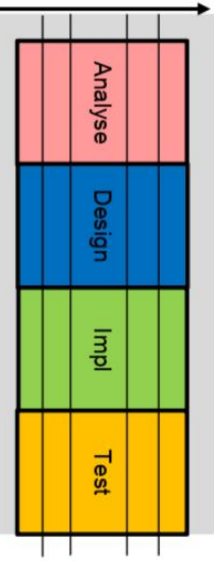
There are two prominent methods to deliver technology: Waterfall and Agile



Waterfall Methodology: is a sequential design process. This means that once each of the Analyse, Design, Implement and Test phases are completed, we can move to the next step.



Agile Methodology: Instead of a sequential design process, the Agile methodology follows an incremental approach. Implementation starts off with a simplistic project design, and then works on small modules

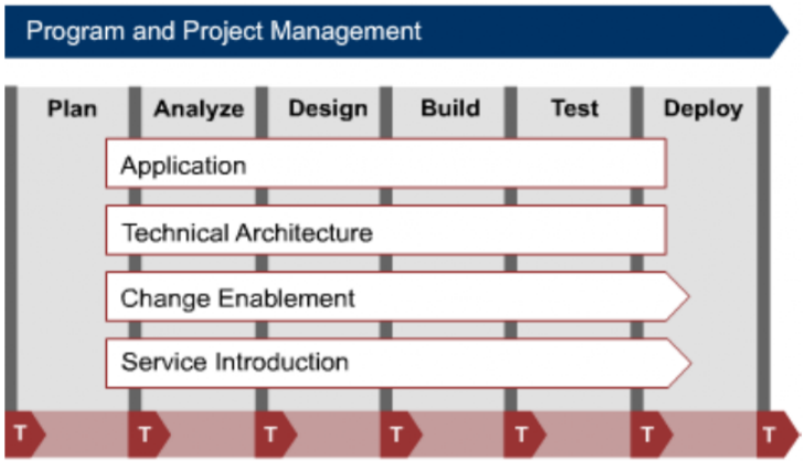


The subsequent slides explain the Waterfall and Agile in detail

Types of Implementation Methodologies – Waterfall

Descriptions of Roles and Activities

- **Program and Project Management:** This activity involves the up-front, project-level planning required to refine the high-level requirements, refine the solution blueprint, select the packaged software, and refine the delivery strategy.
- **Application:** This activity involves the tasks and deliverables needed to plan, architect analyse, design, build, test and deploy a package-based application
- **Technical Architecture:** This activity involves the tasks and deliverables needed to analyse, select and design, install and build, and test the development, test, and live environments
- **Change Enablement:** This activity involves the tasks and deliverables for conducting or facilitating change management, organisation transformation, training and performance support for success adoption of new systems and processes. We understand ABS will be conduct the Change Enablement associated with the Data Acquisition capability, which we will support this from a training perspective
- **Service Introduction:** This activity provides a framework for the management and execution of the introduction of a new product or service into service delivery, including work planning, deliverable management, issues, risks and performance reporting. We understand ABS will conduct the Service Introduction associated with the Data Acquisition capability



Waterfall Accenture's Delivery Methodology (ADM)

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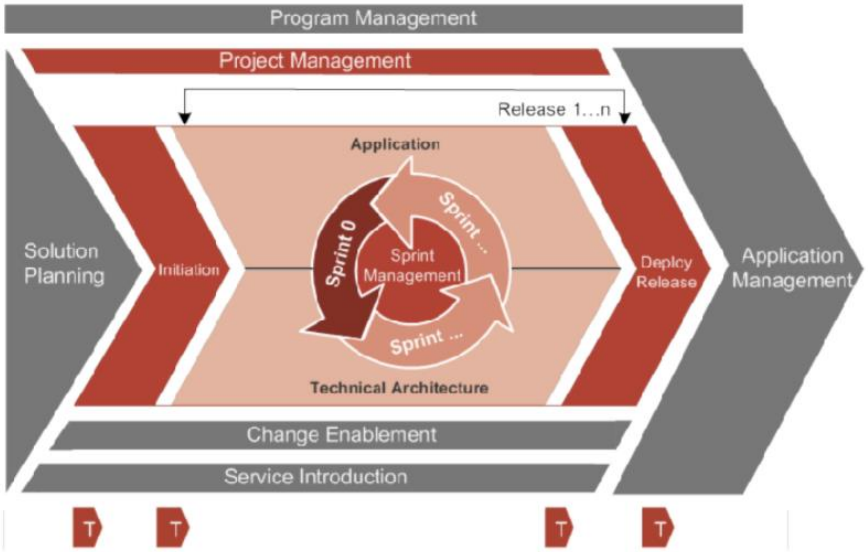
Types of Implementation Methodologies – Agile

Key Benefits of Agile

- **Delivering Early, Delivering Often:** Agile Development initiates with a Discovery phase for the early identification of vertical slices of functional and non-functional requirements (or "user stories"), which together describe the design and architecture of the overall solution. These user stories are then designed, implemented, tested and delivered in time-boxed iterations (or "sprints") of potentially shippable solutions.



- **Tightly Aligned to Requirements:** During the initial Discovery phase, the implementation and business teams collaborate to identify the project and solution plan, understand the solution's high-level requirements, and identify the inventory of user stories to be built (i.e. the Solution Backlog), develop the Integrated Project Plan and agree any relevant management and quality control plans. This early and joint envisioning and preparing helps the implementation team create a consistent, well-defined foundation of user stories that are linked directly and clearly to business and system requirements.



Agile Accenture's Delivery Methodology (ADM)

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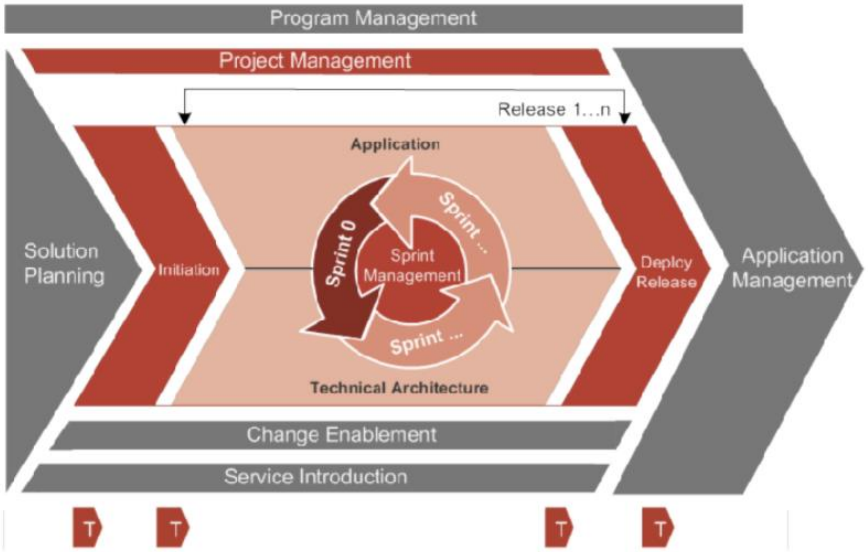
Types of Implementation Methodologies – Agile (Cont.)

Key Benefits of Agile

- **Close Collaboration with Users:** Agile relies upon regular and active collaboration between development teams and business experts, to deliver a solution which addresses business objectives with each and every incremental sprint. The methods provide high visibility into development and delivery such that business users can fully participate in decision cycles, and adapt project delivery to suit changing needs and re-prioritisation of requirements.

- **Responsive to Change and Continuous Improvement:** Agile Development's foundation of incremental delivery provides frequent and predictable sprints of incremental functionality to business and end users. This continuous and early validation of functionality supports an evolving solution design, and results in the less costly correction of defects over the life of the project. Each sprint begins with a Solution Backlog Selection meeting. As work progresses within the sprint, the entire team will gather for a brief Daily Stand-Up. At the end of the Sprint, the team invites the customer and other stakeholders to attend the team's Sprint Review to present completed user stories. After the Sprint Review, the team enters into a sprint Retrospective during which the team identifies and implements any adjustments to future sprint processes.





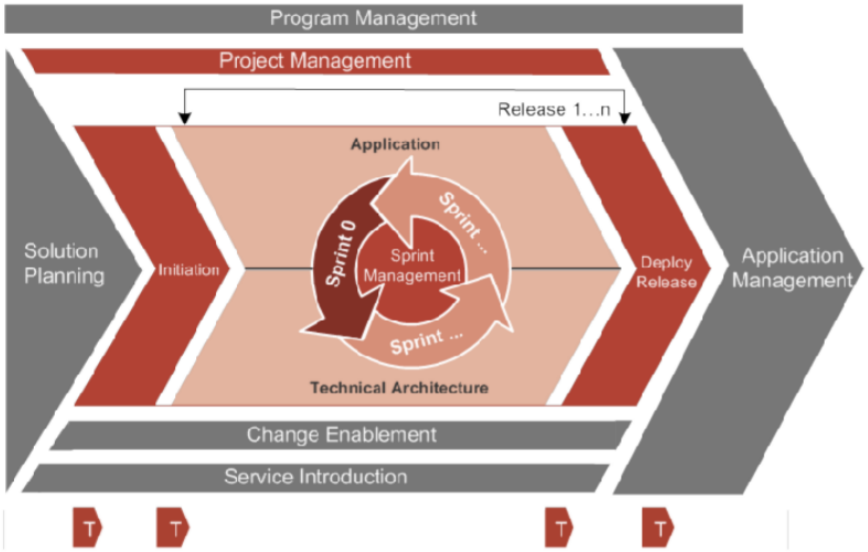
Agile Accenture's Delivery Methodology (ADM)

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Types of Implementation Methodologies – Agile

Key Benefits of Agile

- **Consistent and Transparent Governance:** Transparent governance is a key characteristics of Agile Development, allowing stakeholder and business experts to actively and regularly participate in decision cycles and jointly problem solve to better understand business objectives. This consists of posting of status metrics in team spaces and centrally accessible locations, and working with stakeholders to evaluate progress and provide right-time feedback.
- **Leading Processes:** Design of the architecture is based on the premise of "just in time" and the "right amount" of documentation and procedure to yield high quality solutions whilst remaining agile and lightweight. Testing and quality control are integral parts of the iterative development process, and the use of continuous integration allows solutions to be are incrementally integrated, regression tested, and validated throughout delivery.



Agile Accenture's Delivery Methodology (ADM)

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Waterfall vs. Agile

Waterfall	Agile	Discipline
Structured and Linear	Iterative, Incremental and Lean	Process
Detailed project plan from start to end, created early in project	Coarse grained plan for overall project, detailed plans per iteration	Project Planning
Dedicated specification phase. Initial requirements signed off	Requirements evolve over the course of project	Requirements
Easy to manage if requirements are well defined and don't keep changing	Open to change in requirements and scope. Flexible and works even when requirements are unclear at the beginning of project	
Rigorous change request process	No or relaxed change request process	
Comprehensive requirement documents.	Easy access to customer rather than reliance on comprehensive requirement documents. Customer oriented backlog.	
Comprehensive architecture and design specs before implementation begins	Minimum upfront architecture and design work and validated iteration by iteration. Evolving and incremental architecture	Architecture and Design
Each phase requires the previous phase to complete. Working Solution is available at the end of Implementation phase.	Each iteration produces a working solution that's incremental to the previous.	Build
Each developer is responsible for one area.	Developers share ownership of code.	
Focus on completing architecture modules at different milestones.	Focus on completing user functionality iteration by iteration.	
Doesn't necessarily rely on engineering practices	Relies on engineering practices (TDD, refactoring, pair programming, Continuous Integration, Automation, Collective Code Ownership etc.)	

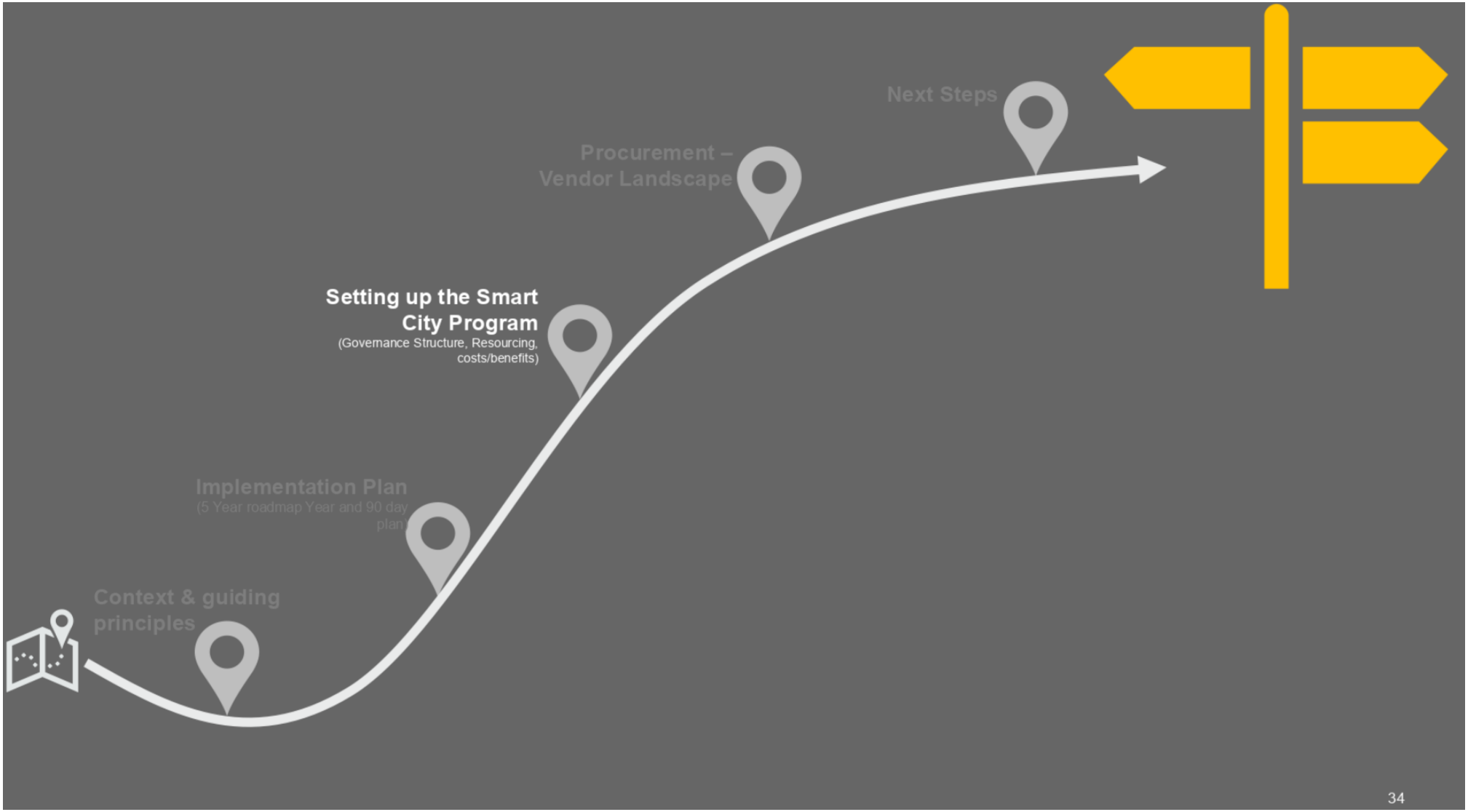
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Waterfall vs. Agile (Cont.)

Waterfall	Agile	Discipline
Integration performed at the end or at different milestones.	Integrate from the beginning and continuously	Build
Relies on small group of architects/designers to review the complete code, the rest of team is very specialized	Requires cross trained resources, knowledgeable in all technologies	
Only few leads or architects can contact business people. Communication mainly happens at the beginning of the project or at milestones.	Developers, QA and management collaborate together and encouraged to talk directly with business. Everyone's point of view is considered	
Testing phase at the end of the project.	Testing spread out over entire project	Testing/QA
Comprehensive test planning. Test Cases are developed during test planning.	Tests are planned and developed continuously iteration on iteration. Test cases are often replaced with checklists and exploratory testing	
Large proportion of manual testing.	Automated testing is needed to keep up with regression tests.	
Separation of roles: Testers are testing, developers are implementation, Business Analysts are requirements.	The whole team is involved in testing and requirements work. Developers take part in testing	
Requirements are relatively completed when testing start.	The requirements are developed continuously throughout the work	
Project Plans, Specifications, Design model, test plans etc.	Focus on delivering working software iteration on iteration. Quality is utmost priority.	Deliverables

33

Item 15.7 / Attachment 6.





Governance Structure

- Description of the proposed governance structure to support execution of projects

35

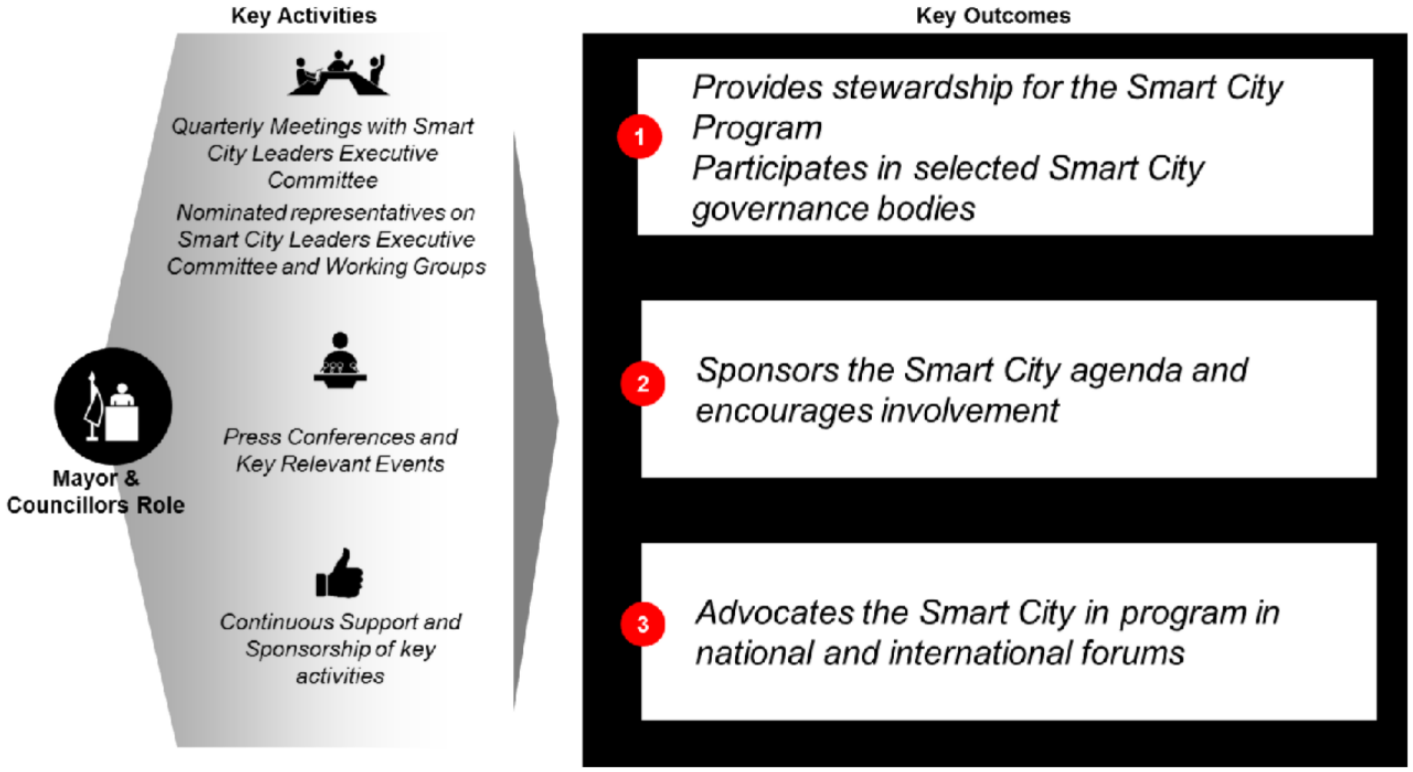
Key Stakeholders

Different groups of stakeholders need to be involved in the delivery of the Ipswich Smart City Program:



Role of the Mayor and Councillors

The Mayor is the ultimate driver of the Smart City Program and plays a key role in providing program sponsorship as well as engaging with different stakeholder groups:



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Model for Governance

A collaborative governance model involving key stakeholders across the city and within Council is needed at 3 levels:

1. Strategic

Oversee the strategic intent of the smart city Program. Provide sponsorship of the Smart City Agenda and oversee execution and delivery of strategic outcomes. Manage executive stakeholder relationships

- Oversees the strategic intent of the Smart City Agenda in Ipswich
- Includes Councilors and key partners from the private sector, academia and Council
- Leaders Executive Committee meets quarterly and would be chaired by the Mayor
- Innovation Think Tank meets bi-annually

2. Management

"Own" the blueprint and facilitate the delivery of Smart City Blueprint outcomes. Work with Industry and Council Initiative Sponsors to deliver initiatives.

- Provides strategic guidance on Smart City themes – education, energy, health etc.
- Includes experts from the private sector, academia, international organisations and Council on specific themes
- Responsible for industry led initiatives and outcomes

3. Execution / Delivery

Plan and execute the day-to-day design, development and implementation of Smart City initiatives.

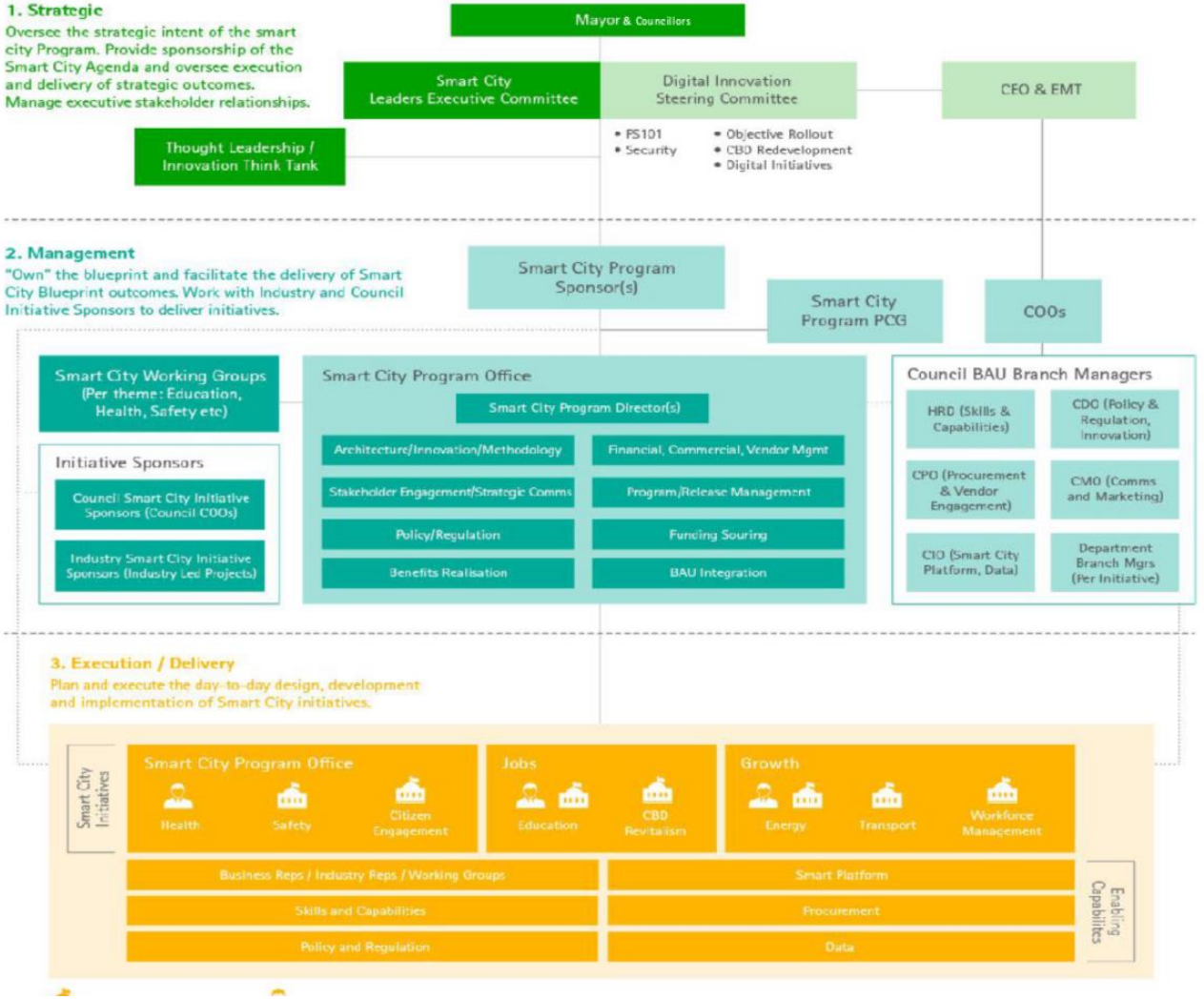
16 Smart City Initiatives will be led and delivered in 2 "types" pf projects:

- Industry Led Initiatives
- Council Led Initiatives



* Not anticipated to be full time roles. Would be ad hoc or part-time dependent on the initiative.

Delivery Structure



Initiative Sponsors

To support the implementation of the Ipswich Smart City Program, an Initiative Sponsor from Council would be identified for each Smart City initiative. The following "views" indicate: (1) the COO from each Department who would be nominated to sponsor each initiative, and (2) a "theme" view of initiative that show the Department COO's / Initiative Sponsors who would need to work closely together, for example to engage and manage stakeholders to deliver initiatives related to a particular Smart City theme:

Smart City Initiative Sponsors – Department COO view of assigned initiatives:

WPR
- Sports Facilities
- Smart Buildings
- Smart Parks
- Drones

IS
- Electric Vehicles & Autonomous public transport

FCS
- 5D Model & Open Data
- Digital Platform

EDM
- Build & Learn Fair
- Innovation Lab
- Social Media
- Digital Skills

ASDCE
- Health Lab (R&D Lab)
- Application Studio

HSRS
- Safe Precinct

P&D
- Eco Village & Smart Homes
- Smart Lighting

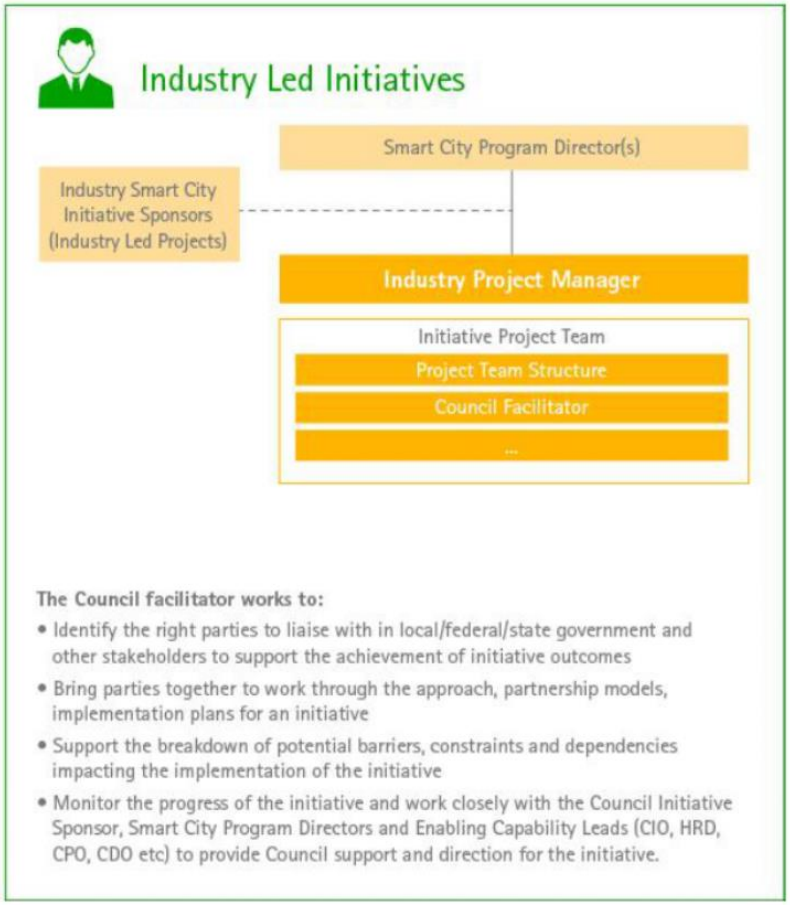
Smart City Enabler Sponsors – Department COO view :

FCS
- Data Architecture
- Solutions/Technology Architecture
- Business Architecture
- Benefits Realisation
- Policy & Regulation
- Funding Sources
- Financial, Vendor and Contract Management

EDM
- Program Management & Release Management
- Stakeholder Engagement
- Communications & Marketing

The difference between Council Led and Industry led initiatives







Key Program Roles Definition

- High level description of the key roles that will be required for the Smart City program

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Key Roles – Smart City Initiative Sponsor

This role encompasses the following:

- Accountable for an Initiative – i.e.. has ultimate ownership of an initiative and makes final decision about an initiative
- Responsible for delivery of the outcomes of the initiative
- Promotes awareness of the initiative and identified the right internal and external stakeholders to be involved in the initiative
- Monitors progress of the initiative and measures achievement of outcomes



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Key Roles – Smart City Initiative Manager

This role encompasses the following:

- Responsible for planning and managing delivery of the initiative in order to achieve agreed outcomes
- Develops detailed plans and coordinates the work needed for the initiative (technical, procurement, stakeholder engagement, data, resourcing etc)
- Works closely with the Initiative Sponsor to achieve the outcomes for the initiative
- Works closely with other Initiative Managers to integrate and align initiatives in terms of timeframes and solution
- Oversees stakeholder engagement for the initiative



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Key Roles – Smart City Business Architect

This role encompasses the following:

- Owns and maintains the Smart City 5 year roadmap of initiatives and enablers
- Management of integration points between 16 Smart City initiatives defined in the Blueprint and Council BAU smart city and other initiatives
- Overall responsibility for managing the scope, approach and activities of each initiative to ensure alignment with the Blueprint intent



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Key Roles – Smart City Solution / Technology Architect

This role encompasses the following:

- Responsible for the integrated solution / technical design / platform across initiatives
- Provides integrity of the technical solution across initiatives
- Drives quality and completeness of initiative design activities, coordinates assurance and acceptance
- Lead the development of the Smart City Platform.
- Establish Technical Design Standards and processes to be used across all initiatives.
- Participate in Smart City Solution Design Authority meetings to assess design options, and make and endorse design decisions.
- Represent Smart City in broader technology and solution architecture related meetings and activities across Council.
- Work closely with the Council CIO and CDO to understand other ICT and Digital related activities and manage inter-dependencies.
- Work closely with the Council ICT operations leadership to transition solutions to BAU operation.

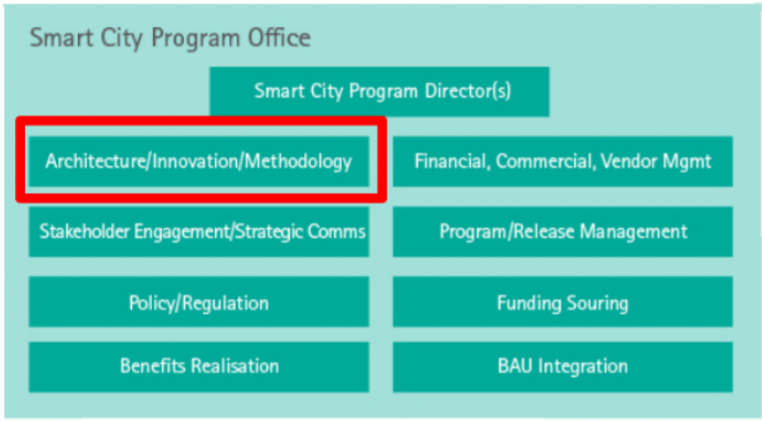


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Key Roles – Smart City Information Architect

This role encompasses the following:

- Oversight across all Smart City Initiatives and Enablers to understand the usage of data within each initiative and more broadly across the initiatives.
- Establish a Data Governance Approach and define associated governance bodies, policies and procedures.
- Lead the definition of the current state view of information assets across the organisation.
- Define the future direction for the Council Information Architecture.
- Assist solution design aspects of the business case for each initiative - including the definition of solution requirements, and procurement activities such as the development of tenders and the assessment of tender responses.
- Assist High Level Design activities for each initiative.
- Establish Data Standards to be used across all initiatives.
- Participate in Solution Design Authority meetings to assess design options, and make and endorse design decisions.
- Play a lead role in helping to define the Council Open Data policy.
- Assist in the establishment of Smart City Platform (e.g. the Data Sharing aspects of the Public Tier and Analytics Tier).
- Oversee the establishment of the Data Center of Excellence.
- Play a lead role in the Open Data Initiative and future Open Data activities.



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Key Roles – Smart City Delivery Coordination and Support (PMO)

This role encompasses the following:

- Provides processes, tools and templates to support initiative reporting, resource management, risk and issue management etc.
- Provides a consolidated dashboard of progress across all initiatives
- Oversees issue, decision and chance control processes across all initiatives
- Design and management of cross initiative approaches
- Ensures initiatives enable targeted outcomes and benefits
- Maintains repository of benefits across all initiatives
- Maintains baseline measurement data and performance target
- Provides benefits performance reporting



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Key Roles – Smart City Stakeholder Engagement, Communication and Marketing Lead

This role encompasses the following:

- Adopts Council communications and marketing standards and guidelines to consolidate and integrate communications across all initiatives – internal and external
- Develops and delivers cross initiative communications – internal and external
- Establishes stakeholder management strategy and monitoring e.g.. for working groups across initiatives



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Key Roles – Smart City Commercial Management and Vendor Management

This role encompasses the following:

- Tracks costs of all initiatives against budget
- Monitors compliance to contracts
- Makes changes to commercial frameworks (as required)
- Consolidates and maintains a register of procurement activities required across all initiatives
- Supports procurement activities for all initiatives
- Researches and identifies possible funding sources and options for smart city initiatives



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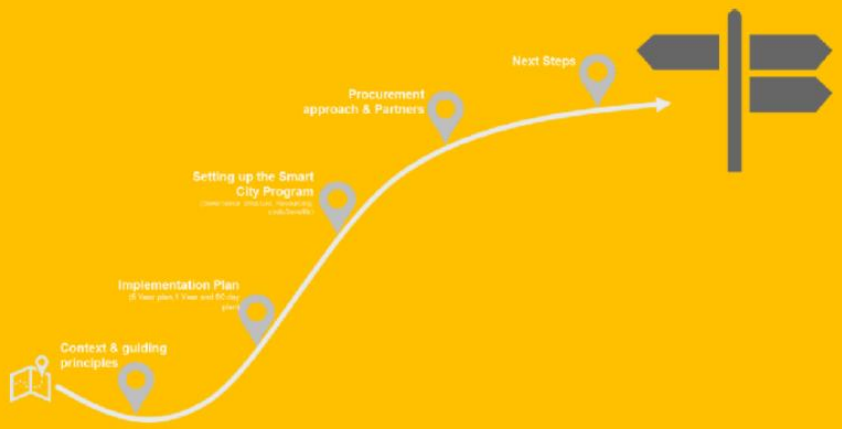
Key Roles – Smart City Policy and Regulation Support

This role encompasses the following:

- Consolidates and maintains a register of policy, regulation and procedural impacts across all initiatives
- Supports the adherence to policy, regulation and procedures (where required)
- Manages changes to policy, regulation and procedures to support initiative implementation (where required)



51



Benefits

- Description of the value drivers and how they map to each initiative
- Examples (from comparable initiatives) of potential benefits that could be unlocked by the city

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Potential benefits that the city can unlock through the Smart City initiatives

The value tree depicts the types of benefits that will be realised by the 16 initiatives. Each initiative can realise one or more benefits.

Outcome	Value Delivered	Explanation
Jobs	*Productivity*	Economy activity, employment rate and educational attainment
Growth	*Capital Efficiencies*	Improved utilisation of assets and capital
Growth	*Operational Efficiencies*	Op Ex savings in service delivery such as maintenance or energy savings
Growth	*Increased Revenues*	Attraction of citizens and businesses that pay Council rates and new revenue opportunities through new service delivery
Growth	*Investment Capacity*	Attraction of investment from other organisations (government funds, research grants, corporate investments, etc.)
Liveability	*Quality of Life*	Availability or improvement of basics and amenities such as health and crime rate, green areas, culture and heritage, disposable income and life satisfaction
Liveability	*Equity and Social Inclusion*	Opportunities for youth and minorities including improved employment rate
Liveability	*Environmental Sustainability*	Intangible value such as better air quality, renewable energy and water efficiency
Liveability	*Civic Engagement*	Consultation of citizens and the community on rule-making

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Benefits – Additional Document

Refer to Appendix Excel document for further elaboration on Benefit drivers and examples of benefits from similar or comparable initiatives across the world.

Benefits to Initiatives mapping matrix - *describes which benefit levers are relevant for each initiative*

			Safety		Education			Health	Energy			
Outcomes	Levers	Sub-Levers	Safe Precinct	Social Media	Innovation Lab	Digital Skills	Build & Learn Fair	Health Lab	Eco-Village	Smart Buildings	Smart Lighting	Sports Facilities
Jobs	Productivity	City product per capita / increased economic activity	X	X	X	X	X		X			
		Employment rate		X	X	X	X		X	X		
		Educational attainment				X	X					
	Capital Efficiencies									X	X	X
	Operational Efficiencies		X							X	X	X
	Increased Revenues	Increased Citizen Revenues		X								
		Increased Business Revenues	X	X	X							
		New Service Delivery			X							
	Investment capacity				X			X				
Liveability	Quality of Life	Green areas as a percentage of total land area										
		Population subjected to violence	X								X	
		Disposable Income				X			X			
		Pride, Heritage and Culture										
		Quality of support network										
		Health rate (mortality rate, life expectancy)	X					X				
		Life satisfaction							X			
	Equity and Social Inclusion	Youth unemployment				X	X					
		Improved opportunities for minorities					X					
	Environmental Sustainability	Population exposed to outdoor air pollution							X			
		Share of renewable energy							X	X	X	X
		Water efficiency										X
	Civic Engagement	Consultation on rule-making										

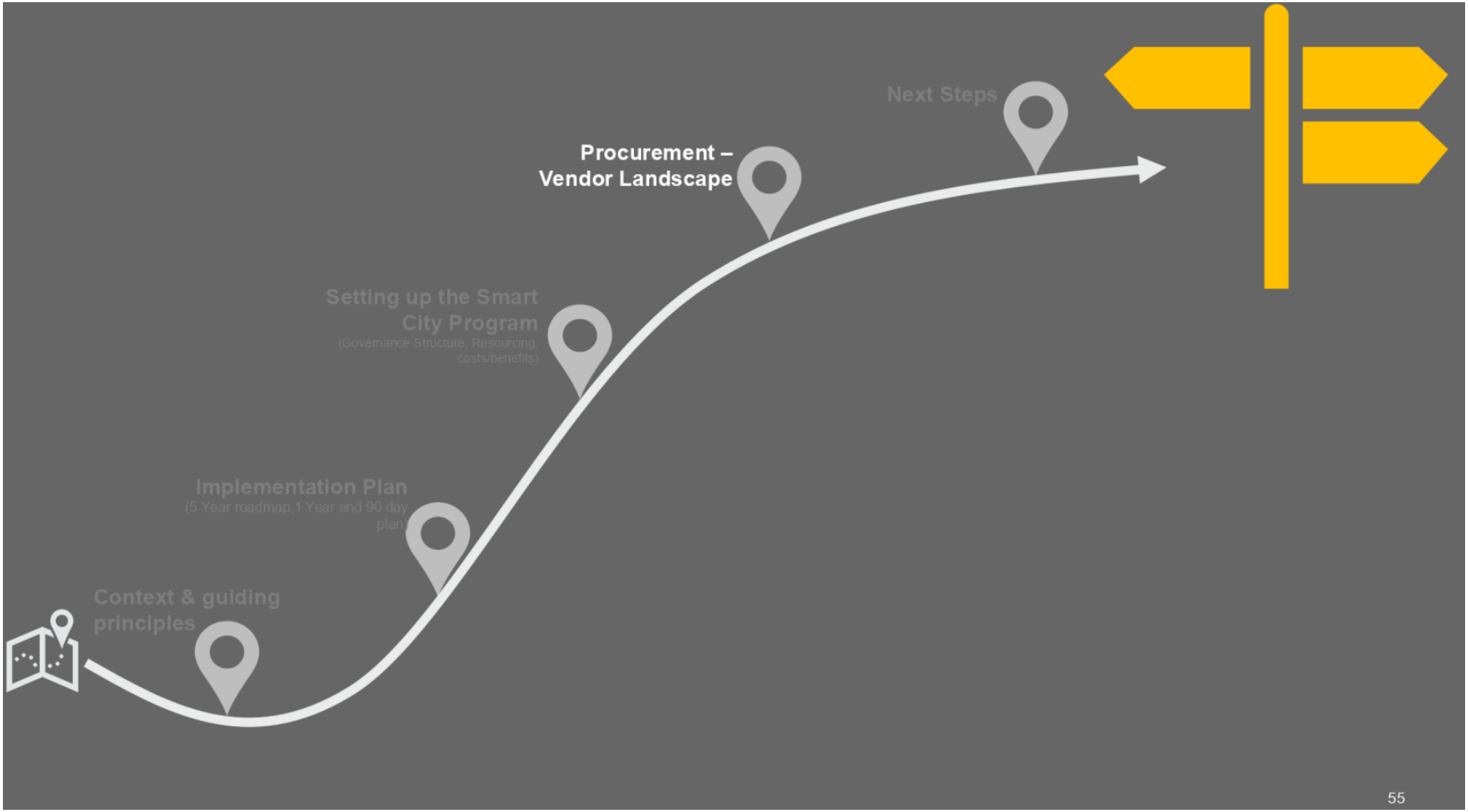
Benefits Description - *describes how the benefits are linked to each initiative.*

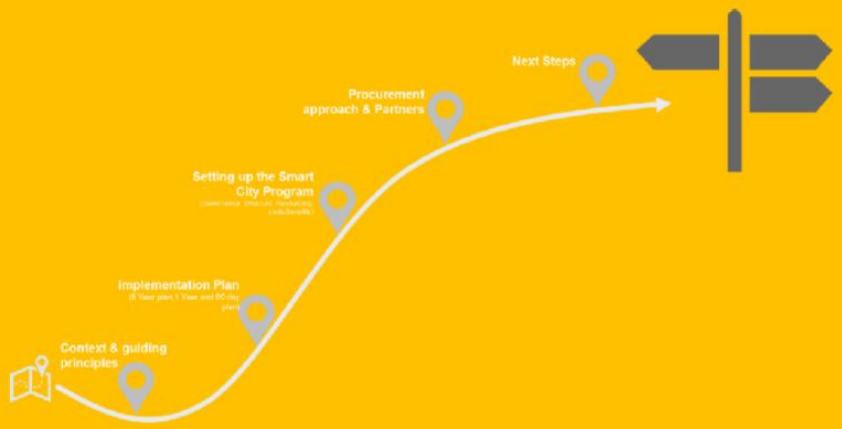


Valuing benefits - *describes the range of benefits that could be achieved with examples and case studies from cities and organisations around the world*

Safety				
Safe Precinct				
Outcome	**Lever**	**Sub-Lever**	**Benefit**	**Sources**
Jobs	Productivity	City product per capita / increased economic activity	-An increase in property crime by one standard deviation can decrease property values by 3%	http://ric-zai-inc.com/Publications/cops-p248-pub.pdf
	Operational Efficiencies		-Converting street lights to LED-based lamps cuts energy and operations costs by 50% or more	http://www.silverspringnet.com/wp-content/uploads/SilverSpring-Whitepaper-Smart-Street-Light-Biz.case.pdf
			-Predictive asset maintenance reduces maintenance costs by up to 30% and brings down breakdowns by up to 75%	https://www.accenture.com/ch-en/service-accenture-analytics-operations-analytics?src=SOMS
	Increased Revenues	Increased Business Revenues	-Retail sales along streets with sustainable and safety elements outperform those without it (in Columbus Avenue in NYC, for example, by 13%)	http://www.nyc.gov/html/dot/downloads/pdf/dot-economic-benefits-of-sustainable-streets.pdf
Liveability	Quality of Life	Population subjected to violence	-Every dollar of investment in public safety per resident contributes to declines of 5 violent crimes and 21 property crimes per 100,000 population	http://ric-zai-inc.com/Publications/cops-p248-pub.pdf
		Health rate (mortality rate, life expectancy)	-Studies show that streets rated as clean and more attractive are associated with lower BMI (body mass index)	http://www.ncbi.nlm.nih.gov/pubmed/22992355
Social Media				
Driver	**Lever**	**Sub-Lever**	**Benefit**	
Jobs	Productivity	City product per capita / increased economic activity	-An increase in brand favorability is 5x higher for people exposed to social media touchpoints than who people not exposed	
			-When social media is coupled with PR (public relations) exposure, people increase their spending by 17%	http://www.atelier.net/en/trends/articles/social-media-has-direct-impact-brand-perception-and-favorability
		Employment rate	-A good city reputation has a negative effect on the city's unemployment and also limits unemployment increases	http://www.aecr.org/web/congresos/2012/Bilbao2012/htdocs/pdf/p488.pdf
Growth	Increased Revenues	Increased Citizen Revenues	-A good city reputation strongly correlates with an increase in visiting, living, working and investing in the city	http://www.slideshare.net/Reputation_Inst/2014-city-rep-trak-topline
		Increased Business Revenues	-Well reputed places do better in terms of attracting tourists, foreign direct investment, high skilled workforce, as well as have better diplomatic and trade opportunities	http://placebrandobserver.com/country-reputation-sweden-tops-2016-reptrak-ranking/
Education				
Innovation Lab				
Driver	**Lever**	**Sub-Lever**	**Benefit**	
Jobs	Productivity	City product per capita / increased economic activity	- According to UBI Global, which benchmarks university business hubs around the world, in the past 5 years, North America's business/innovation hubs generated $5.3 billion in sales, equating to an average of $89 million in sales per hub	http://www.alp.org.au/poweringinnovation
		Employment rate	-According to UBI Global, in the past 5 years, North America's business hubs have created almost 30,000 jobs (473 jobs per hub)	http://www.alp.org.au/poweringinnovation
Growth	Increased Revenues	Increased Business Revenues	-The Infocomm Development Authority of Singapore has invested $500m into Small and Medium Enterprises' innovation through their ICT procurement	https://www.accenture.com/t20150523T033713__w__/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_9/Accenture-Digital-at-Depth-for-Government-Innovation.pdf#zoom=50
		New Service Delivery	-Public innovation labs can claim to be a global movement not just in sheer numbers of teams and labs worldwide but also because of the momentum behind the creation of new ones, at a current rate of least one a month	http://www.nesta.org.uk/blog/world-lab#sthash.6m8iGWwl.dpuf
	Investment Capacity		-According to UBI Global, in 2015 North American business hubs have attracted almost $2 billion in investment, meaning each of the 60 hubs has received an average of $33 million each	

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Strategic Choices for Platform Selection

- The three key decisions to be made in setting up the Smart City platform

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Smart City Platform

To begin design and development activities for the Smart City Platform, the following 3 key decisions must be made:

1. **Smart City Platform – Define Application Architecture for Core Strategic Elements (Public Tier, Analytics Tier, Platform Tier)**

    - While some elements of the Smart City Platform architecture are tactical in nature and will need to be selected for each initiative (e.g. Edge Tier sensors, Proximity Network connectivity, Access network links), other components such as those in the Public Tier, Analytics Tier, and Platform tier are more strategic choices as they are common across all initiatives.
    - Applications must be selected that complement each other to form a cohesive Smart City Platform.
    - Defining the core elements of the Smart City Platform effectively sets a number of technical requirements in place that all future Smart City initiatives must meet. This will allow integration and data access.

2. **Hosting of the Smart City Platform**

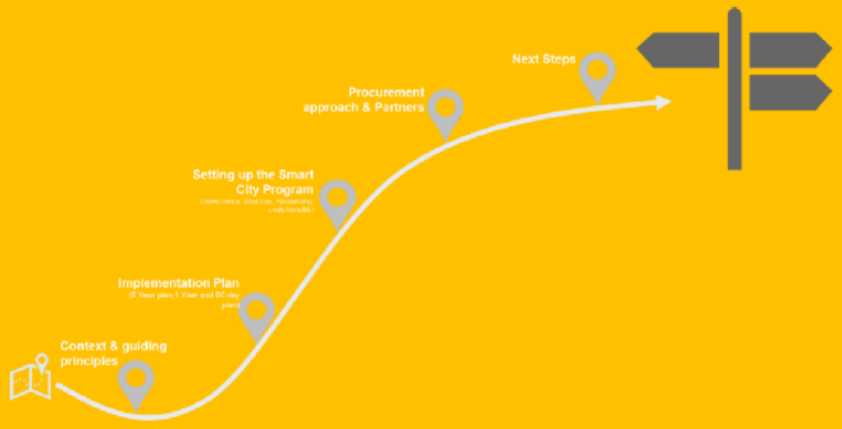
    - A decision is required on whether the Smart City Platform components are to be hosted – i.e. in Council's current Private cloud, or on Public Cloud infrastructure. And if Public cloud which provider is most suitable (e.g. Microsoft Azure, Amazon Web Services)

3. **Support for the Smart City Platform**

    - A decision is required on whether the Platform is to be supported internally by Council or provided as a Managed Service by a third party.



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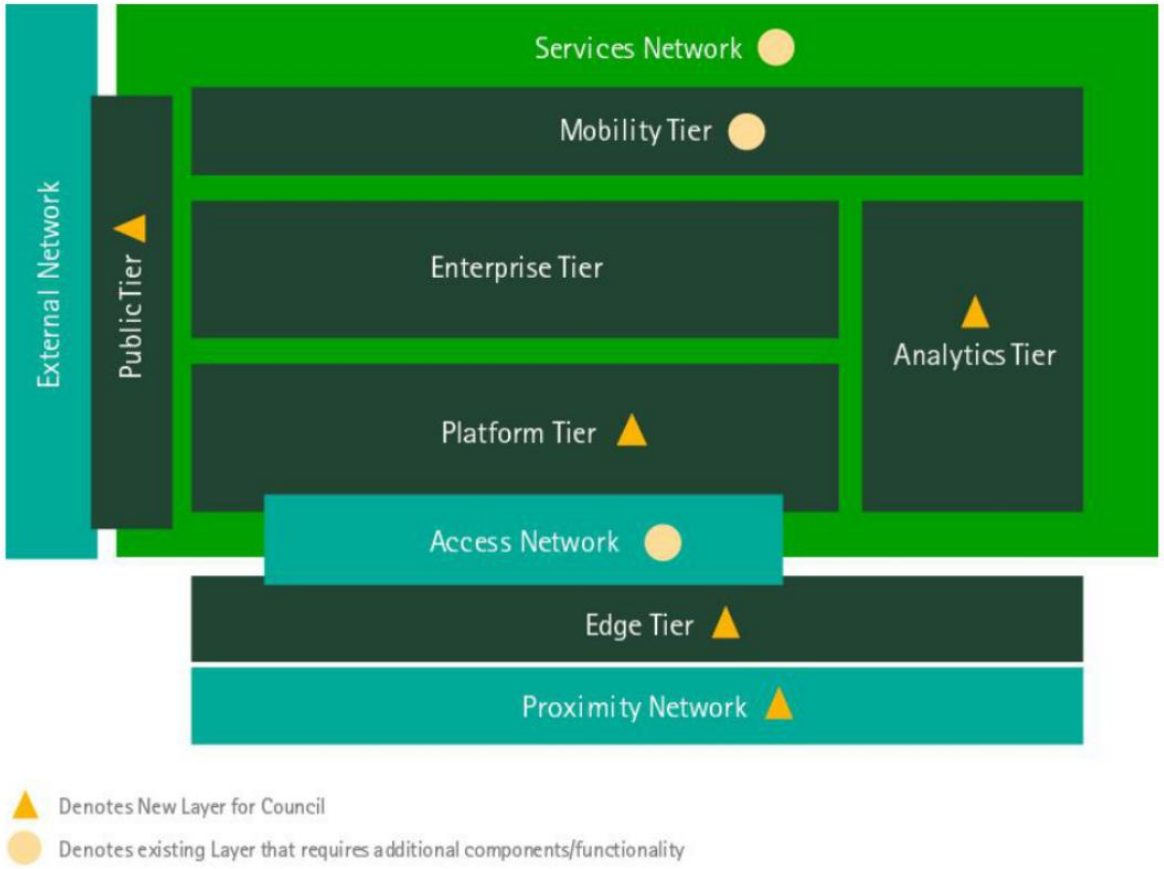


Vendor Profiles

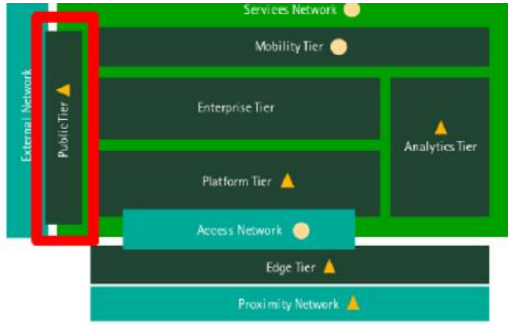
- Overview of the potential vendors for individual initiatives and platform

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Smart City Platform



Item 15.7 / Attachment 6.



Smart City Platform – Public Tier

The Public Tier offers a safe gateway for external resources to access Council data and services. The Public Tier's major components are: API Management and Data Sharing Services.

API Management

- **Mulesoft:** provides integration software for connecting applications, data sources and APIs, in the cloud or on-premises. Mulesoft also provides services for, identity & authorization services, administration services and portal development.
- **Apigee:** Apigee's business model is selling the Apigee Enterprise platform to enterprise API providers like Netflix and Sears. It offers in the cloud or on-premise services. Similar to Mulesoft, Apigee also provides services for, identity & authorization services, administration services and portal development.
- **Oracle API Manager:** Oracle offers very comprehensive API management solution. Oracle's API management solution expands on the proven Oracle SOA Suite integration platform to address the challenges of the digital business landscape. Oracle API Manager offers in the cloud or on-premise services.
- **Microsoft Azure API Management:** is a in the cloud API management solution and it is easy to set up and quickly create consistent and modern API gateways for existing backend services hosted anywhere.

MuleSoft
connecting the new enterprise
apigee
ORACLE
Microsoft Azure

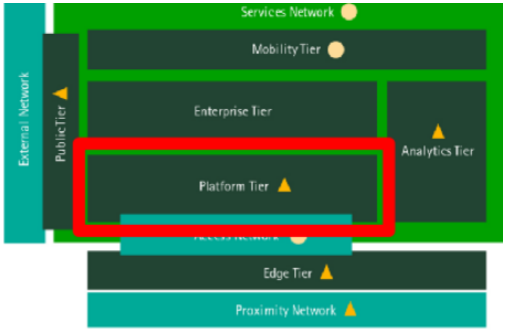
Data Sharing Services

- **Data.gov.au:** provides an easy way to find, access and reuse public datasets from Government. The main purpose of the site is to encourage public access to and reuse of public data. data.gov.au provides a central catalogue to discover public data.
- **Ckan:** is a powerful data management system that makes data accessible – by providing tools to streamline publishing, sharing, finding and using data. It offers in the cloud or on-premise services.
- **Socrata:** is a company that provides cloud-based data visualization and analysis tools for opening government data. Originally called Blist. It offers in the cloud or on-premise services.

data.gov.au
ckan
Socrata

Item 15.7 / Attachment 6.

Smart City Platform – Platform Tier



The Platform Tier consists of the Data Ingestion Layer that reads data from external sources. Data Orchestration Layer that processes the data, applies business rules and triggers event processing. The Platform Tier also offers data storage for IoT data.

Data Storage

- **Apache Hadoop:** is an open source software framework for distributed storage and distributed processing over very large data sets on computer cluster build from computer clusters. Hadoop ecosystem has a large community support and offers a range products which suits the IoT landscape.
- **Splunk:** offers platform for processing of large amount of machine generated Big Data such data from pervasive devices (e.g., IoT) and log files.
- **Cassandra:** similar to Hadoop, Apache Cassandra is a free and open-source distributed database management system designed to handle large amounts of data across many commodity servers.
- Other vendors: there are many more vendors offering data processing for IoT such as**: Cloudera**, **alteryx, Amazon Kinesis, S3/Redshift, MySQL, Spark, Talend** and **MapR**.

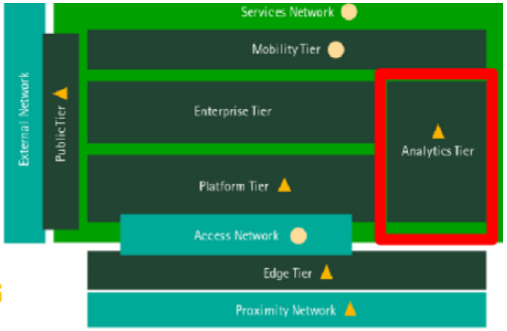
Data Ingestion

- **Splunk:** Splunk also offers a range of different data collector to ingest the data, including data from IoT devices.
- Other vendors: there are other vendors can ingest the data in real-time (e.g., **Apache Kafka, Apache Storm**) or offline (e.g., **Apache Sqoop**)

Data Orchestration

- **Oracle CEP Engine:** it is a light weight application server which connects to high volume data feeds and has a complex event processing engine (CEP) to match events based on user defined roles.
- **Microsoft StreamInsight: i**s a powerful platform that you can use to develop and deploy complex event processing (CEP) applications. It is a high-throughput stream processing architecture that supports Microsoft .NET Framework.
- Other vendors**: Apache Oozie, Spark Streaming, Chef** and **Esper.**

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Smart City Platform – Analytics Tier

In the Analytics Tier, information is ingested from both enterprise systems and data from the Platform Tier. Once analysed, the data can be used by to Enterprise applications, exposed via the Public Tier, or presented to Council users via applications

Analytics

- **Accenture Insights Platform (AIP):** offers a turn-key analytics solution that allows organizations to get actionable insights and business outcomes quickly.
- **Revolution Analytics:** is the leading commercial provider of software and services based on the open source R project for statistical computing.
- Other vendors: **SAS, R (open source), Apache Mahout (open source), WEKA (open source)** and **Spark MLIB (open source)**

Visualization

- **Tableau:** is software company headquartered in Seattle, Washington. It produces a family of computer interactive data visualization products focused on business intelligence.
- **Qlik:** is a software company based in Radnor, Pennsylvania, United States. Qlik is the provider of QlikView and Qlik Sense, business intelligence & visualization software.
- **D3:** is an open source JavaScript library for producing dynamic, interactive data visualizations in web browsers.

Data Storage

- **Apache Hadoop:** is an open source software framework for distributed storage and distributed processing over very large data sets on computer cluster build from computer clusters. Hadoop ecosystem has a large community support and offers a range products which suits the IoT landscape.
- **Splunk:** offers platform for processing of large amount of machine generated Big Data such data from pervasive devices (e.g., IoT) and log files.
- **Cassandra:** similar to Hadoop, Apache Cassandra is a free and open-source distributed database management system designed to handle large amounts of data across many commodity servers. It is suitable for IoT.
- Other vendors: there are many more vendors offering data processing for IoT such as**: Cloudera**, **alteryx, Amazon Kinesis, S3/Redshift, MySQL, Spark, Talend** and **MapR**.

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Smart City Platform – Edge Tier

The Edge Tier, which contains most of the field technology, is made up of 5 main component types: Sensor/actuators/video capture, tag/connector, edge router, edge gateway, human interface. The below list contains vendors providing an end-to-end IoT.

Software/Platform

- **ThingWorx (IBM):** is a complete development platform for IoT. ThingWorx enables powerful, enterprise IoT solutions.
- **Cisco IoT:** is a comprehensive set of technologies and products for enterprises to help them accelerate and innovate with IoT.
- **Wind River (Intel):** is a subsidiary company of Intel providing embedded system software which comprises run-time software, industry-specific software solutions for IoT.
- **Intel IoT Platform:** is an end-to-end reference model and family of products from Intel, that works with third party solutions to provide a foundation for seamlessly and securely connecting devices, delivering trusted data to the cloud, and delivering value through analytics.
- **Eurotech:** develops and offers the technical building blocks required to assemble distributed systems of devices and sensors which are effectively connected to IT infrastructures.
- Other vendors: **Alleantia** and **Continential**

ThingWorx
cisco
WIND
intel
EUROTECH
Imagine. Build. Succeed.
Alleantia
Continental

Smart City Initiatives – Innovation Lab

Innovation lab between Council, Firestation 101, universities (USQ), industry and students to research and explore civic challenges. Innovation Lab requires a crowdfunding platform to fund university-to-start-up teams

Crowdfunding

- **Kickstarter:** is an American public-benefit corporation based in Brooklyn, New York which has built a global crowdfunding platform focused on creativity. Kickstarter is the world's largest funding platform for creative projects.
- **Indiegogo:** is an international crowdfunding website founded in 2008. The site is one of the first sites to offer crowd funding. Indiegogo allows people to solicit funds for an idea, charity, or start-up business. Indiegogo charges a 5% fee on contributions. This charge is in addition to credit card and Paypal charges that range from 3.5% to 9%.
- **Ozcrowd:** it is 100% Australian owned and operated. Compared to other crowdfunding sites, Ozcrowd Australian-based platform is focused on great one-to-one service, low fees and making it as easy as possible to get your message and fundraising initiative out there to the wider world.
- Other vendors: **gofundme, venture crowd, Patereon, Pozible, startnext** and **Citizinvestor**

Smart City Initiatives – Digital Skills

Digital skills program as a supplement to learn coding and other digital skills that helps students obtain 6-12 month coding degrees to go on to get entry-level developer or analyst jobs.

Platform/Program Digital Learning

- **General Assembly:** is a computer programming coding bootcamp founded by Jake Schwartz, in early 2011. Beginning as a co-working space in Midtown Manhattan in 2011, General Assembly evolved into a private school offering short courses and longer, immersive, 12-week 'boot-camp' style courses, offering a chance to complete an intensive survey of web development related topics.
- **Microsoft Digital Literacy:** the goal is to teach and assess basic computer concepts and skills so that people can use computer in their everyday life.
- Other vendors: **Udemy, Udacity,** and **Coursera**



Smart City Initiatives – Eco-Village

An "ecovillage" is defined as an intentional community whose goals is to become socially, economically, and ecologically sustainable. The intent is to create sustainable living habitats in greenfield developments.

Micro-grids

- **GE:** provides Grid IQ™ Microgrid enables distribution grid operators to integrate and optimize energy assets with an objective to reduce the overall energy cost for a local distribution grid.
- **Siemens Microgrid Management System:** integrates and optimizes decentralized power generation assets and controllable loads to ensure enablement of energy infrastructure functionality
- **Power Analytics:** is a privately held developer of electrical power system design, simulation, and power system analytics software. Headquartered in San Diego, California.
- ***ABB:*** is a global leader in power and automation technologies that enable utility and industry customers to improve their performance while minimizing environmental impact
- Other vendors: **Chevron, Echelon,** and **Microgrid Energy**

Energy trading

- **Reposit:** can store, shift and trade your household's energy so you can reduce bills and earn profit by selling back to the grid. Deposit Power was founded in 2012, a small tech start up company with big ideas based in Canberra, Australia.
- **Bosch:** offers Virtual Power Plant Manager can optimize the energy trading services.

Smart City Initiatives – Smart Buildings

Energy targets and smart buildings program to both increase energy efficiency in existing building stock throughout the city (starting with Council buildings) and a policy for new developments moving forward.

Video Analytics	▪ **Accenture Video Analytics:** can automatically identify events related to security / safety. Operators can therefore focus on higher-value activities and rely on those "electronic eyes" to watch without blinking all the video feeds on a 24x7 basis. ▪ **IBM Intelligent Video Analytics:** identifies events, attributes or patterns of behaviour through video analysis of monitored environments. ▪ Other vendors: **3VR, Avigilon, Genetec,** and **iOmniscient**	
IoT and Proximity Network	▪ **ThingWorx (IBM):** is a complete development platform for IoT. ThingWorx enables powerful, enterprise IoT solutions. ▪ **Cisco IoT:** is a comprehensive set of technologies and products for enterprises to help them accelerate and innovate with IoT. ▪ **Wind River:** is a subsidiary company of Intel providing embedded system software which comprises run-time software, industry-specific software solutions for IoT. ▪ **Intel IoT Platform:** is an end-to-end reference model and family of products, that works with third party solutions to provide a foundation for seamlessly and securely connecting devices, delivering trusted data to the cloud, and delivering value through analytics.	
Extend Access Network	▪ **NBN Co:** is one the biggest network and internet provide in Australia can provide leased line to extend the access network. ▪ **Telstra:** is Australia's largest telecommunications and media company ▪ **Optus:** Singtel Optus Pty Limited is the second largest telecommunications company in Australia. ▪ Other vendors: **Vodafone, NextGen, Vantage, Pipenetworks, Optus and Vodafone**	

Smart City Initiatives – Smart Buildings (Cont.)

Smart Building Platform

- **Microsoft:** as part of the Microsoft Services, Microsoft provides a comprehensive smart building solution to improve building operations services, security & accessibility services, and new tenant applications & services that improve productivity.
- **Switch Automation:** provides a full-featured smart building management platform for the buildings, the data, operations and the people. They provide a software layer that integrates all of the disjointed monitoring and energy metering devices and sub-systems in each building.
- **ThingWorx (IBM):** is a complete development platform for IoT. ThingWorx enables powerful, enterprise IoT solutions.
- Other vendors: **Ezenics, KSG Automation, Iconics,** and **Telit**

Smart City Initiatives – Smart Lighting

A smart lighting program in Springfield or Ecco Ripley or any other suburb in Ipswich with LEDs, remote monitoring, energy efficiency analytics, motion-sensored and solar powered

Smart Lighting	▪ **Philips:** is a Dutch technology company headquartered in Amsterdam with primary divisions focused in the areas of electronics, healthcare and lighting. It produces very "hue", a very popular smart lighting product. ▪ **GE lighting:** is a division of General Electric headquartered in Nela Park, East Cleveland, Ohio, United States. ▪ Other vendors: **Samsung, LIFX** and **Osram**
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Smart City Initiatives – Sport Facilities

Smart Sporting Facilities" that ensure that all of Council's sport facilities are energy self-sufficient – powered by solar energy, has LED lighting and backed by battery charging.

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Solar Energy

- **Major International Players:**
  - **SUNTECH:** was one of China's first solar energy companies and is now the world's largest silicon solar panel producer.
  - **TRINA:** Founded in 1997, Trina Solar is one of the world's leading PV companies.
  - **SHARP SOLAR:** is a subsidiary business of the Japanese electronics giant, Sharp. The company has been developing solar power solutions for more than 50 Years and has secured a large consumer base and is well trusted in the industry.
- **Major Australian Players:**
  - **Todaesolar:** is one of the major Australian commercial solar installer.
  - **True Value Solar:** is a major Australian renewable energy company headquartered in Melbourne
  - **Origin:** is Australia's leading integrated energy company offers solar energy solutions
- Other Vendors: **AGL, ZEN, Euro Solar** and **Green Engineering**

Smart City Initiatives – Sport Facilities (Cont.)

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- Other vendors: **3VR, Avigilon, Genetec,** and **iOmniscient**

Smart City Initiatives – Electric Vehicle Ecosystem

Electric vehicle ecosystem including setting policies, installing premiere charging stations, providing renewable energy power, purchasing electric cars for Council and installing a charging station at Council's office building and an electric autonomous circular bus route or streetcar for easy access around the CBD or to the CBD.

EV Car	▪ **Toyota:** is the world's market leader in sales of hybrid electric vehicles. Toyota offers different ranges of models such as: Prius, Rav4, IQ and IRoad ▪ **Nissan:** offers different ranges of models such as: e-NV200, Esflow, and Townpod ▪ **Telsa Motors:** is an American automotive and energy storage company sells electric cars, and battery products ▪ Other vendors: **Honda, Mitsubishi, Ford** and **GM**
EV Car Charging Station	▪ **Panasonic:** is world leading company offers level 1, level 2 and level 3 charging station ▪ **e-Station:** is a leading European provider of EV Charging Stations and EV Charging Cables ▪ **ChargePoint:** provides a safe, convenient and easy-to-use public and private electric vehicle charging station network throughout Australia and New Zealand ▪ **Tritium:** A Brisbane based companies offers fast public charging stations. ▪ **Telsa Motors:** is an American automotive and energy storage company sells electric cars, and battery products
EV Bus	▪ **Proterra:** is a world leader in the design and manufacture of zero-emission buses. ▪ **Optare:** is a British bus manufacturer based in Sherburn-in-Elmet, North Yorkshire. ▪ Other vendors: **Mercedes-Benz** and **Mitsubishi**
EV Bus Charging Station	▪ **Optare:** is a British bus manufacturer based in Sherburn-in-Elmet, North Yorkshire. ▪ **Siemens:** offers very fast chargeable batteries and charging stations.

Smart City Initiatives – 5D Model & Open Data

5D modelling and virtual reality platform to allow for collaboration on planning assessments, town planning and other decision-making remotely initially for above ground assets and subsequently for underground.

5D Modeling

- **Accenture Digital Underground Mapping: d**eliver a digital platform for storing and visualizing underground infrastructure data.
- **CityZenith:** is world leading 5D modelling company where its software platform maps and visualizes the torrent of data produced by modern cities to an intuitive real-time 3D simulation that anyone from the mayor to the engineer in the field can easily use. CityZenith has been used in many smart city projects around the word such as: Amsterdam, Singapore, San Francisco, Dubai , Chicago and Barcelona.
- **Esri's GIS (geographic information systems):** mapping software helps you understand and visualize data to make decisions based on the best information
- **True CADD:** offers a full range of Building Information Modelling. TrueCADD uses Virtual Design & Construction (VDC) expertise to implement 3D parametric modelling, 4D BIM (3D + Time, Construct, Schedule) and 5D BIM (Cost) services for construction technology.
- **Vico Sofwtare:** provides 5D modelling software and services to the building construction industry. Building owners, general contractors, and construction managers use our software and our services to reduce risk, manage costs, and optimize schedules on complex building projects.
- **Teslsa CAD Solution:** is a leading BIM Services Provider company in Australia offers Building Information Modelling Services to major Construction Firms and Builders.
- Other vendors: **CostX, CrunchBase** and **connexxion**

Smart City Initiatives – Drones

The two major categories of Drones are: Multirotor or Fixed wings where the Multirotor Drones can flight between 30-60 minutes while the fixed wings can fly between 1-12 hours.

Multirotor Drones	▪ **DJI:** Dà-Jiāng Innovations Science and Technology Co., Ltd marketed as DJI) is a Chinese technology company founded in 2006. It manufactures unmanned UAV for aerial photography and videography. According to The Economist in 2015, the company was at the forefront of the civilian-drone industry. ▪ **3D Robotics:** is an American company headquartered in Berkeley, California that designs and manufactures commercial and recreational unmanned aerial vehicles. ▪ **Yuneec:** is a Chinese aircraft manufacturer. Yuneec markets its man-carrying aircraft in the United States through GreenWing International. ▪ Other brands: **Matternet, Game of Drones, GoPro, Sunlight Photonics** and **Vires Aeronautics**
Fixed Wing Drones	▪ **Parrot:** is a remote controlled flying quadcopter helicopter built by the French company Parrot. ▪ **Sense Fly:** produces EBEE a fixed wing Drones for professional applications ▪ **Falcon UAV:** a precision agriculture UAV (**unmanned** aerial vehicle) system designed and built in Australia. ▪ Other vendors: **Falcon Unmanned, SkyWorks Aerial Systems, Panoptes UAV,** and **Flyability**
License and training	▪ **RPAS Training & Solutions**: is CASA Certified to deliver RPAS Training that will give you your UAV Controller Certificate. ▪ **UAVAir:** is a joint venture between Basair, Australia's largest flying school, and Airsight Australia the most advanced commercial drone operators in Australia. ▪ Other vendors: **Ground Effect Aviation**, and **ACUO**

Smart City Initiatives – Smart Park

Smart Park with a sensor platform to remotely monitor and remotely control assets while also doing predictive maintenance and include smart motion-sensored LED lighting and road light surfacing.

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UV Surfacing	▪ **Pro-Teq Surfacing:** offers Starpath, a spray-on technology that can be applied over concrete, tarmac, wood, or any other existing solid surface to give it an artificial sparkly blue glow.
IoT and Proximity Network	▪ **ThingWorx (IBM):** is a complete development platform for IoT. ThingWorx enables powerful, enterprise IoT solutions. ▪ **Cisco IoT:** is a comprehensive set of technologies and products for enterprises to help them accelerate and innovate with IoT. ▪ **Wind River:** is a subsidiary company of Intel providing embedded system software which comprises run-time software, industry-specific software solutions for IoT. ▪ **Intel IoT Platform:** is an end-to-end reference model and family of products from Intel, that works with third party solutions to provide a foundation for seamlessly and securely connecting devices, delivering trusted data to the cloud, and delivering value through analytics.

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Smart City Initiatives – Safe Precinct

Safe CBD precinct which includes smart motion-sensored LEDs that are solar powered, provides call buttons and electronic signage, and adds sources of data to the current Safe City system.

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Social Media Listening

- **Accenture Social Medial Platform:** provides a variety of services from data ingestion of different social media to social media analytics
- **Synthesio:** a social intelligence and listening platform for robust social analytics. Use social listening for better insights and a smarter social business
- **Salesforce Social Studio:** allows to tap into the power of social media in your marketing, customer service, and sales organizations.
- Other vendors: **Digimind, Brandwatch, NetBase** and **Hootsuite**

Smart City Initiatives – Safe Precinct (Cont.)

IoT and Proximity Network

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Smart City Initiatives – Social Media

The aim of this initiative is change perception of Ipswich for outsiders by creating an uplifting or other social media strategy that highlights positive things about Ipswich.

Platform

- **Accenture Fjord:** Fjord is a design and innovation consultancy, acquired by Accenture Interactive in 2013. Fjord creates useful, effective, and desirable digital services that people love. Fjord helps the world's leading businesses make complex systems simple and elegant with the power of design.
- **Takk Takk:** is a hands-on web marketing and communications agency that helps nice companies use the web to make friends and influence people.
- **Orange Marketing:** offers a complete solution for email marketing as well as design, consulting and support of social media marketing campaigns.
- **Slack:** brings all your communication together in one place.
- Other vendors: **Cover PR** and **The Head Quarter**

Smart City Initiatives – Health Living Lab

The Health Living Lab brings together the health providers from across Ipswich and beyond, in collaboration with Council, to study the health and wellness of the Ipswich community in new and interesting ways.

Wearables

- **Accenture Connected Wellness:** provides a platform for the wearable s devices to cconnect people to personalized health & benefit information.
- **Fitbit Inc:** is an American company known for its products of the same name, which are activity trackers, wireless-enabled wearable technology devices that measure data such as the number of steps walked and heartbeat.
- **Jiff:** is US based company that helps companies lower healthcare costs and cultivate happier, healthier employees. Jiff's enterprise benefit platform integrates all the vendors employers already have in place, and lets them choose from a menu of pre-integrated services. By delivering personalized incentives, real-time data analytics, and a beautifully designed experience, Jiff targets individual employee cost drivers and increases utilization of those services proven to save money.

Smart City Initiatives – Application Studio

Council liquid application studio with design thinkers, designers and developers to understand specific citizen issues that can be addressed through an app and develop apps in an agile way with direct user feedback.

App Development Platform

- **Kony:** is the leading enterprise mobility provider with over 350 customers in 45 countries. Kony customers choose from ready-to-run apps, app accelerators, or custom apps powered by the Kony Mobility Platform.
- **Xamarin:** is a Microsoft-owned San Francisco, California based software company founded in May 2011 by the engineers
- **Appster:** is a full scale development firm with offices in Australia and America
- Other vendors: **Alpha Software, Telerik, OutSystems** and **Kinvey**

Smart City Initiatives – Digital Platform

Digital online single point of contact for Council. The Digital Platform has 5 main components: CMS, Digital Experience, Marketing Platform, Social Media Listening and Digital Assistant/chat

CMS

- **Oracle WebCenter Content:** provides a unified repository to house unstructured content, enabling organizations to deliver it to business users in the proper format and within the context of familiar applications
- **IBM Web Content Manager:** is designed to accelerate digital content development and deployment through all the digital channels.
- **MS SharePoint:** is a web application that integrates with MS Office. Launched in 2001,SharePoint is primarily sold as a document management and storage system, but the product is highly configurable and usage varies substantially between organizations.
- Other vendors: **Jadu, Opentext, ouCampus, solodev** and **Terminal four**

Digital Experience

- **Adobe Digital Forrester Wave:** The Q4 2015 report, Adobe was named the leader with the highest scores possible in content, marketing, customer data, and more.
- **Oracle:** is a world leading software company who provides a whole suit of software for Digital experience
- **IBM Exceptional Digital Experience:** formerly Exceptional Web Experience solutions includes IBM Customer Experience Suite and IBM Employee Experience.
- Other vendors: **SAP Hybris, Sitecore, Salesforce, Acquia** and **EpiServer**

Smart City Initiatives – Digital Platform (Cont.)

Digital Marketing

- **Adobe Marketing Cloud:** provides the most comprehensive set of digital marketing solutions for all marketing needs.
- **Oracle Responsys:** allows marketers to leverage display advertising when messaging to known customers.
- **IBM Digital Marketing:** helps power the delivery of exceptional experiences for customers across the buyer journey by using customer data, providing analytical insights and automating relevant cross-channel interactions.
- **Hubspot:** is the first inbound marketing software that provides all the tools you need to improve and manage your online marketing strategy
- Other vendors: **Exacttarget, Marketo, Marin Software** and **vocus**

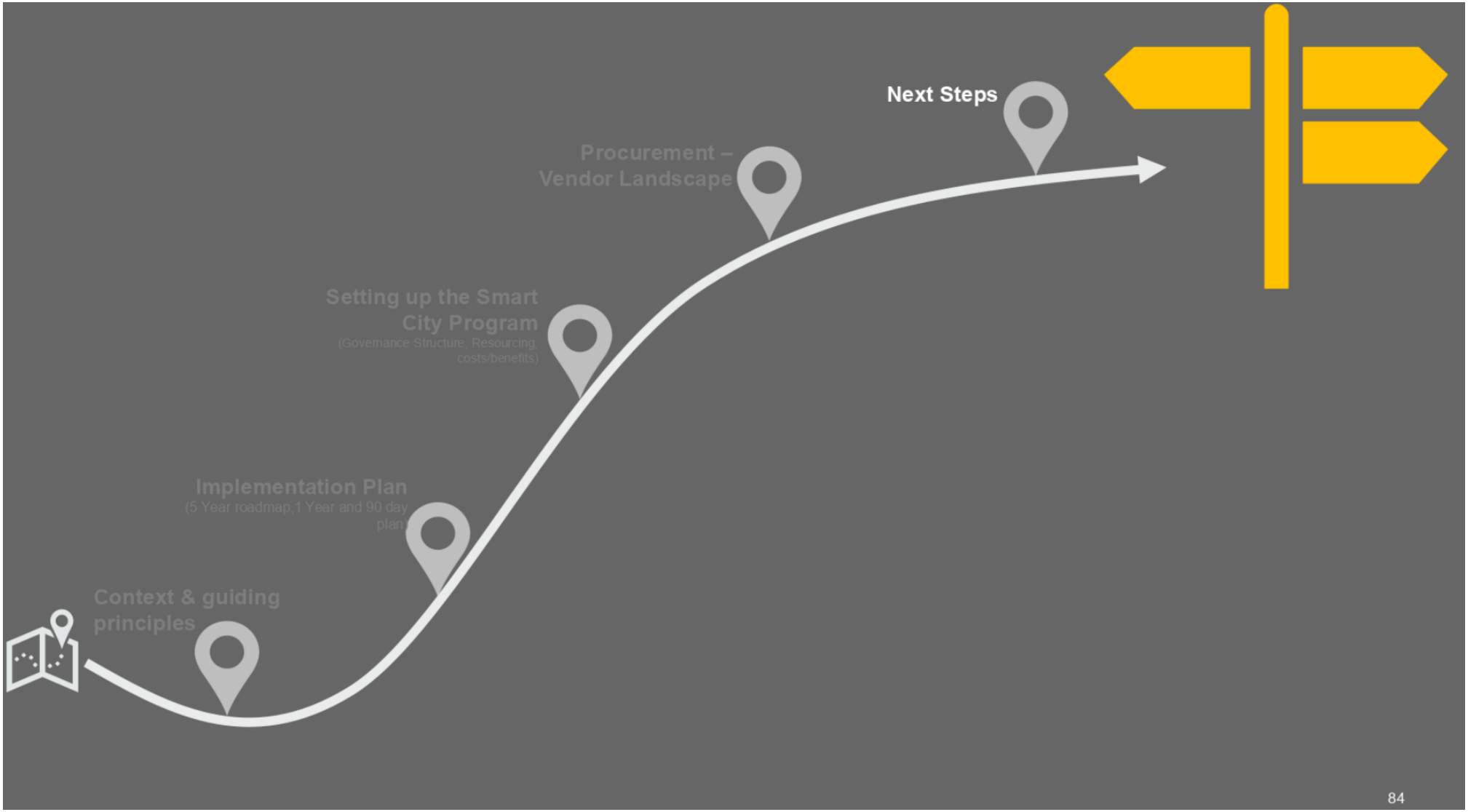
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- **Salesforce Social Studio:** allows to tap into the power of social media in your marketing, customer service, and sales organizations.
- Other vendors: **Digimind, Brandwatch, NetBase** and **Hootsuite**

Digital Assistant/chat

- **Accenture Amelia:** is a digital assistant able to dialogue with users in natural language to answer questions, execute requests and resolve issues. Amelia makes use of AI technologies such as Machine Learning and Natural Language Processing to act like a person
- **IBM Watson:** IBM used AI to build a powerful chatbot
- **Fcebook M:** through the Messenger Platform's new Send/Receive API, bots can send more than just text.
- Other Vendors: **Nanorep** and **chatbots.io**

Item 15.7 / Attachment 6.



Next Steps and Action Items

A "Scrum" workshop has been planned as the immediate next step for the Executive Management to discuss and agree on the way forward towards implementing the Smart City Blueprint

Scrum Agenda

Time	Session	Description	Timing	Facilitator	Outcome	Pre-Reading
8:00 – 9:15	Warm Up: Why?	• Pre Season comments from the Coach • Goal of the scrum: 1. Share points of view on Year 1 program mobilisation activities and initiatives - what is needed for success and potential barriers in Year 1 2. Discuss and make decisions on how Council will organise itself to deliver the vision & blueprint: - Identify Sponsors for each Smart City Initiative - Identify Sponsor for the Smart City Program - Agree initiative delivery structure (project teams / program office) • Introduce the Fanatical Fan (Workshop Facilitator) • Around the ground (Introductions) and Rules for the scrum	10 mins 5 mins	Jim Louise	• Common understanding of why Council has developed a Smart City Blueprint and how work / governance has been structured to date • Expectations of how the Scrum will work / COO participation are clear. • Outcomes from the scrum are clear.	• Agenda
9:15 – 9:25	1st Half: What and When?	The Game Plan • Blueprint Highlights • Implementation Plan Highlights	10 mins	Matt / Janine / RK	• Recap of "What" initiatives and enablers are in the Blueprint, and the timings for "When" that are outlined in the Implementation Plan • Deeper understanding of Year 1 initiatives	• Blueprint - describes the vision for Ipswich as a Smart City. It outlines the Smart City initiatives and enablers to be undertaken over the next 5 years • Draft Implementation Plan - outlines the implementation activities, timeframes, governance structure, resourcing and potential vendor partners, for initiatives. Contains 5 year roadmap, 1 year plan and 100 Day Plan • Focus in Year 1: ○ Program Mobilisation ○ Drones Program ○ Application Studio ○ Build and Learn Fair ○ Open Data ○ Smart Lighting ○ Smart City Platform Pilot
		Activity 1 – Year 1 Success - Breakout (2 Initiatives per Group) What does success look like, feel like, sound like in Year 1? • What does Council need to get right for these initiatives? (eg. people, process, technology, regulation, procurement, funding, communications, etc) • Who from Council needs to be involved in these initiatives? ○ Who is accountable (ie. the sponsor?) ○ Who needs to be involved? (responsible, consulted, informed)	20 mins	Louise 3 x Breakout Groups: • Andrew, Shaun, Matt, Janine • Dan, Craig, Charlie, Tim, Catherine • Ben, John, Mark, RK		
		Activity 2 – Year 1 Challenges - Breakout (Different 2 Initiatives per Group) What is stopping us? • What are the barriers for successful implementation of Year 1 initiatives? • Is the timeframe realistic for these initiatives? • Is Council committing to something it can't achieve in Year 1?	20 mins			
		Activity 3 – Past Council Experiences (Plenary Discussion) • What other experiences has Council had (good and bad) in city wide / council-wide programs in the past 10 years that we can learn from?	10 mins	Louise		
		Discussion – Other Experiences • Experiences from other organisations in implementation of enterprise wide programs. Advantages and disadvantages of delivery models.	10 mins	Catherine		

2

Scrum Agenda

Time	Session	Description	Timing	Facilitator	Outcome	Pre-Reading
9:25 – 9:30		Half Time – Grab a Powerade				
9:30 – 10:30	2nd Half: How	Activity 4 – Initiative Ownership (Plenary) • Context: ○ Define concept of Accountability vs Responsibility ○ Explain distinction between (1) initiative level accountability and responsibility and (2) cross-initiative / program level accountability and responsibility • Initiative Accountability vs Responsibility ○ Decide Initiative Sponsor accountable for each of the 16 initiatives. ○ Agree model for delivery of initiatives – eg. project structure with "business" resources and "enabler" resources to deliver initiatives.	20 mins	TRC 3 x Breakout Groups: • Andrew, Shaun, Matt, Janine • Dan, Craig, Charlie, Tim, Catherine • Ben, John, Mark, RK	• Agree role of Initiative Sponsors. Decide COO Sponsor for each initiative • Agree role of Smart City Sponsor. Decide Smart City Sponsor • Agree on need to consolidate Smart City initiatives (Program Office) • Identify where Program Office capability will resides in Council • Identify any Strategic Decisions that need to be made and assign owner with responsibility to resolve	• Definition of Accountability and Responsibility • Proposed Sponsors for each Initiative (see Implementation Plan) • Summary of Roles needed in Year 1 (see Implementation Plan)
		Activity 5 – Smart City Ownership (Plenary) • Smart City Accountability vs Responsibility ○ Identify Smart City Sponsor accountable across all initiatives ○ Discuss the capabilities needed across all initiatives ○ Discuss the role of the PMO and where it should reside in Council	30 mins	Louise		
		Activity 6 – Strategic Decisions: • Bringing it all together - strategic decisions and next steps	10 mins	TRC		
10:30 – 11:00	Warm Down	Activity 7 - Individual Commitments: • Personal commitments from COOs to sponsor / deliver the season ahead	05 mins	Louise		n/a
		Discussion: • Immediate next steps and communications	5 mins	Don / Matt		
		Wrap Up • Coach expectations for the team and the season ahead	10 mins	Jim		

3

The outcome from the workshop will form the basis for the next steps and actions

Item 15.7 / Attachment 7.



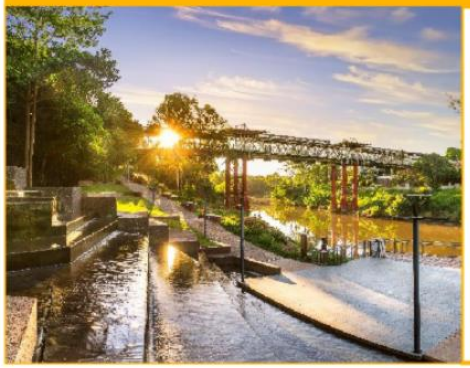
One of the fastest growing regions in Australia, Ipswich is facing challenges to create new jobs and ensure equitable growth.

Current Context



- As Queensland's oldest provincial city, Ipswich is one of the fastest growing regions in Australia
- A community of almost 190,000 people the population is expected to double in the next 20 years
- City council's priorities related to a safe, friendly and liveable city are of key importance to deliver on the overall vision for the community.

Key Challenges



- Ipswich has to reinvent itself from its current profile as a manufacturing hub towards supporting digitally-based businesses
- With a wide set of demographics, Ipswich needs to develop equitable strategies for digital access and education
- Based near a larger city, Council is intent on encouraging its citizens to study, live and contribute at Ipswich
- Ipswich wants to create the right environment to foster innovation and setup of new businesses in the city, while shedding the image of an "unsafe" city

2

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The Peer City Analysis is intended to answer the following key questions



What is a Smart City? What are the common **smart city definitions**?



What are the **patterns of success** and **pitfalls** to watch out for when embarking on a Smart Digital City Blueprint that we can learn from other cities?



What have been the **trigger points and journeys** adopted by peer cities of the size and scale of Ipswich? What has worked and what hasn't?



What **initiatives** have typically been implemented by leading global Smart Cities and what are the **key learnings**?

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Our Approach

1

Smart City Definitions

- Smart City drivers
- Smart City sample definitions



Slides 5-12

2

Patterns of Success

- What we learned from peer cities
- Guiding principles across leading Smart City programs



Slides 13-22

3

Peer City Case Studies

- 6 Deep-Dives case studies on small to medium sized cities, 2 Case in Points
- Lessons learned applicable to City of Ipswich's context



Slides 23 - 59

4

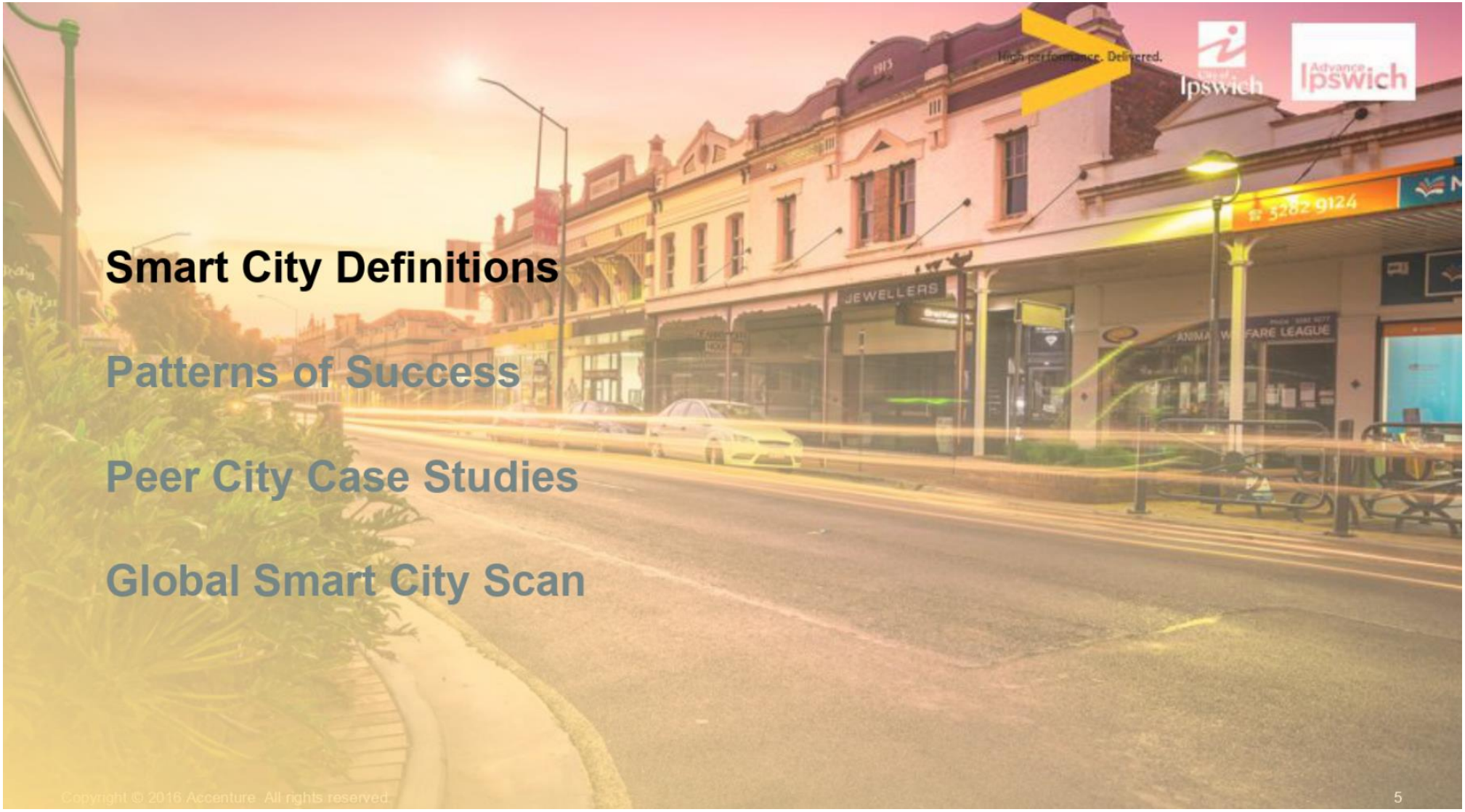
Global Smart City Scan

- 12 geographically dispersed cities
- A short brief on the variety of projects spanning the pillars of a Smart City
- Highlight a variety of technologies and partnerships



Slides 60 - 97

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Smart City Definitions
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Cities globally face similar challenges going into the future

Today's largest cities are thriving. But as population grows and resources dwindle, they will soon face huge challenges in:

Population Growth

The world's urban population is growing.

TODAY
3.9B live in urban areas.

2050
Urban population will reach **6.3B**

Urban Mobility

Traffic congestion levels are rising worldwide.

Globally, drivers are spending **46%** more time in their cars.

In the US, traffic congestion results in **$121B** in total delay and fuel costs.



Environmental Degradation

Urban waste is increasing rapidly.

Cities account for **2%** of world's landmass

and over **70%** of greenhouse gas emissions.

Disaster Response

Future megacities are increasingly vulnerable.

>75% of the **100 largest cities** are exposed to at least one **natural hazard**.

only **four** of the **top 23** are considered 'well prepared'.

Open Data Sharing

Cities have little data about their citizens.

85% of urban citizens are online.

90 percent of data generated by connected devices is **never analyzed**.

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Smart Cities enabled by the Internet of Things pave the way for future growth

The Internet of Things unlocks a multitude of solutions to alleviate the challenges city face ahead:

Population Growth

Cities can better manage their growth, creating:

1. Higher urban GDP
2. Reduced inefficiencies
3. Sustainable growth

Urban Mobility

Cities can access new data sources, providing:

1. Real-time traffic data
2. Accurate monitoring
3. Reduced congestion



Environmental Degradation

Cities can efficiently manage their limited resources, resulting in:

1. Reduced waste
2. Cost savings
3. Sustainable resource use

Disaster Response

Cities can connect systems and services, resulting in:

1. Data-driven alerts
2. Rapid resource deployment
3. Resilient networks

Open Data Sharing

Cities can create a connected data network to:

1. Understand behaviors
2. Optimize operations
3. Create new interactions

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A Smart City is typically constituted by the following attributes
TECHNOLOGY
A City that embeds technology into its design and operation
INTEGRATION
A City that integrates across multiple infrastructure layers
CITIZEN-CENTRIC
A City that focuses on service provision for its citizens and business
COLLABORATIVE
A City using an innovative public & private sector collaboration model
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A Smart City typically leads to the following outcomes
QUALITY OF LIFE
One of the aims of a city would be to improve quality of life in terms of emotional as well as financial well-being.
SUSTAINABLE SOCIETY
This is related to city infrastructure and governance, energy and climate change, pollution and waste, and social, economics and health.
ECONOMIC DEVELOPMENT
A smart city exhibits implicit or explicit ambition to improve economic and social standards for its citizens.
IMPROVED & EFFICIENT SERVICES
Citizens receive higher quality municipal/council and other services at a lower cost.
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Smart Cities maximize productivity and connectedness by satisfying basic human needs through technology



The Smart City hierarchy sets out a fundamental framework, enabling humans to self-actualize and strive for maximum potential.

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Smart City sample definitions

"A city well performing in a forward-looking way in [economy, people, governance, mobility, environment, and living] built on the **smart combination of endowments and activities of self-decisive, independent and aware citizens.**"

Center of Regional Science, Vienna UT

Smart sustainable cities **use information and communication technologies (ICT) to be more intelligent and efficient in the use of resources**, resulting in cost and energy savings, improved service delivery and quality of life, and reduced environmental footprint – all supporting innovation and the low-carbon economy.

Boyd Cohen

"We believe a city to be smart when **investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure** fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance."

European Group for Public Administration

Hitachi's vision for the smart sustainable city seeks to achieve concern for the global environment and lifestyle safety and convenience through the coordination of infrastructure. Smart Sustainable Cities realized through the **coordination of infrastructures consist of two infrastructure layers** that support consumers' lifestyles together with the **urban management infrastructure that links these together using information technology (IT).**

Hitachi

A Smart City is a finite entity with its own local governing authority that **uses emerging ICT and instrumentation technologies** to achieve the explicit goals of improving the quality of life of its citizens and sustainable economic development. These goals are achieved via **improved service delivery**, more **efficient use of resources** (human, infrastructure, and natural), and financially and environmentally sustainable practices that **support economic development**.

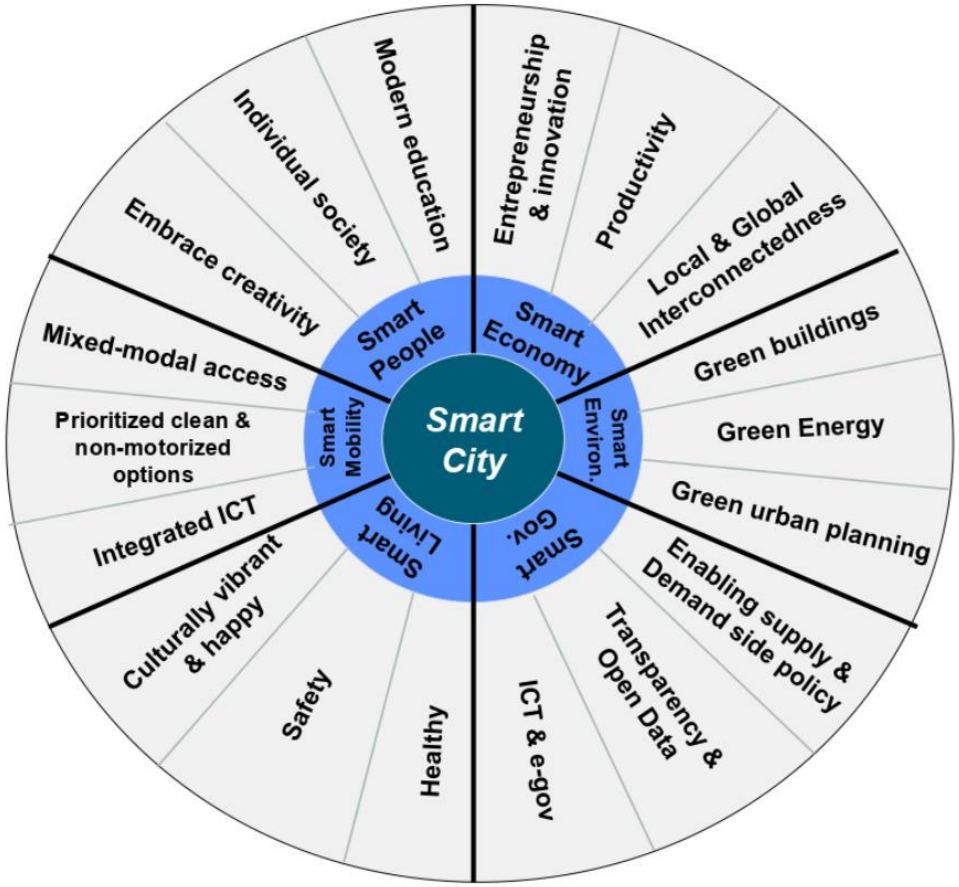
IDC Government Insights

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Smart Cities are composed of holistic set of key drivers - 'Smart City Wheel' framework

The smart city movement is similar to the sustainability movement in that no company is truly sustainable, and no city is truly smart. Rather, **cities and companies are on a journey toward being smarter and more sustainable.**



Indicators can help cities track their performance with specific actions developed for specific needs.

Source: Model by Boyd Cohen. This model has been inspired by the work of many others, including the Center of Regional Science at Vienna University of Technology, Siemens' work with the Green City

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Executive Summary

Key 'Patterns of success' for successful Smart Cities.

- **VISION:** Best-in-class Smart Cities implement a robust communications strategy, usually coordinated by a municipality, that shares successes and project details on an ongoing basis.
- **CITIZEN ENGAGEMENT:** Smart Cities are inclusive of their citizens by enabling them with the tools and opportunities to create and contribute to solve problems at local level, so all voices are not only heard, but instrumental in designing solutions.
- **PARTNERSHIPS:** A collaborative partnership ecosystem that brings together the private sector, public institutions, academia and non-profits provides leading-edge insights and accelerated program delivery.
- **DATA:** Adopting a data centric approach is critical to success. Once this foundation is set, the establishment of open standards and shared data, analytics and ICT infrastructure is central to many Smart City implementations.
- **GOVERNANCE:** Smart City programs are unique, joint cross-sector efforts, requiring new levels of collaboration across entities, requiring multiple levels of governance and engagement approaches.
- **PILOTS:** Nearly all Smart Cities have made use of Pilots to test concepts on a small scale and adjust implementation plans based on lessons learned.
- **FUNDING MODELS:** Funding for Smart Cities projects has often been a combination of public grants to kick-start programs, along with private funding in return for tangible benefits to partners.
- **SHARED VALUE:** Most Smart City initiatives focus on consumer-centric "Energy & Water Supply" and "Mobility" initiatives that create broad shared value and are built on existing ICT enabled infrastructure.

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Vision

Best-in-class Smart Cities implement a robust communications strategy to explain city Vision (usually coordinated by a Council) including successes and project details on an ongoing basis

- The Olympics is a good example of a shared, ambitious goal, succeeding in bringing together communities, the public and private sectors, academia, volunteers and business and capturing the attention of viewers around the world.
- Best-in-class Smart Cities have a robust communications strategy that share successes and project details on an ongoing basis with the broader stakeholder community.
- The converse is true for poorly executed initiatives where the public and stakeholders are not fully informed of the benefits or consulted on the execution aspects of projects.
- Local government must take the lead in disseminating communications and coordinating public input.
- Best practices include:
    - Articulating future initiatives and vision in contrast to reporting only on past initiatives
    - Stakeholder specific communication channels
    - Recognition of project partners

Barcelona Inspires

As part of Barcelona's Smart City strategy, they have defined 3 important axes for success: international promotion, international collaboration and local projects.

Barcelona strongly pushes for international visibility, through promotion, participating in international conferences and hosting important international events, such as Mobile World Congress and Smart City Expo that serve as a window shop for all their smart city initiatives.

This has led to Barcelona's international recognition as one of the leading cities in the area of 'Smart Cities' and 'Mobile Technologies'. The city was awarded with the title of 'European Capital of Innovation' by the European Union in 2014 and is ranked the 4th Smart City in Europe and the 10th in the world.

Source: http://placebrandobserver.com/en/rebranding-barcelona-city-branding-case-study/

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Citizen Engagement

Smart Cities are inclusive of their citizens by enabling them with the tools and opportunities to create and contribute to solve problems at local level, so all voices are not only heard, but instrumental in designing solutions.

SIMPLE

Overcome technical and bureaucratic language barriers between policy makers/implementers, technologists and citizens

RECIPROCAL

Citizens must be incentivized with concrete benefits in exchange for their time, effort, money or behavioral change

INCLUSIVE

In citizen engagement, aim to represent the city's broad set of demographics and include those that are not digital literate

GIVING

Meet your citizens where they are. Do not assume citizens will come to you, especially if you wish to engage specific demographics

BALANCED

Interventions should be online and offline. There are advantages to both online and face-to-face discussions, which also increase inclusivity.

TRUSTWORTHY

Build trust by bringing up the issues of privacy and rights early and take the time to explain what the applied rules are.

Boulder Smart Grid

Xcel Energy became the first utility in the world to create a fully-functioning smart city powered by an energy-efficient, self-monitoring smart grid. They brought a SmartGridCity successfully online in 2008. However, many consider their SmartGridCity a failure due to the lack of communication with customers.

The initial vision was focused on selling the technology to the customer; what they could get out of this changing landscape of information and services. However, many customers now complain that they were not delivered what was promised ("fully electronic houses with all this technology, and adding solar"). Xcel Energy acknowledges that they should have done a better job setting expectations on the cost estimate and the objectives for the customer.

The Wi-Fi enabled smart meter devices allow customers to remotely control appliances and thermostats in the home, thereby achieving better management of their energy consumption. But, in practice, customers reportedly found the devices too simplistic, and demand was not as great as Xcel anticipated. Additionally, many homes didn't meet Xcel's installation criteria. Though plans called for installing 1,850 devices, the utility ended up installing just 101 of them in Boulder homes.

Source: European Innovation Partnership on Smart Cities and Communities (EIP-SCC)

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Partnerships

A collaborative partnership ecosystem that brings together the private sector, public institutions, academia and non-profits provides leading-edge insights and accelerated program delivery.

Partnerships have been key to nearly all smart cities projects as an effective means of risk-sharing and gaining diverse resources and expertise. Technology partners and municipalities often make financial investments in proving out solutions, with the expectation that the project will be extended and expanded, paid for by the beneficiaries.

1. **Seek partners who have a shared vision**
   - The vision should be based on enabling long-term transformative change
   - The partnership's vision needs to be compatible with the vision of each partner

2. **Establish clear partnership roles, responsibilities and obligations**
   - Establish clear financial, contractual and delivery roles and responsibilities
   - Establish clear entry and exit criteria from the partnership
   - Clearly define IP considerations and contributions for each partner

3. **Transfer project risks to the partners that can best manage those risks**
   - Complex contractual frameworks are required to assign risks to the partners who can best control those risks, whether they are financial, credit, delivery performance, security, reputational etc.

Barcelona Smart City Operating System

Barcelona City Council selected Accenture to develop an integrated urban management system to improve city management, enriched services for citizens, and enhanced opportunities to build a new economy based on data. City OS will connect various technical systems in Barcelona, including Sentilo, which manages multiple sensors across the city (like irrigation systems, acoustic management systems and more).

Accenture partners with Abertis and GDF Suez to manage the operating system for the city, City OS, over the next 3 years. A consortium model brings the best of capabilities to the city at pace and low cost.

- Accenture, in addition to consulting, strategy and project management services, will bring big data and analytics capabilities.
- Abertis, now Cellnex, a broadcasting, connectivity and security company, will bring assets and experience in telecomms. Furthermore, Abertis has local context and leadership, as the leading infrastructure company in the region.
- GDF Suez, helps complete a vertical solution, with deep expertise in urban services.

This will allow the consortium to provide an end-to-end solution to meet and exceed the City's requirements.

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Data

Adopting a data-centric approach is critical to success. The establishment of open standards and shared data, analytics, ICT infrastructure would be highly dependent on the approach to "data"

Objectives	Functionalities	Outcomes
• Aggregate vast amounts of data that cities already generate on a daily basis • Integrate data from silo-ed agencies across the city, including police departments and citizen contact centers	• Analyze current and historical data • Build predictive models to uncover actionable insights buried in the data	• Capitalizing on opportunities to increase public safety, deliver services more efficiently, and protect its finances • Increasing operational optimization by enabling the City to more quickly and accurately shift resources to where they are needed most

NYC Data Analytics

Through its DataBridge project, the City is now employing cutting edge analytical techniques at an enterprise level to capitalize on opportunities to increase public safety, deliver services more efficiently, and protect its finances. The City developed a best in class analytical platform to integrate the vast amount of data the City generates on a daily basis to facilitate holistic analysis for trends impacting many aspects of City government. Accenture worked with the City to implement the tools, processes, and organizational structure to achieve the fast and sustainable results from the new tools.

The MODA (Mayor's Office of Data Analytics) team has already been able to produce very significant, such as: five times the return on time spent by building inspectors looking for illegally converted apartments, an improved "hit" rate (30 percent to 82 percent) for inspectors discovering stores selling bootlegged cigarettes, identified one percent of pharmacies that accounted for more than 60 percent of total Medicaid reimbursements for Oxycodone, a boost in the inspection hit rate of dangerous buildings that must be vacated, rising from 13 percent to 75 percent and a dramatic increase in the detection of business licenses being flipped.

Source: https://www.accenture.com/t20150624T211456__w__/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Technology_7/Accenture-Data-Analytics-Helps-New-York-City-Boost-Efficiency-Spend-Wisely.pdf

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Governance

Smart City programs are unique, joint cross-sector efforts, requiring new levels of collaboration across entities, requiring multiple levels of governance and engagement approaches

- The Governance model for Smart City programs aim to achieve these common objectives:
  - Setting program stewardship & sponsorship from highest form of government
  - Set direction and accountability for the delivery of the Smart city project
  - Oversee implementation and report on realized benefits
  - Establish a mechanism to collaborate with government entities, private sector, advisory boards, and international experts

- To support the implementation of a Smart City program, a collaborative governance model involving key stakeholders is crucial
  - Local: citizens (students, professionals, elderly, youth), tourists, expatriates, neighborhood groups
  - National/international: ministries, agencies, academia & research, non-profits
  - Private sector: start-ups, SMEs, MNCs

- Government can be involved in the following ways:
  - By playing the **role of driver** providing direction and setting the strategy
  - By playing the **role of coordinator** to bring stakeholders together
  - By playing the **role of funder** providing funding mechanisms and footing pilots
  - By playing the **role of regulator** ensuring common standards and regulations

Smart Dubai

There are various key stakeholders involved in Dubai's 2021 plan being centrally governed by the Dubai Executive Council. The Council sets strategic direction and overarching collaboration mechanisms and defines key initiatives and measures their success.

Implementation partners include:

- Dubai Government Departments responsible for smart government services implementation.
- Dubai Department of Economic Development oversees implementation of Dubai Smart Industry strategy (such as the Smart Dubai Silicon Oasis, & Smart Dubai Industrial City).
- Dubai Supreme Council of Energy oversees environment initiatives of DEWA, RTA and other local environmental agencies.
- Higher Committee for Dubai Smart City develops collaboration with private sector and telecom operators to develop the Smart Dubai platform.
- Private sector strategic partners provide input into the Dubai Plan 2021 Strategy and are selected as Strategic Implementation Partners for various Dubai Plan 2021 Initiatives

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Pilots

Nearly all Smart Cities have made use of Pilots to test concepts on a small scale and adjust implementation plans based on lessons learned.

- To be successful, cities need to run people-centered smart city pilots. For example, they might set up a civic innovation lab to drive innovation in collaborative technologies; use open data and open platforms to mobilize collective knowledge; and involve smaller companies and civil society organizations in smart city pilots.
- Pilots often establish the tone for how broader initiatives are received across a Smart City. Stories – both positive and negative – about the success of pilots often filter out very widely. While you can never expect all pilots to be successful, the approach maximizes chances of success by selecting the most promising projects and the best team, and make it easy for them to identify value.
- In establishing pilot projects, a balance needs to be struck between having clarity on the intentions and scope of the pilot, and allowing experimentation that may uncover even more valuable uses and applications.

SFpark

SFpark started with the installation of smart parking meters that accepted payment by credit card and phone. The Municipal Transportation Agency also attached sensors to each parking space, enabling the agency to know when they were being used, and for what length of time. In 2011, the MTA started adjusting prices quarterly - between 25 cents and $6 an hour - at meters and city-owned garages based on demand, and issued an app to help drivers find parking in the SFpark districts. SFpark ended in 2013, the parking sensors and app were shut down, and the MTA began evaluating the data from the internationally watched experiment:

- Average meter rates dropped by 4% and garage rates by 12%
- 60-80% occupancy of spaces occurred 31% more often
- No parking spaces available occurred 16% less often
- Average time spent looking for parking decreased by 5 min (43%)
- Citations for parking meter violations declined by 23%
- Miles driven and CO2 emissions from searching dropped 30%

Due to the success of the pilot and proven results, the program will be spread to throughout the city.

"We've learned a lot from SFpark," said Jay Primus, program manager. "It's making it easier to find parking and pay for it."

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Source: http://www.sfgate.com/bayarea/article/SFpark-called-a-success-will-expand-throughout-5568645.php

Funding Models

Funding for Smart Cities projects has often been a combination of public grants to kick-start programs, along with private funding in return for tangible benefits to partners

- The fundamental question is, "Who pays for this?"
- According to a Black & Veatch Smart Cities study, 70% of Councils, governments and utility companies report budget constraints to develop Smart City projects.
- Smart City projects are technology investments that often require pilot projects and testing while competing for funds against more mundane capital and operating projects.
- Cities around the world are exploring creative funding solutions, such as as-a-Service models, single purpose vehicles, public-private partnerships and attraction of federal and state grants.
- Cities need to evaluate the pros and cons of funding scenarios to strike the right balance between ownership, private sector engagement, level of control and influence on the platform, and level of government funding.

City Digital in Chicago

The City of Chicago has set up a public-private partnership, coordinated by a non-profit group, UI Labs. The partnerships sponsored by the CIO of City of Chicago.

Accenture and various consortium partners like Microsoft, Siemens and Commonwealth Edison, have made an investment to be part of an urban innovation consortium. This investment gives the private sector consortium partners first access to new Smart City initiatives. The partners, and the City, no longer have to invest time and effort in long bidding processes.

In many cases, the private consortium partner will invest in a pilot, usually a living lab – or area of the city designated to pilot Smart City initiatives. If the pilot is successful, the City commits to procuring the solution to scale it across the city.

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Source: 2016 Strategic Directions: Smart City/Smart Utility Report, Bloo & Veatch Insights Group

Shared Value

Most Smart City initiatives focus on consumer-centric "Energy & Water Supply" and "Mobility" initiatives that create broad shared value and are built on existing ICT enabled infrastructure.

- The Energy and Water (or broader utilities space) and Mobility areas represent the most significant existing infrastructure in a city. This infrastructure is therefore a natural focus for Smart City initiatives that support better management of these investments by:
  - Creating consumer-centric projects that create value and enable empowerment, choice and control
  - Creating compelling financial returns that are clearly articulated
  - Building on existing ICT enabled infrastructure that is foundational to a networked City
- Retrofitting street lights is one of the most visible examples. If a city replaces street lights with LEDs, electricity usage will likely drop by more than 60%, resulting in significant cost savings. Add in network connectivity that allows for adaptive control and another 10% in savings can be achieved. The savings in bills can offset the cost of the retrofit.
- Given the advancements in communications, sensor and connectivity technology, assets inevitably become "smarter" as they are replaced with new equipment. The ability to collect, measure, and move data from connected city elements demonstrates the increased value of these assets.

Water Analytics as a Service

Thames Water is the UK's largest water and wastewater services company. Thames Water wished to join up Information Technology and SCADA investment roadmap to enhance asset management capability and business process planning.

Thames Water deployed an analytics solution for their intelligent operations by building a platform which provides deep insights in near real time using big data technologies. The platform is being used by 250 users to monitor and manage asset networks. Product roadmap includes advanced features to monitor sensor health, online collaboration for quick decision-making and operational action logging to track operating practices.

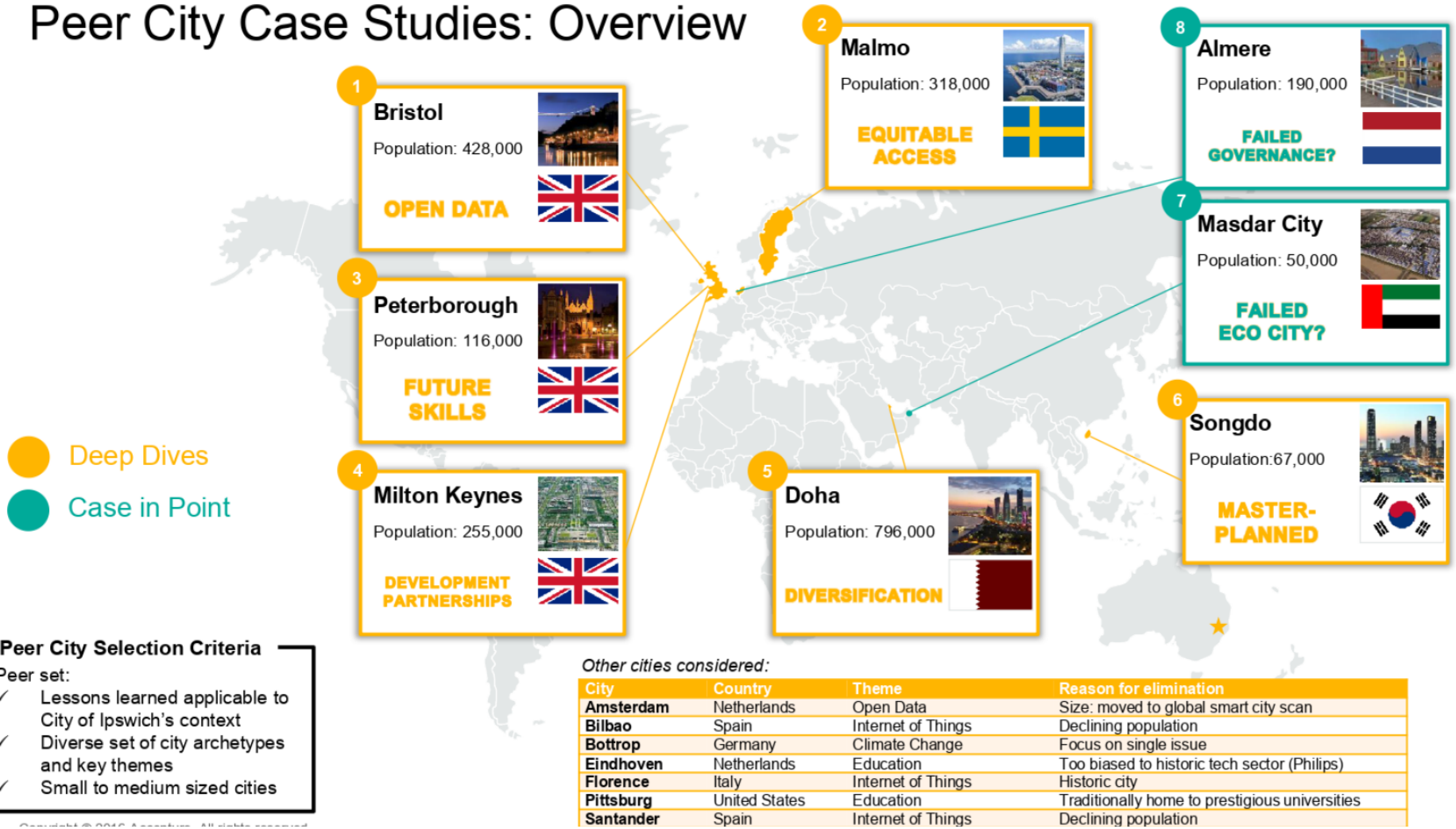
The key benefits from the technology investment are:
- Improvement in investment targeting by at least 10%.
- Extend the life of pressure management schemes by 100%
- Reduce business rates by 20%
- Reduce production at peak power tariffs by 15% to 10%
- Improve reliability of equipment and reduce maintenance expenditure by 5 to 10%
- Cut costs of data management and maintenance by 10%

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Source: 2016 Strategic Directions: Smart City/Smart Utility Report, Black & Veatch Insights Group


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Peer City Case Studies: Overview



Peer City Selection Criteria

Peer set:

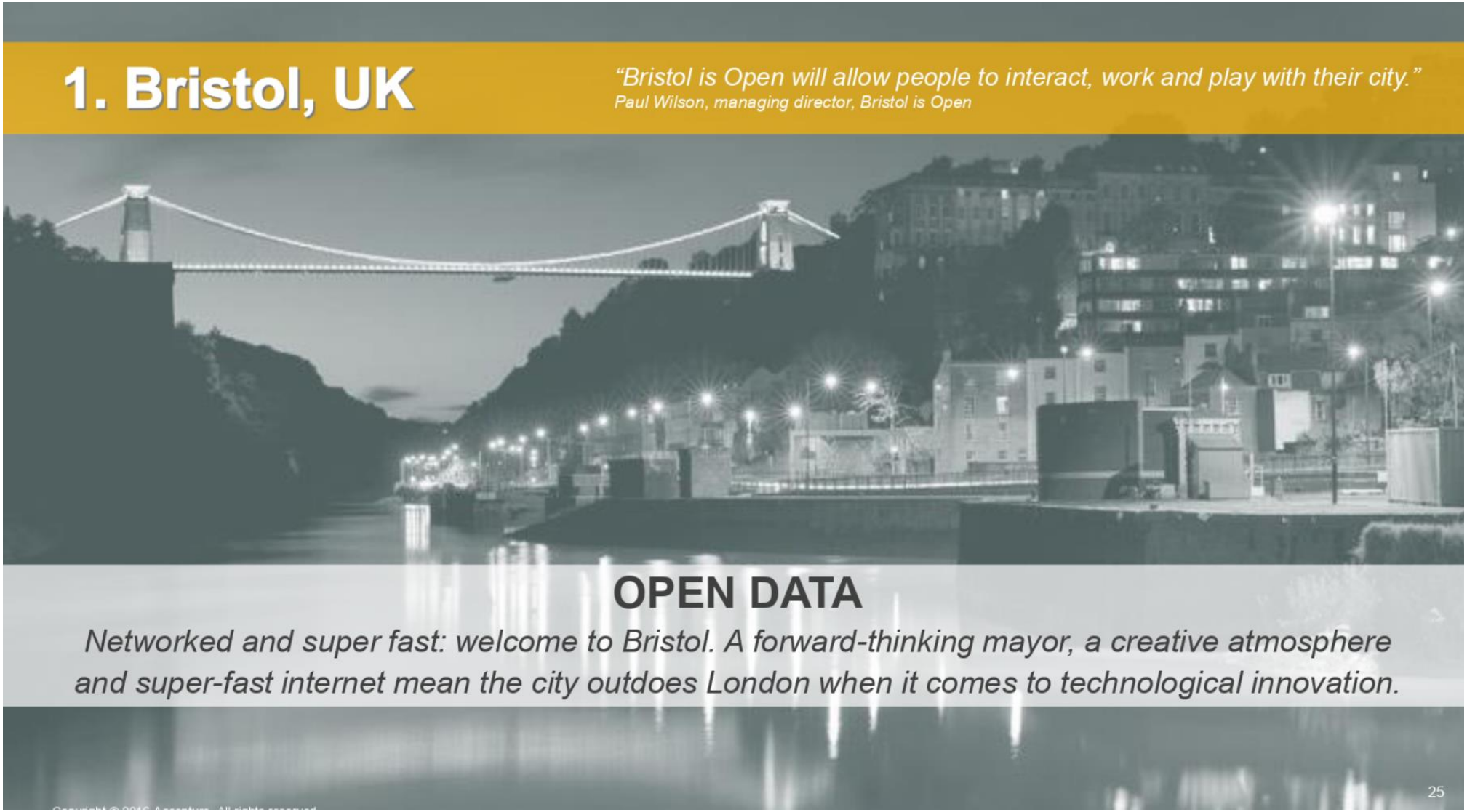
- ✓ Lessons learned applicable to City of Ipswich's context
- ✓ Diverse set of city archetypes and key themes
- ✓ Small to medium sized cities

Other cities considered:

City	Country	Theme	Reason for elimination
Amsterdam	Netherlands	Open Data	Size: moved to global smart city scan
Bilbao	Spain	Internet of Things	Declining population
Bottrop	Germany	Climate Change	Focus on single issue
Eindhoven	Netherlands	Education	Too biased to historic tech sector (Philips)
Florence	Italy	Internet of Things	Historic city
Pittsburg	United States	Education	Traditionally home to prestigious universities
Santander	Spain	Internet of Things	Declining population

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1. Bristol, UK
"Bristol is Open will allow people to interact, work and play with their city."
Paul Wilson, managing director, Bristol is Open
OPEN DATA
Networked and super fast: welcome to Bristol. A forward-thinking mayor, a creative atmosphere and super-fast internet mean the city outdoes London when it comes to technological innovation.
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Bristol: Smart City Profile

Bristol is turning itself into a giant laboratory by looking at how big data can be used to solve problems such as air pollution, traffic congestion and assisted living for the elderly, and understand data from a trial of self-driving cars.

What?

- Bristol is fast gaining a reputation as the UK's most technologically smart urban environment, a place that is trying to understand how the cities of the future can exploit the vast realms of data they will collect.

Who?

- The city's council is working with Bristol University and commercial partners such as Japanese firm NEC and other private sector partners to equip the city with the latest in sensor and connectivity technology.

How?

- The high-speed fiber network, which makes use of disused cable ducting owned by the city, is being combined with the university's £12m supercomputer and a new 'city operating system' that powers the experimental network.

Results?

- The network is currently being rolled out and tested. The next phase of the "Bristol is Open" project will be the collection, storage and analysis of the city's data. Bristol was one of the winners of the government's driverless car trial competition. It is currently testing a driverless Bobcat on its roads.

Facts

Main Theme	Open Data
Stakeholders	• City Council • Bristol University • Private Sector: NEC, EY, General Electric, Atkins Global, Imtech, Esoterix
Use Cases	• High speed broadband • Internet of Things • Self driving cars • Smart grid & metering
Duration	Ongoing since 2011
Awards	• 2015 European 'Green Capital' • 2014 Guangzhou Award • 2014 International Award for Urban Innovation
Links	• http://www.bristolisopen.com/ • http://cor.europa.eu/en/news/Documents/Presentation_Bristol_as_a_Smart_Green_City.pdf

Bristol was selected as a peer city because it:

- Has undergone recent revitalization
- Competes with nearby London
- Punches above its weight, internationally recognized for its Smart City efforts
- Has focused on open data

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1. Bristol: Smart City Strategy

Key drivers for Bristol as a Smart City.



Conception

- Smart City Bristol was launched in 2011 focusing on Smart Energy, Smart Transport and Smart Data. It included pilot projects (smart metering, smart grid, electric vehicles, open data), alongside permanent initiatives (Traffic Control Centre and Freight Consolidation Centre).

Partnerships

- Bristol collaborates with microelectronic, environmental technology and creative companies who are working with communities. For example through Bristol's Living Lab in Knowle West a group of people are actively involved in the creation and evaluation of technologies which they will ultimately use.

Awards

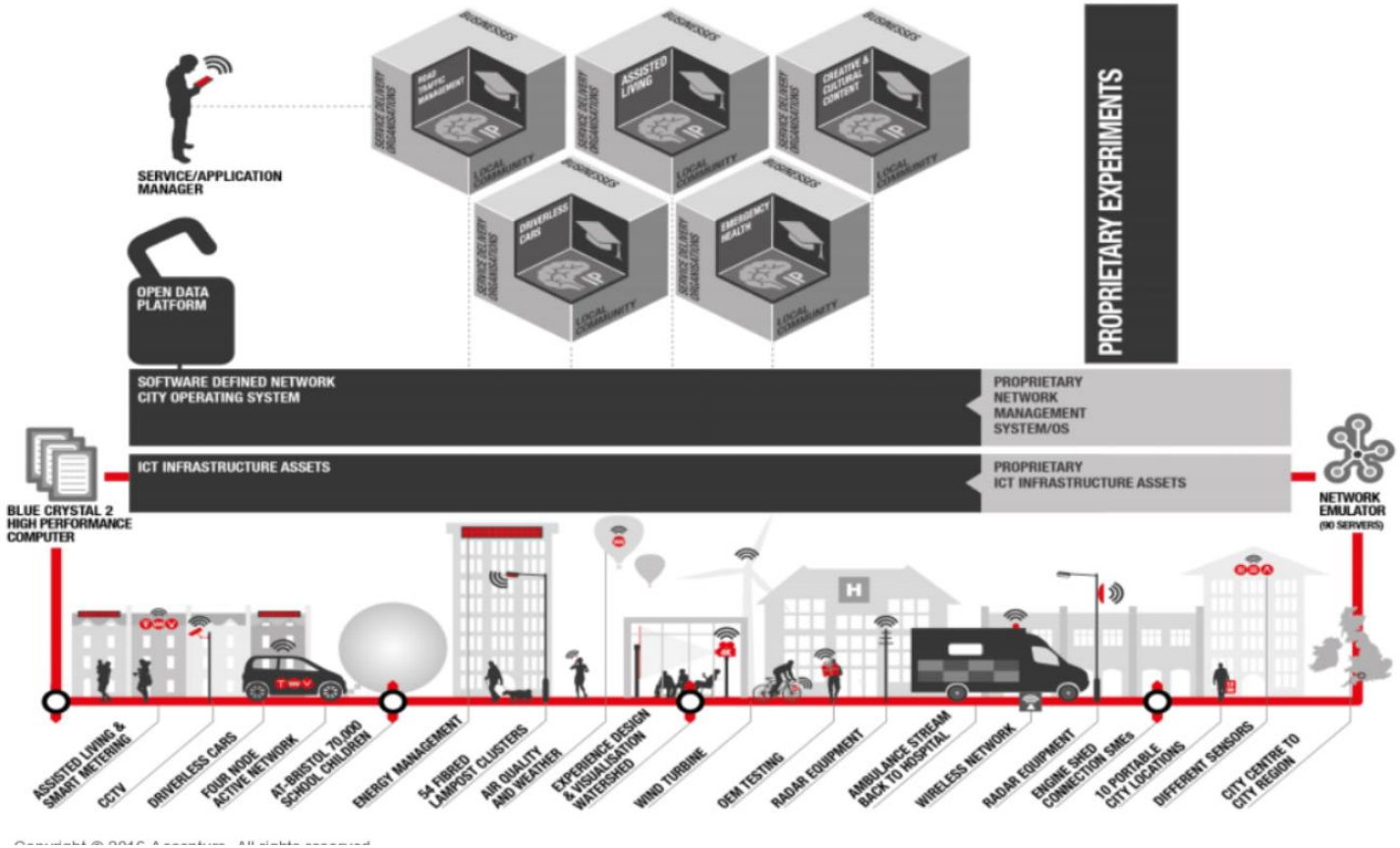
- The City was awarded European 'Green Capital' status for 2015. The European Green Capital 2015 program will also contribute to these targets, promoting Bristol as a center for innovation in Green technology.

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1. Bristol: 'Bristol Open' project

Bristol wants to become the world's first open programmable city, with the objective to put its people first and to create more livable communities.



Approach

- Bristol has opened up almost two hundred of the city's data sets on traffic flows, energy use, crime and health trends to kick start the creation of innovative new services, allowing people to interact, work and play with their city.

Funding

- The project has received £5.3 million in funding from the government's connected cities plan, with support and technology being provided by the city council, university and a number of commercial partners. In total "Bristol is Open" said it had access to £75m worth of infrastructure and technology.

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1. Bristol: Lessons Learned

Key lessons learned from Bristol's efforts are to put citizens first, ensure good communication and to consider political sensitivities.

Bristol's approach to smart cities is putting people at the heart of a smart city, rather than technology led.

- For example, the "So La Bristol smart grid" project uses bespoke technology in residents' homes to connect solar PV generation to battery storage units.
- The smart city approach places people and communities at the center of technological innovation. To that end, the "So La Bristol project" works with a local community based charity with the specific aim of stakeholder engagement.

When deploying smart city projects, one of the major obstacles to success is ensuring good communication with the project customers.

- By linking the smart city agenda to Bristol's status as Green Capital, the profile of the various projects has been raised significantly on a national level.
- At a local level, a directly-elected mayor has helped distil messages about the necessity for a 'smart city' approach to carbon reduction.

When seeking to deploy innovative technological solutions, there are a number of political sensitivities to consider.

- Especially in the context of decreasing authority budgets and the perception that smart city projects are somehow non-essential expenditure.
- This has been largely overcome by establishing successful links with other internal council departments, securing buy-in from senior managers as to how the technology in question can actually increase efficiency, and provide a more effective service for Bristol's citizens.

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2. Malmö, Sweden
"Malmö exhibited dynamic leadership from its city council, which did not leave the evolution of the city to the market."
Robert Muggah, director at the Igarape Institute
EQUITABLE ACCESS
Malmö is Sweden's most climate centric smart city. It has revitalized itself from the ground by building out infrastructure and creating opportunities for anyone who wants to help Malmö achieve its goals.
30

2. Malmö: Smart City Profile

Hit by the economic decline of the industrial sectors in the 1960s and 1970s Malmö struggled with ecological and socio-economic difficulties in subsequent decades.

What?

- Malmö focused on the physical regeneration of the existing 60s and 70s housing stock as engine for social change, growth and decreased climate impact. With a population of 48% under 35 years of age, this is one of the fastest growing and diverse cities in Europe. 14% of the population are foreign nationals, while 41% have a foreign background.

Who?

- Malmö Smart City is an initiative between the city, academia and the private sector that together established a structured long term innovation program.

How?

- Malmö has established a long term innovation program focusing on the physical regeneration of the existing 60s and 70s housing stock as engine for social change, growth and decreased climate impact.

Results?

- Major social changes have occurred since the initiative's launch. Unemployment has fallen from 30% to 6%, and participation in elections has increased from 54% to 79%.

Facts

Main Theme	Equitable growth
Stakeholders	• Malmö city • Malmö University, Lund University, University of Agricultural Science • Private Sector: E.ON, MKB, Trianon, WSP, Schneider Electric, Skanska, IBM
Use Cases	• Smart Buildings • Urban planning • Social and economic development of inhabitants
Duration	Ongoing since 1997
Awards	• 2015 Sweden's best bike city • 2014 OECD most innovative cities in the world
Links	TBC

Malmö was selected as a peer city because it:
- Faced economic decline in the 60s and 70s
- Focused growth around specific clusters (i.e. sustainable development)
- Experienced social challenges with high level of immigrants

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2. Malmö: Smart City Strategy

From the beginning of 1990's, several implementation steps according to sustainable urban development standards were constantly pursued. A core principle to its approach is participation of the local population in planning and implementation.

City of Malmö

Goals

Building on global challenges and international market needs, Malmö 2020 vision goals include:

- To become an international leader in creating and implementing innovations for smart sustainable cities
- To become the best place and partner for R&D, prototyping, testing and demonstration of innovations in the field of smart sustainable cities



Use Cases

Malmö focuses innovation activities on selected thematic areas such as retrofit and regeneration for sustainability in existing buildings and city districts. Key areas of focus include:

- Smart collaboration and financing models
- Smart lighting
- Smart mobility
- Smart energy, heating and cooling

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2. Malmö: Equitable Access

The first step Malmö Smart City took was the renovation of 1,600 apartments by recycling old materials. Houses with green roofs, solar panels, and biogas have been completed.

City of Malmö

How?
To make this happen, the local housing company MKB and the city of Malmö agreed on a joint management contract. This contract contains the following key aspects:

- **Renewable energy:** producing solar energy and small scale-wind
- **Waste separation:** aiming a recycling rate of over 70% compliance by installing waste-separation and food composting facilities.
- **Green spaces:** construction of a 9,000m2 botanical roof garden intercepting half of the total yearly run-off. Despite helping to absorb the rainwater, the green roofs also provide local habitat and biodiversity. The total green space of Agustenborg has increased by 50% since the initiative had started.
- **Mobility:** residents introduced a carpool with eco-friendly cars used for community purpose.
- **Participation and learning:** all different groups of residents have been involved in the renovation process. Elderly people, immigrants, children, adults, and students discussed the process of change in their social respective units.



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2. Malmö: Lessons Learned

Malmö has become an international success story that has inspired many cities around the world. Citizen engagement and a bold vision have helped Malmö to get where they are today.

City of Malmö

Engaging the public is key. Since the local population is largely composed of foreign people, communication was a challenge in Malmö because of language and cultural barriers.

- 45% of the population was unemployed at the time the initiative started and some citizens were skeptical about the project's feasibility, and were concerned about the large increase of green spaces and the drainage system.
- An enormous challenge was to encourage stakeholders from the outset, albeit not knowing whether the project will be successful or fail. Continuous exchange of information and trust in stable communications were the instruments which helped cope with most of the barriers and conflicts.

Setting up a bold vision will drive major changes in the long run, but it requires courage and patience to see it through and get tangible results.

- Today almost 90% of the rainwater from roofs and other surfaces leads to the new sustainable urban drainage system established by the initiative. Since the new system was installed there has not been any severe flood or water related problems.
- The green space aspect helped the management of former local flood and ecological impacts and increased biodiversity by 50%. In terms of waste separation 80% of the local waste is being collected or reused. Speed limits of 30 km/h have recently been introduced by residents.
- Despite these significant ecological results, major social changes have also occurred since the initiative's launch. Unemployment has fallen from 30% to 6%, and participation in elections has increased from 54% to 79%.

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3. Peterborough, UK
"A new town with medieval roots, Peterborough has always been forward-thinking, a city ahead of its time."
Marco Cereste, Leader, Peterborough City Council
FUTURE SKILLS
How was a small town like Peterborough awarded 2015 Smart City of the year? By finding its niche and becoming the UK's first circular city while actively involving its citizens.
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3. Peterborough: Smart City Profile

Peterborough is creating a step-change in how the city works, delivering new integration and synergies between partners to make urban systems more effective.

What?

- In 2012 the Government's innovation agency, Innovate UK (Technology Strategy Board), launched a UK-wide future cities competition to demonstrate how cities could take a new approach to how they run. By developing and testing innovative ideas, cities were called upon to shape smarter and more sustainable places.

Who?

- With a bid developed with public, private and third sector partnership, Peterborough was awarded £3million. The 'Peterborough DNA' programme was born: to implement the ideas, innovations and new systems that were put forward.

How?

- Peterborough is empowering its citizens to collectively create and own a future-proof city with low environmental impact. Peterborough DNA generates new partnerships, ways of thinking and doing amongst its residents, brings together diverse stakeholders and build strong economic and social ties.

Results?

- Peterborough was named Smart City of the Year 2015. The city is full of innovative SMEs and the smart city program supports and encourages them to work together to take advantage of new technologies and new thinking to drive growth, sustainability and prosperity.

Facts

Main Theme	Skills for our Future
Stakeholders	• Peterborough City Council and Opportunity Peterborough • Private Sector: IBM, Royal Haskoning, Green Ventures
Use Cases	• Skills for our future • Innovation • Smart Business • Living Data
Duration	Ongoing since 2012
Awards	• 2015 Smart City of the year
Links	• www.peterboroughdna.com/

Peterborough was selected as a peer city because it:

- Has focused in a particular growth and branding area (i.e. circular economy)
- Focus on higher education and setting up of universities to attract the right talent
- Has put itself on the international map winning 2015 Smart City of the Year

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3. Peterborough: Smart City Strategy

Peterborough's work reflects the integrated nature of the city's assets, and provides a linking and holistic mechanism for mutual and exponential benefit for all citizens.

Priorities

- The starting point was to assess the key challenges the city faces and embed long-term change by working from the inside out. Two priorities are central to Peterborough's approach – integration and grassroots collaboration.

Engagement

- Effective human interaction complements the power of data and information and all initiatives work together to empower residents and businesses, thus sustaining the change. It enables the city to think creatively and take risks.

Collaboration

- It has accelerated a broader understanding of how different sectors can work together and focus their efforts to reach the fundamental goal of growth, innovation and sustainability.

City of Peterborough



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3. Peterborough: Skills for our Future

City of Peterborough

For a long time, Peterborough was one of the largest cities without a university and in the largest cold-spot for higher education provision. Now they are building skills that create local jobs and help shape a better city.

The challenge

- Ensure the city has the right skills to meet local business demand.
- Develop future skills to put Peterborough in the best possible position to take advantage of emerging markets.
- Build the university and establish it as a hub for innovation.
- Grow and retain local expertise to tackle sustainability challenges on the doorstep.

Approach

- Leverage existing pioneering work, like the Peterborough Skills Service, rather than reinventing the wheel.
- Inspire the city's young people through real-life opportunities.
- Deliver the local skills that businesses need now and in the future.

Result

- Recent investment in both Higher Education and the entire school system has seen the establishment of University Centre Peterborough and unparalleled improvement in education performance.
- Peterborough has accelerated the benefits of education into the city's communities and businesses.

OUR SMART CITY SOLUTION

- **Peterborough Graduate Scheme** – 12 part-funded graduates for six months to boost local businesses and tackle their sustainability challenges; raising the profile of University Centre Peterborough
- **Bursary Scheme** – developing homegrown talent with funding for four residents to study an MSc in Sustainability. Creating opportunities for local people and re-investing new skills back into the city to drive Smart City approaches
- **Skills and Innovation Centre** – a brand new, dedicated hub to drive aspiration in local young people through interaction with innovating businesses

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3. Peterborough: City Size

City of Peterborough

Rather than being a disadvantage in the smart city world, smaller cities have numerous advantages when it comes to planning, implementing and operating smart city infrastructure and service projects.

- **Citizen Engagement**
  More social cohesion and sense of local identity. Large metropolitan areas are literally an amalgamation of diverse populations with sometimes conflicting priorities. Social cohesion and feelings of being more connected to the community can be stronger in local communities than in larger cities. There is evidence that citizens of small communities develop a strong common identity and will act to support community goals, which could make developing, approving and funding smart city programs easier.
- **Greater Access**
  Remoteness from the center leads to need for greater access. As a number of small areas are distant from large urban centers, many of these populations suffer from lack of access to critical services that are readily enjoyed by their big city counterparts, such as advanced medicine or world-class education. To empower citizens and businesses in these small areas, there is strong need to bring these services to remote areas.
- **Easier decision making**
  Potential for easier planning, approval, and funding decisions. Decision making is often far less complex and faster in smaller, simpler administrative structures than in cities with large, siloed bureaucracies.
- **Partnerships**
  Small areas are more likely to have fewer internal technical capabilities and financing tools available to them. This implies a greater need to partner with third parties, typically smaller businesses with expertise in specific areas, to bring their visions to life. This brings diversity of thinking, deep expertise and innovation to smaller regions. Similarly, they may be more inclined to embrace public-private funding models to fund smart city programs.

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3. Peterborough: Lessons Learned

Peterborough has created an opportunity to change the way cities think and act, becoming an international leader and incubator for new ideas.

City of Peterborough

Even smaller sized cities can have international impact and become a true future city demonstrator. The key is to punch above your weight.

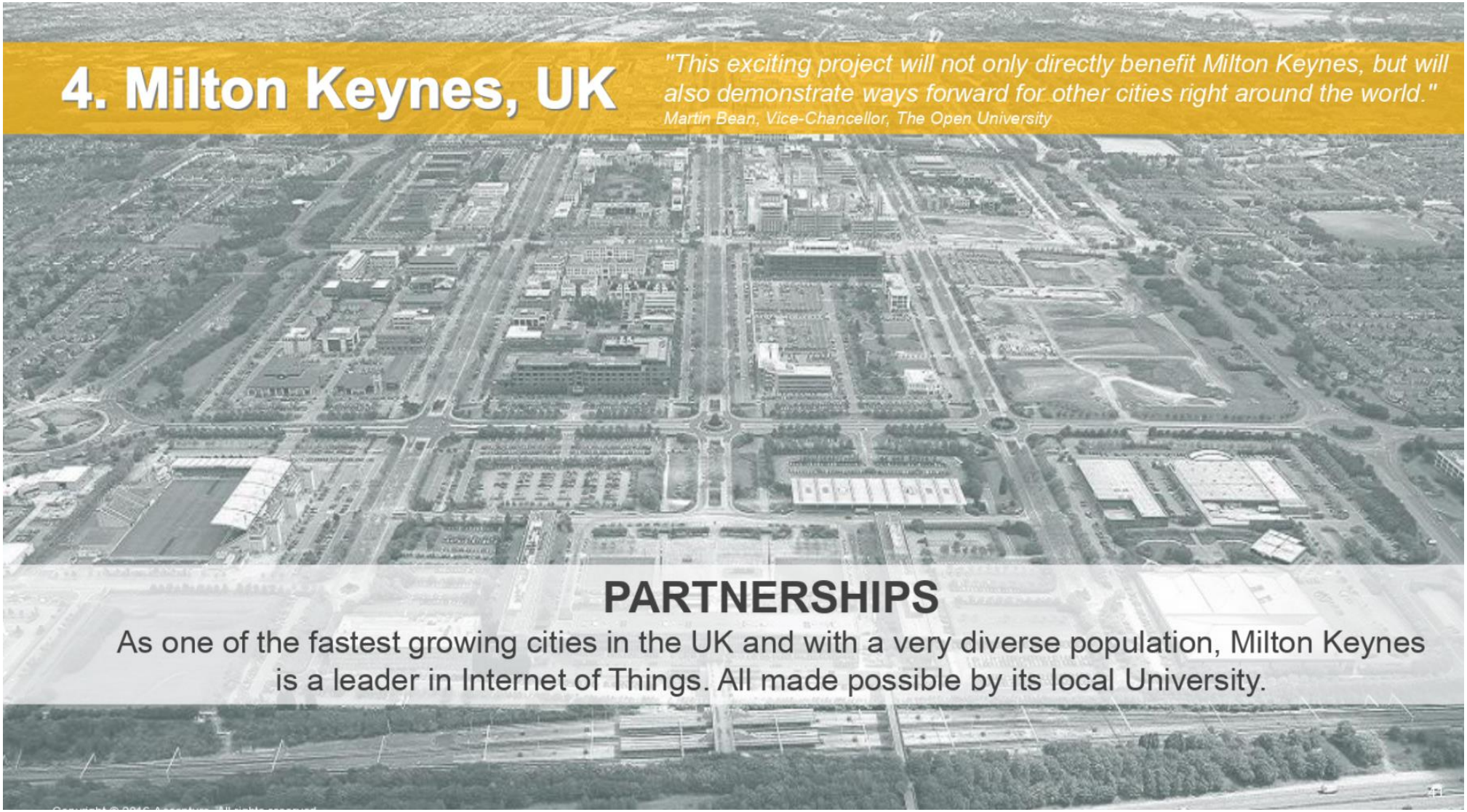
- A primary intention of the original Future City Demonstrator program was to encourage the sharing of lessons learnt and best practices and, crucially, to stimulate international export by bringing British solutions to new markets. Peterborough is raising the profile of the city and its businesses and supporting the UK's presence in the global innovation marketplace.
- Peterborough is showcasing Smart City solutions and leading and engaging in discussions across the UK and Europe. They are raising the profile of UK innovation, smart thinking and collaborative partnerships through expos and conferences and they have also learnt from other countries as the program develops and integrated key insight and learning.

The initiatives being carried out in Peterborough are designed to be blueprints for wider roll out.

- Peterborough's approach is cost effective, highly impactful, and scalable. They have generated and embedded the Smart City frameworks and networks, along with the innovations and interventions, that inspire transformation.
- By becoming an incubator for new ideas and technologies, Peterborough is able to innovate ahead of larger cities and benefit from its leadership position.

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Item 15.7 / Attachment 7.



4. Milton Keynes: Smart City Profile

Milton Keynes is one of the fastest growing cities in the UK and a great economic success story. The challenge of sustainable growth without exceeding capacity of infrastructure, while meeting carbon reduction targets, is a major one.

What?

- Milton Keynes Smart City aims to help secure the future economic growth of the city. It is forecasted to carry on growing, from around 250,000 today to more than 300,000 people in a decade. At the center of this program is the MK:Smart, a state of the art data acquisition and management infrastructure.

Who?

- MK:Smart is a £16m initiative, partially funded by the Catalyst Fund of the Higher Education Funding Council for England's (HEFCE) and led by The Open University, which brings together a higher education and industry partnership.

How?

- Central to the project is the creation of a state-of-the-art 'MK Data Hub' which will support the acquisition and management of vast amounts of data relevant to city systems from a variety of data sources. These will include data about energy and water consumption, transport data, data acquired through satellite technology, social and economic datasets, and crowdsourced data from social media or specialized apps.

Results?

- Milton Keynes has generated new partnerships and ways of thinking and doing amongst its residents, bringing together diverse stakeholders and building strong economic and social ties.

Facts

Main Theme	Partnerships
Stakeholders	• Milton Keynes Council • Open University • Private Sector: British Telecom, E.ON, Playground Energy, Tech Mahindra
Use Cases	• Open Data, Smart Metering
Duration	Ongoing since 2014
Awards	• Finalist 2015 Smart City Award
Links	• http://www.mksmart.org/

Milton Keynes was selected as a peer city because it:

- Originally built as a commuter town for London
- Turned itself around from a commuter town to a city in its own right
- Is experiencing tremendous growth

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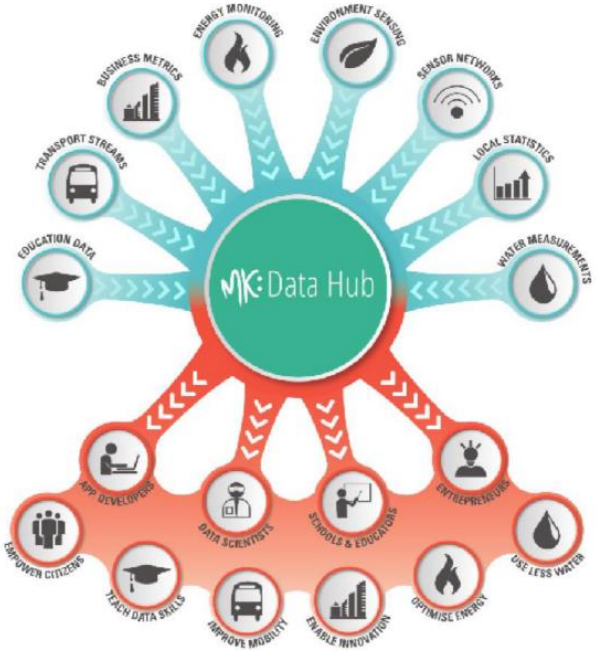
4. Milton Keynes: Smart City Strategy

Milton Keynes has put in place an integrated innovation and support program, which leverages large-scale city data to sustain and accelerate economic growth.

- At the center of this program is the MK:Smart, a state of the art data acquisition and management infrastructure, which will curate and make available a variety of data sources relevant to how the city functions, including: local and national open data resources; data streams from both key infrastructure networks (energy, transport, water) and other relevant sensor networks (e.g., weather and pollution data); satellite data; and data crowdsourced from social media or through specialized apps.

- In particular, the MK Data Hub will make it possible to implement radical new solutions for managing demand, a key enabler to ensure that the city's capacity to reach forecast growth potential of 64% by 2026 can be effectively and sustainably realized.

- MK:Smart also features an integrated programme of business engagement, aimed at supporting businesses that wish to take advantage of the innovation capabilities developed in the program. A key component of this activity will be the Innovation and Incubation Centre (IIC) at University Campus Milton Keynes (UCMK), which will provide training in data-driven business innovation and the digital economy, as well as hands-on support for business development, demonstration facilities, and an incubation space.



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4. Milton Keynes: Partnerships

Milton Keynes Development Partnership (MKDP) will help facilitate continued growth and economic success.

- MKP's strategy is set out in their "A Strategy for Growth to 2031". Their model for the next phase of expansion moves away from grid squares to large-scale, mixed-use, higher-density development, enabled by IoT technology.

- Joining forces with The Open University, Connected Digital Economy Catapult, Future Cities Catapult, and others, Milton Keynes Council formed a Smart City collaboration to rise to this occasion. These partners will help build a city-wide, open access network for Machine to Machine (M2M) communications and the IoT that will enable a smart city. It is estimated that the partnership has the potential to increase employment at a rate of 2,600 jobs per year.

- Milton Keynes is a pioneer in the Smart Cities field, having been invited to join a government-led forum along with just four other cities around the UK. From an early stage they signed Memorandums of Understanding with key partners.

Source: http://www.techmahindra.com/media/press_releases/New_partnerships_put_Milton_Keynes_at_heart_of_400bn_Smart_cities_revolution.aspx

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4. Milton Keynes: Lessons Learned

While MK:Smart is leading the way in partnering with private sector participants in creating data driven smart city solutions, it is having trouble moving beyond the piloting phase

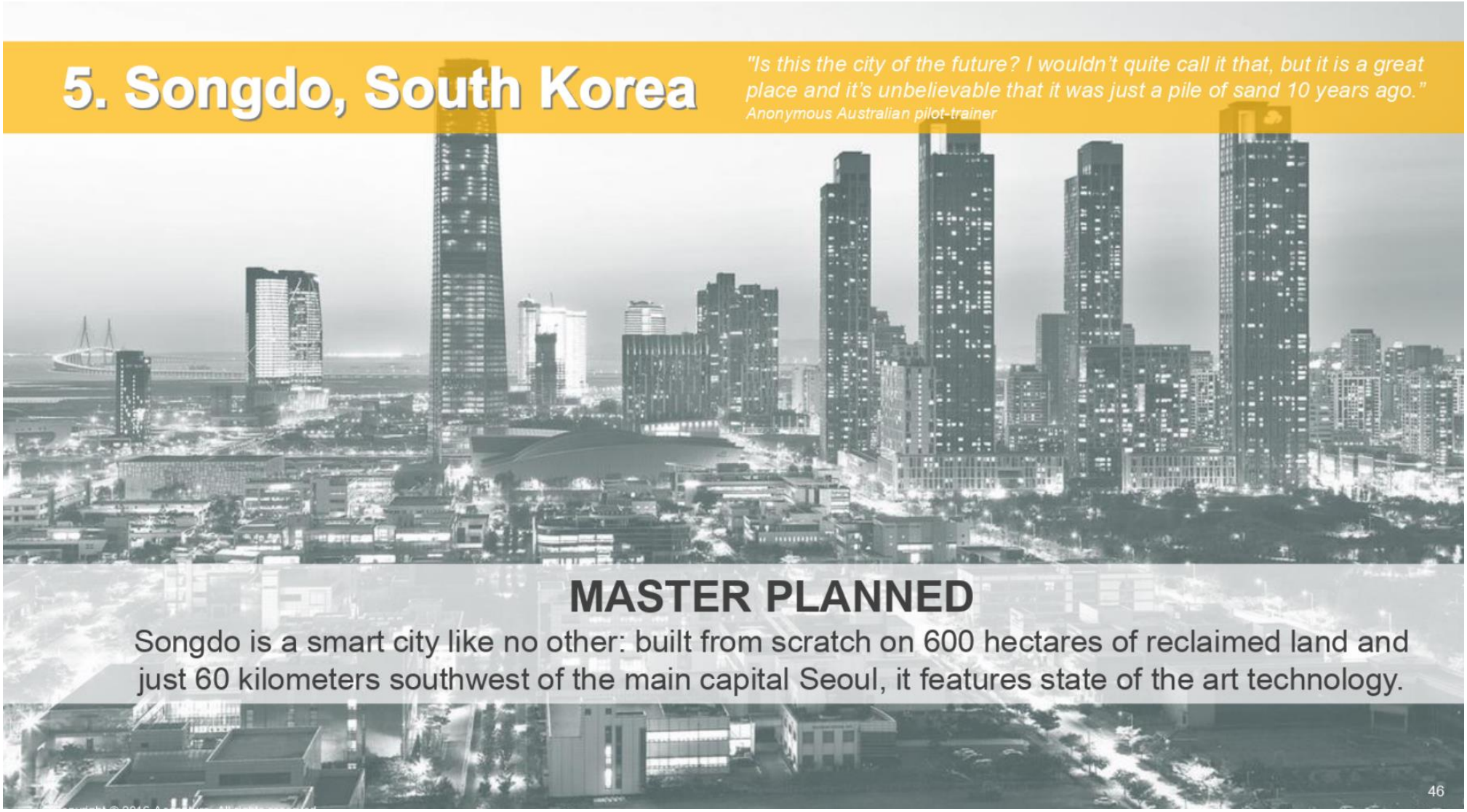
While MK:Smart is able to demonstrate many positive applications of smart-city technologies, it is proving hard to move beyond the demonstration scale

- While MK:Smart is able to demonstrate many positive applications of smart-city technologies, such as improved management of parking and more efficient waste collection practices, it is proving hard to move beyond the demonstration scale. One reason for this could be a reluctance to change traditional service models and approaches, particularly in the delivery of Council services, such as adult social care.
- However, austerity budgets are beginning to change mindsets and the availability of open-source data is beginning to lead to the establishment of small companies seeking to find new economic applications. Over time it is possible that these innovative firms will begin to identify the new business applications that will enable the Internet of Things to contribute to sustainable business models, both for the private and the public sector.

There is an opportunity to use new technology to improve services and city management, but much of the benefit lies in the data being generated.

- To realise the value of this requires a powerful datahub, with dedicated management. The data-centred city may then enable improved urban management, the development of new applications and services, the creation of new economic opportunities, and, crucially, the stronger engagement of local residents.
- To reap these rewards requires a willingness to develop new approaches within public authorities and a commitment to opening up access to data. MK:Smart has undertaken much of the leg work in developing the protocols for open-data collection and is willing to share this experience.

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5. Songdo, South Korea
"Is this the city of the future? I wouldn't quite call it that, but it is a great place and it's unbelievable that it was just a pile of sand 10 years ago."
Anonymous Australian pilot-trainer
MASTER PLANNED
Songdo is a smart city like no other: built from scratch on 600 hectares of reclaimed land and just 60 kilometers southwest of the main capital Seoul, it features state of the art technology.
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5. Songdo: Smart City Profile

Songdo IBD

Songdo International Business District (SIBD) —a district in a larger city name Incheon—was built on reclaimed land on the Yellow Sea. The pace and incentives of Smart City development there have been aggressive

What?

- The International Business District in Songdo is a Smart City that has been built from the ground up (one-of-a-kind planned city).

Who?

Corporations are being given subsidies and are guaranteed no property tax for 10 years (and reduced rates thereafter) if they relocate. Moreover, SIBD is attracting younger residents through international schools and more open space than nearby Seoul.

How?

- One of Songdo's major advantages as a Smart City is its high-speed internet infrastructure which is able to support "Telepresence," in thousands of homes, schools and offices around the city. Applications include citizen services like education, healthcare and counseling. The novel application of prevalent technology made this initiative relevant.

Results?

- Songdo is already 50 percent built, with 30,000 residents, 33,000 jobs and 70% fewer emissions that developments its size. In total, there has been $40bn of investment to date, yet future investment remains uncertain as SIBD's population growth has not been as expected.

Facts

Main Theme	Master planned development
Stakeholders	• Gale International and Posco E&C (developers)
Use Cases	• Smart Buildings, Telepresence, Smart Transportation
Duration	Ongoing since 2006
Awards	• Sustainable Cities Award (Urban Land Institute, Financial Times 2008)
Links	• http://songdoibd.com/

Songdo was selected as a peer city because it:
- Built as an entirely master planned city
- Has based its ability to attract citizens on its innovative technology and underlying ICT infrastructure
- Has not seen the level of growth expected

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5. Songdo: Smart City Strategy

Songdo IBD

Songdo, compared to other major cities, benefits because infrastructure can be built in conjunction with the city's development

- One of Songdo's major advantages as a Smart City is its high-speed internet infrastructure which is able to support Cisco's plan video conferencing service, "Telepresence," in thousands of homes, schools and offices around the city. Applications include citizen services like education, healthcare and counseling. The novel application of prevalent technology made this initiative relevant.

- Cisco's network enables telepresence to connect every home, office and school through video. It also helps regulate electricity and water use in all the city's buildings, curbing waste and cutting operating costs. The system even gives residents the power to control their own energy use. The underlying technology infrastructure that links all buildings together allows some dramatic benefits of 30% energy reduction.

	Projects	Description	Technology	Fund. / Partners	Org Framework
Past	**Smart Waste Disposal**	• Pneumatic piping that removes waste from the city center	• Pneumatic piping across nation	• Undetermined / multiple partners	• Gale International and Posco E&C (developers)
Past	**Water Recycling**	• Smart water capability that separates waste and potable water • High-efficiency system recycles waste water and restores it for public use	• Smart Water Metering System	• Undetermined / multiple partners	
Current	***Video-conferencing System**	• As a main partner of the connectivity in Songdo, Cisco has installed and continues to install its Telepresence service in many homes and businesses	• Video Conferencing	• Cisco	

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5. Songdo: Master-planned Development

Songdo IBD

South Korea is one of the world's most densely populated countries. When the Songdo project began in 2001, there was no available land to build it

- Fifteen hundred acres had to be reclaimed from the sea. Some of world's best planners, architects, builders and technology companies are creating Songdo from the ground up. Until date more than 400 new buildings have been built, including South Korea's tallest skyscraper.

- Songdo took an approach that has the best elements from some of the finest cities in the world. Forty percent of the space is open space. One can leave your car at home and can walk to central park, walk your child to school, visit an office or a retail shopping center, or go to the golf course - all within walking distance.

- Once this infrastructure is complete, it plans to set a standard for all future cities how they're built and the best practices for city planning.



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5. Songdo: Lessons Learned

Songdo IBD

While the pace and incentives of the development of Songdo have been aggressive, the number of people moving to the city has been disappointing

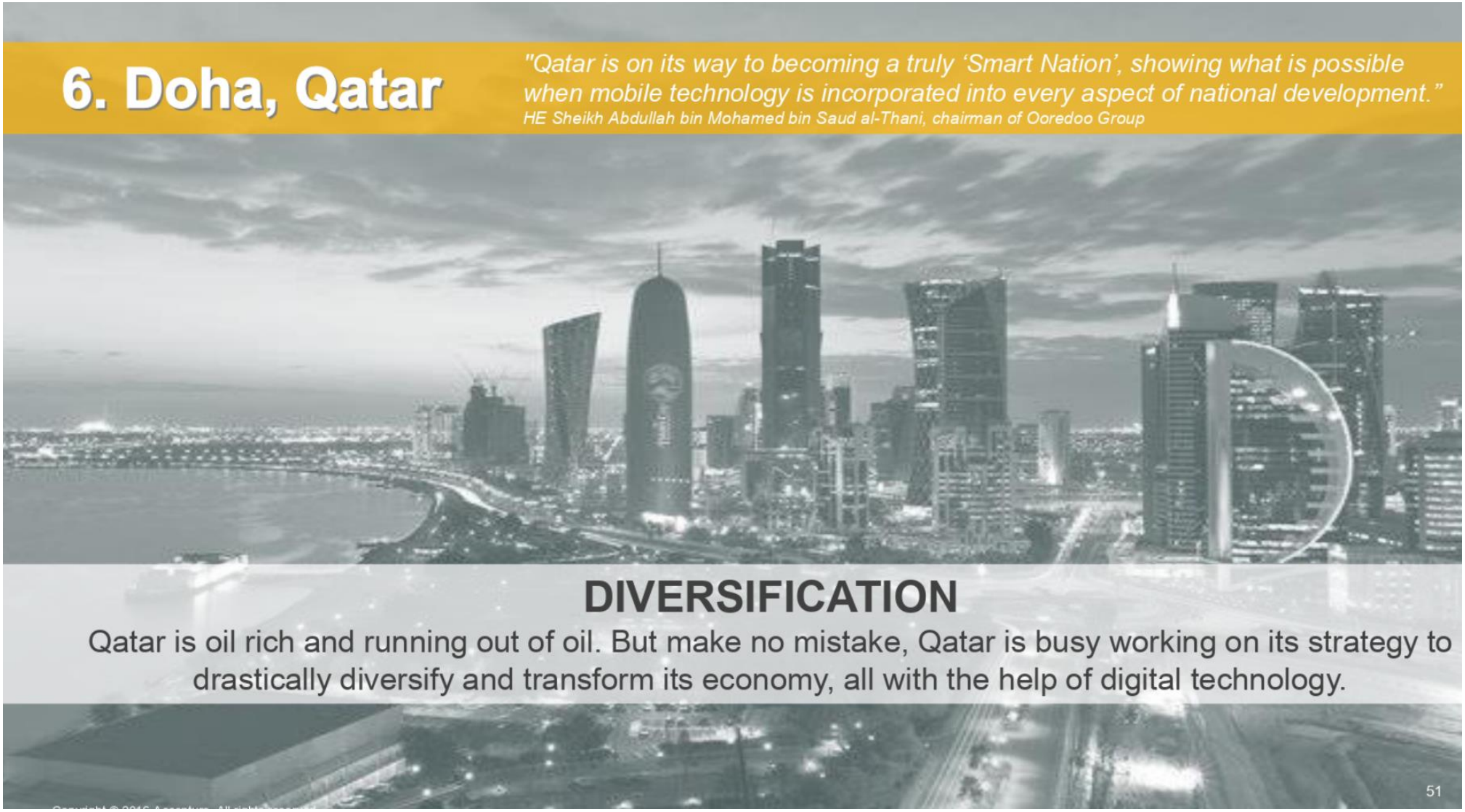
While over $40B USD has been invested to date, population growth has not been as expected. This is a reminder that not all Smart Cities are liveable cities.

- The master plans developed by Incheon City, IFEZ and KPF attempt to materialize grand visions for a technocratic utopia, but resident feedback disrupt these grand visions. The complicated and sometimes contradictory ways that these visions are articulated at different scales highlight the process-oriented production of Songdo.
- As the city comes ever-nearer to its 2020 completion date, it will be interesting to see what will emerge next – 2020 is not the 'end', then, but another node in a web of trajectories that continue to crisscross and produce meaningful, liveable places.

Private sector participants will seek opportunities to invest in new Smart Cities and pilot their technologies.

- Cisco recently announced plans to eventually roll out 20 new cities across China and India, using New Songdo as a template. In the spirit of Moore's Law, each will be done faster, better, cheaper, year after year.
- Cisco calls this Smart+Connected Communities initiative a potential $30 billion opportunity, a number based not only on the revenues from installation of the basic infrastructure but also on selling the consumer-facing hardware as well as the services layered on top of that hardware

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6. Doha, Qatar
"Qatar is on its way to becoming a truly 'Smart Nation', showing what is possible when mobile technology is incorporated into every aspect of national development."
HE Sheikh Abdullah bin Mohamed bin Saud al-Thani, chairman of Ooredoo Group
DIVERSIFICATION
Qatar is oil rich and running out of oil. But make no mistake, Qatar is busy working on its strategy to drastically diversify and transform its economy, all with the help of digital technology.
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6. Qatar: Profile

Qatar aims to invest in a new economy by increasing the share of total economic output of "digital" initiatives, such as digital skills, technology and the accelerators.

What?

- The decision to award Qatar the 2022 FIFA World Cup has fueled a wave of investment in a digital cluster. Qatar is developing policies to create awareness of the need for a sustainable footprint and the challenges it will create for citizens and cities. In order to achieve this, it is investing in the sustainability and growth of Qatar's digital cluster.

Who?

- Qatar has the highest GDP but also the highest CO2 emissions per capita in the world, its economy is mainly driven by oil and gas. While a scarce and expensive energy supply is an important driver of innovation and efficiency improvements in many countries, Qatar has decided to create a plan to drastically transform its economy.

Why?

- Qatar focuses on three key areas:
  - **Digital skills:** the digital nature of occupations and the skills and knowledge required of people to perform their jobs.
  - **Digital technologies:** the productive assets related to digital technologies (hardware, software and communications equipment).
  - **Digital accelerators:** the environmental, cultural and behavioral aspects of digital components of the economy that support digital entrepreneurship or activities

Facts

Main Theme	Diversification
Stakeholders	• Qatar Government, Ooredoo, Microsoft, Lusail
Use Cases	• Smart Transportation, Digital Skills, Digital Services, Smart Buildings
Duration	Ongoing since 2014
Links	• www.ictqatar.qa

Doha was selected as a peer city because it:

- Is experiencing the challenge of having to diversify its economy and move away from a resources-based economy
- Is making a strong push towards developing a digital economy

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6. Doha: Digital Strategy

There are 7 key enablers that are imperative to the successful creation, sustainability and growth of digital cluster

Digital Cluster Key Enablers

Enabling Public Procurement for SMEs:
Strategic use of government as a first customer for services and solutions provided by start-ups, small and medium enterprises to support innovation and growth opportunities

Formalizing and Consolidating Collaboration:
Management of stakeholder engagement at all levels (local, regional and global) through the development of incentive packages and strategic teams

Defining the Right Policies and Regulations:
Development of a comprehensive policy agenda that provides a conducive platform of support for the Digital Cluster Projects and Initiatives

Defining the Supporting Infrastructure and Services:
Identification and development of key requirements that define the cluster's physical manifestation, key services, business model and operational management

Creating a Globally Recognized and Visible Brand:
Creation of a unified brand that connects the different members of the cluster and the execution of a national and international communication strategy to gain visibility and recognition

Enabling the Right Pool of Skills:

Driving the Roadmap Governance Effort:
Guidance, inter-ministerial coordination, management and execution of the key programs and initiatives that define the Digital Cluster Roadmap

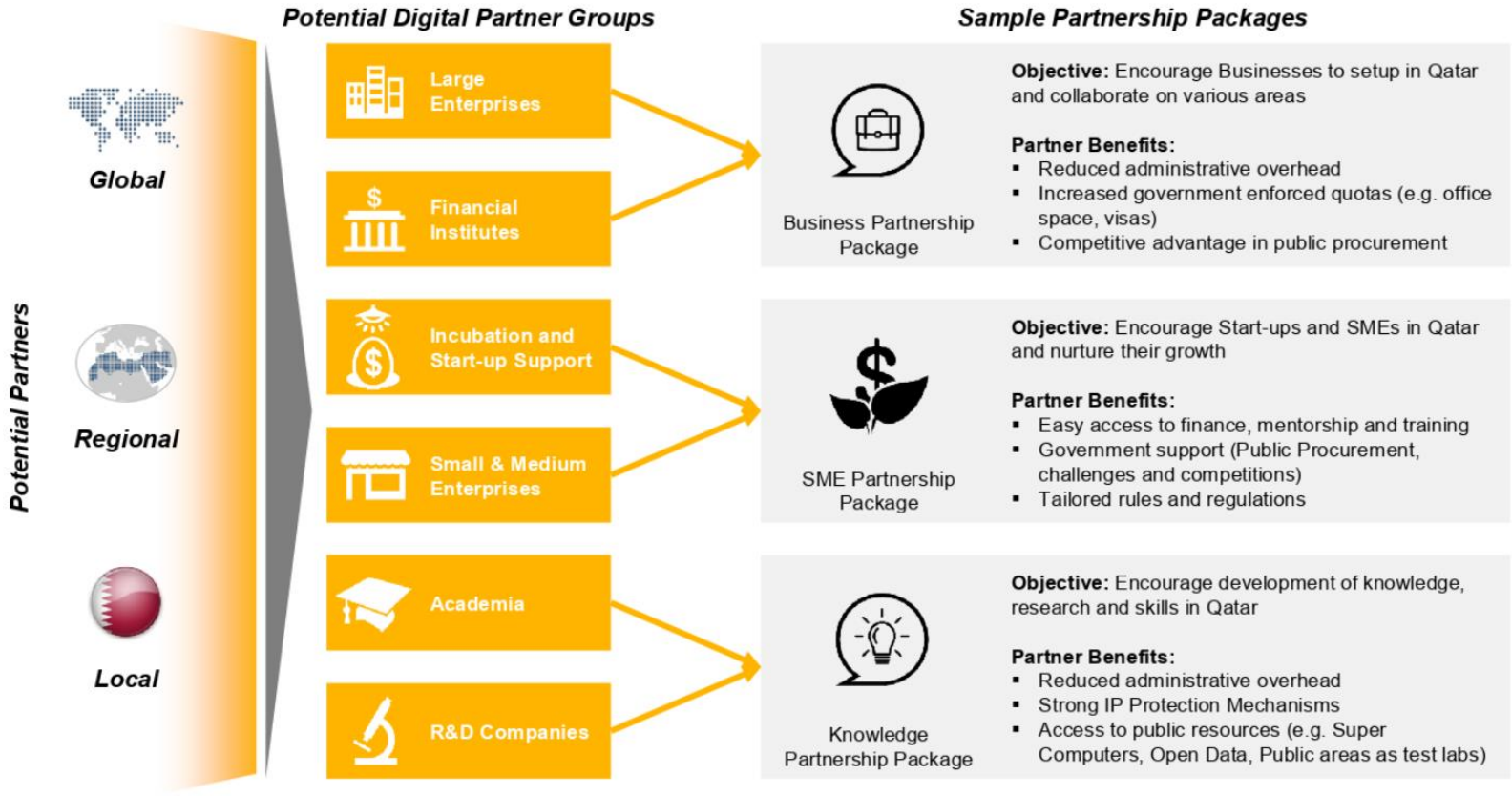
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confidential

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6. Doha: Diversification

Doha aims to use incentive packages to attract different stakeholders that can contribute to the collaboration effort essential to the success of the Digital effort



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6. Doha: Lessons Learned

While organizations are taking advantage of digital technologies, many economies, including Qatar, remain digitally immature. Digital skills and capital represent 22.5% of the world economy and is far from being fully exploited .

The power to connect digital size, scale and outcome lies with businesses, industry sectors and governments. With smarter investments, digital resources, technologies and assets can have a positive influence on competitiveness and help economies and industries drive greater, more sustainable value.

Key actions business leaders and policy makers must take to exploit the growing digital economy, improve their economic opportunities and drive new productivity and growth include:

- **Prioritize digital investments based on value opportunities**
  - Balance digital investments so that an optimal combination of improvements in areas such as skills or technology helps you to deliver the best returns.
- **Compete using an industry-specific digital strategy**
  - Be clear on which platform, what roles, and which data are fundamental to compete successfully in your industry.
- **Create the right environment for digital transformation**
  - Improve your “digital IQ,” teaming with government to open up cross-industry relationships and change the rules of competition.

Source: Accenture Strategy - Digital disruption: The growth multiplier, 2016

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7. Almere, Netherlands
"The early versions of "smart city" concepts propose centralized infrastructure governed by local authorities, the ultimate manifestation of a top-down urban governance approach."
Theodore Novikov, Architectural Robotics founder
FAILED GOVERNANCE?
Setup for growth, this city embarked on a futuristic smart city project. Now it appears its plans were based on legacy urban planning ideals and few people may have benefited from investments.
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7. Almere

Gemeente Almere

Almere, a suburb to Amsterdam, is destined for strong growth in the next twenty years and is gearing up to become a safer, healthier and more liveable and environmentally-aware city.

- A consortium of Cisco, IBM, Liander, Living PlanIT and Philips has worked to create a 'smart society' with the Almere Economic Development Board through smarter deployment of ICT, people and resources in urban management and development. The Almere Smart Society vision promotes more efficient urban management, innovation and economic growth, strong social cohesion and sustainable development.

- Recent news reporting highlights that the smart city budget of 450,000 Euros was largely spent on just a manager and an assistant. It also reveals that a majority of citizens had never heard of the project or had seen no benefits from the efforts undertaken.

- Local political parties have recently debated with the council to get transparency on results. This type of centralized approach is a manifestation of a top-down urban governance approach that does not engage its citizen and fails to get tangible results.

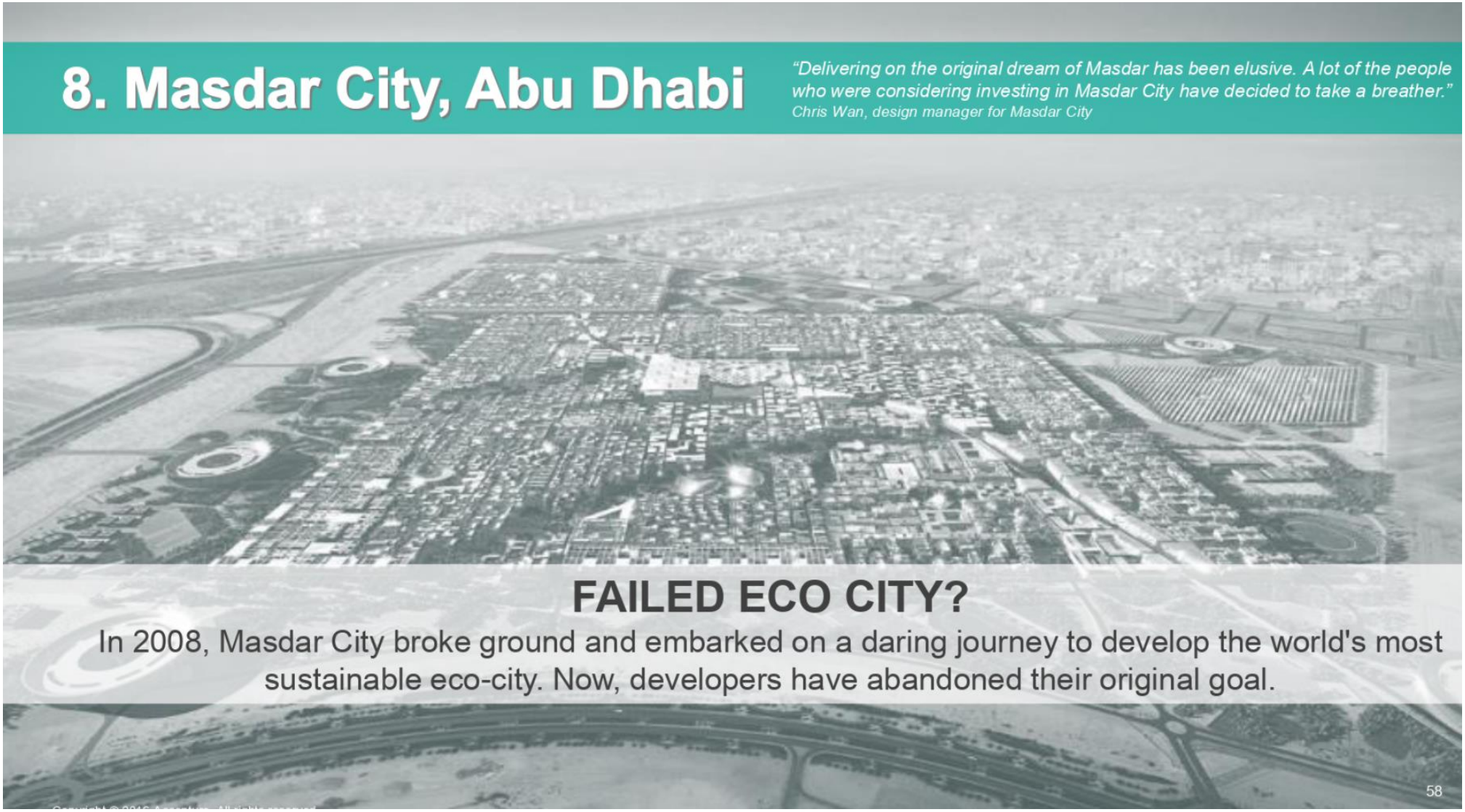
Facts

Main Theme	Failed Governance?
Stakeholders	• Almere Economic Development board • IBM, Liander, Living PlanIT and Philips
Use Cases	• Smart Metering, Smart Buildings
Duration	Ongoing since 2013
Links	• http://amsterdamsmartcity.com/projects/detail/id/30/slug/almere-smart-society

Almere was selected as a peer city because it:
- Serves as a "suburb" to Amsterdam
- Feels a strong need to distinguish itself from Amsterdam and become a city in its own right
- Is projected to grow considerably in the next few decades

Sources (in Dutch):
http://www.dichtbij.nl/almere/regio/artikel/4236211/geld-almere-smart-society-ging-voornamelijk-naar-manager-.aspx

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8. Masdar City, Abu Dhabi
"Delivering on the original dream of Masdar has been elusive. A lot of the people who were considering investing in Masdar City have decided to take a breather."
Chris Wan, design manager for Masdar City
FAILED ECO CITY?
In 2008, Masdar City broke ground and embarked on a daring journey to develop the world's most sustainable eco-city. Now, developers have abandoned their original goal.
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8. Masdar City

Developers have abandoned their original goal of building the world's first zero-carbon city in the UAE desert. Masdar's dream could become world's first green ghost town.

- When Masdar City began, in 2006, the project was touted as a model for a green mixed-use urban landscape: a global hub for the clean tech industry, with 50,000 residents and 40,000 commuters. With the downward pressure from oil prices, the UAE has stepped up its efforts to wean itself off oil, lifting fossil fuel subsidies and billing Emiratis for water and electricity.

- Ten years on, however, only a fraction of the town has been built - less than 5% of the original six square km. The completion date has been pushed back to 2030.

- Delivering on the original dream of Masdar has been elusive. Plans withered in the global economic recession which soon followed when investors put their green dreams on hold. A lot of the people who were considering investing in Masdar City decided to take a breather. Today, fewer than 3,000 people work and live in the city.

Facts

Main Theme	Eco City
Stakeholders	• Masdar City, Abu Dhabi government • Siemens, Foster Partners,
Use Cases	• Renewable Energy, Smart Transportation, Smart Buildings
Duration	Ongoing since 2006
Links	• http://www.masdar.ae/

Masdar City was selected as a peer city because it:
- Built as an entirely master planned city
- Has not seen the level of population growth expected
- Has suffered unexpected setbacks from dependency on a resources-based economy

Sources:
http://www.theguardian.com/environment/2016/feb/16/masdars-zero-carbon-dream-could-become-worlds-first-green-ghost-town
http://www.fastcoexist.com/3035446/eerie-video-shows-masdar-city-the-sustainable-city-of-the-future-has-no-one-in-it

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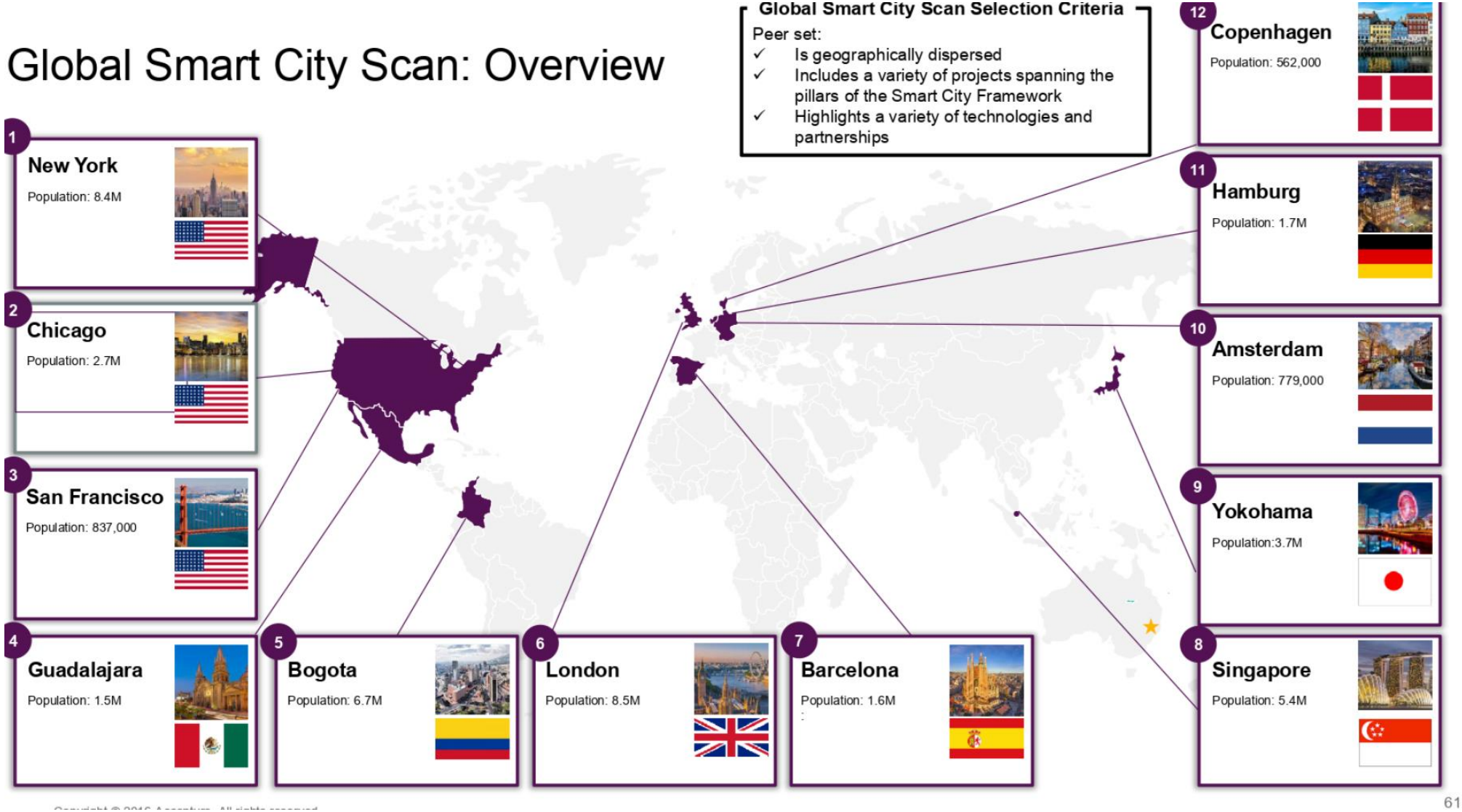

Smart City Definitions
Patterns of Success
Peer City Case Studies
Global Smart City Scan
Ipswich
Advance Ipswich
JEWELLERS
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Global Smart City Scan: Overview

Global Smart City Scan Selection Criteria

Peer set:

- ✓ Is geographically dispersed
- ✓ Includes a variety of projects spanning the pillars of the Smart City Framework
- ✓ Highlights a variety of technologies and partnerships



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1. New York City: Profile

New York is working with corporations, educational institutions, and tech centers in order to expand analytics in the city and provide improved quality of life for its citizens and tourists.



Key Themes	**Analytics, city improvement, tech ecosystem**
Key stakeholders	City of New York, Cornell Tech
Smart City Use Cases	Public safety, education, customer service, technology
Smart City Framework pillars	Smart People, Smart Living, Smart Government, Smart Economy

Smart City Strategy Summary

- **Data analytics** to improve customer service and citizen well-being.
  - NYU's Center for Urban Science and Progress partnered with New York City's Hudson Yards neighborhood to build the nation's first "quantified community." The 17 million square feet of commercial and residential land, currently in Phase 1 development, will track data on air quality, pedestrian traffic, energy production and consumption, and the health and activity levels of workers and residents. There will be a school, hotel and 14 acres of public space along with an on-site power plant and central waste-management system
    .
- **Education and entrepreneurial** focus to create jobs and solve city problems

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1. New York City: Use Cases Overview

New York is working with corporations, educational institutions, and tech centers in order to expand analytics in the city and provide improved quality of life for its citizens and tourists



Projects	Description	Technology	Fund. / Partners	Org Framework
NYC 311	• Public service call center solution to provide optimal customer service for New York City residents • Single, integrated communication channel for residents to receive information, file complaints, and resolve issues	• Data analytics • Systems integration	• NY Department of Information Technology and Telecommunication • Mayor's Office of Operations • Accenture	• City of New York partnerships with large corporations and educational institutions
DataBridge	• Enterprise level analytics platform with tools, processes and org structure to increase public safety, deliver services efficiently, and protect city finances	• Data analytics and management • Business intelligence	• City of New York • Accenture	
Cornell Tech	• New Cornell tech graduate school campus that will offer classes focused on computer science, business and entrepreneurism	• Solar panels • Geothermal wells • Science and engineering to make a difference in the world	• City of New York • Cornell University • Irwin and Joan Jacobs (of Qualcomm)	

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1. New York City: Case Study

The City of New York partnered with Accenture on the DataBridge project to build an analytics infrastructure, assess available data, and create a model for sustainability



Deep-Dive

- In 2013, Mayor Michael Bloomberg launched the Mayor's Office of Data Analytics (MODA), a department focused on creating cross-agency data transparency to help make informed decisions and to root out fraud and waste
- The City chose to work with Accenture to design and implement DataBridge, an analytics infrastructure
- The project built an end-to-end infrastructure, assessed available city data, and created scalable structure to support growth and sustainability
- City employees can now prioritize issues and better allocate issues, make more informed decisions, and identify patterns in data to reduce risk

Stakeholders

Stakeholders	Benefits	Risks/Contributions
City of New York	• Save revenue, increase operational efficiencies, and improve public safety • Save lives by helping avoid human catastrophe	• City wide data
Accenture	• Cutting edge project with quantifiable results and positive press	• Analytics infrastructure

Takeaways

- Successful and high-profile city project that continues to drive quantifiable results
- City of New York can now: prioritize issues and better allocate resources, make decisions based on true need, identify high risk-or high-cost activities, identify patterns in data to reduce risk and stop problems before they happen, and identify and reduce instances of fraudulent, wasteful, abusive, and erroneous activities/transactions

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2. Chicago: Profile

Chicago is partnering startups and entrepreneurs with educational institutions and corporations to help solve problems in the city. A focus on open data and analytics is present in many use cases.

Key Themes	**Open data, analytics, sensors**
Key stakeholders	City of Chicago
Smart City Use Cases	Urban planning, public health, array of things
Smart City Framework pillars	Smart Living, Smart Environment

Smart City Strategy Summary

- **Entrepreneurial focus** to create jobs and to solidify Chicago as a robust technology hub

- **Strong partnerships** between the city, corporations, and educational institutions and labs to increase collaboration and opportunity
    - The Array of Things (AoT) project, launched last summer in partnership with the city, has set out to "smarten" Chicago by placing sensors everywhere with the objective to publish (free and open) environmental data about the city. The project is led by researchers from the Urban Center for Computation and Data of the Computation Institute, which is a joint initiative of Argonne National Laboratory and the University of Chicago.

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2. Chicago: Use Cases Overview

Chicago is partnering startups and entrepreneurs with educational institutions and corporations to help solve problems in the city. A focus on open data and analytics is present in many use cases.

Projects	Description	Technology	Fund. / Partners	Org Framework
UI Labs	• Research and commercialization collaborative that aims to define problems, design partnerships, and create scalable solutions • Working on underground infrastructure mapping and smart building data services	• Digital manufacturing • 3D printers • Data analytics	• U.S. Department of Defense • City of Chicago • Universities	• City of Chicago works with educational institutions and corporations
Array of Things	• Urban sensing project that will install modular sensor boxes around Chicago to collect real-time data on the city's environment, infrastructure, and activity	• Open data • Sensor boxes	• National Science Foundation • University of Chicago • Argonne National Laboratory	
1871 Entrepreneurial Hub	• Co-working and collaboration space for startups that fuels innovation and entrepreneurship. Received $2.5M in funding from the State of Illinois	• Varies	• Chicagoland Entrepreneurial Center • State of Illinois	

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2. Chicago: Case Study

In 2014, the State of Illinois funded the construction of the 1871 Innovation Hub, a not-for-profit incubator for tech startups that has graduated 80+ companies and created 2,500+ jobs in the Chicago area.



Deep-Dive

- 1871 opened its doors in 2012 with support from J.B. Pritzker, the state of Illinois, and corporate sponsors such as Comcast and Cisco Systems. It is the city's most high-profile space for startups
- As of January 2015, 80 companies graduated from 1871 and created 2,500 jobs in the Chicago area
- The center offers desks to rent, has partnerships with VCs and universities, and offers mentoring and workshops for its entrepreneurs
- 1871 ranked 1st in the U.S. in the UBI Global list of Top University-Affiliated Business Incubators in 2015

Stakeholders

Stakeholders	Benefits	Risks/Contributions
State of Illinois	• High-profile area for startups brings more jobs and positive press to Chicago • Stronger start-up scene in Chicago	• Potential loss of public support due to non state funded competitors (i.e. WeWork)
Citizens of Chicago	• Creation of 2,500+ jobs • Entrepreneurial ideas and companies may be created to benefit citizens	• Tax payer money provided to areas that do not directly impact many citizens

Takeaways

- Successful and high-profile Innovation Hub that has garnered a lot of positive press and created many jobs
- To continue with the rate of growth witnessed till date will require additional funding. It will be interesting to watch if taxpayers may approve of further investments by the city

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3. San Francisco: Profile

Initiatives have been developed to ensure no citizen is without access to internet and each citizen is well-aware of how to find and access basic city services. San Francisco's power initiatives are best-in-class.



Key Themes	**Citizen-facing tech, education, open data, Efficient transportation (EV+)**
Key stakeholders	City and County of San Francisco
Smart City Use Cases	Open data, free Wi-Fi, SF Electric drive
Smart City Framework pillars	Smart Government, Smart Living, Smart Mobility

Smart City Strategy Summary

- San Francisco has been long in the process of using **shared mobility, public transit, and connected automated vehicle technology** to reduce the city's congestion problems and free up parking and street space
- SF provides its residents with a large number of **free Wi-Fi hotspots**
- City really excels is in **green and sustainability initiatives** (in recycling, energy conservation and electric charging stations)

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3. San Francisco: Use Cases Overview

Initiatives have been developed to ensure no citizen is without access to internet and each citizen is well-aware of how to find and access basic city services. San Francisco's power initiatives are best-in-class.



Projects	Description	Technology	Fund. / Partners	Org Framework
Open Data	• Over 200 open data APIs (2x Seoul, almost 3x Amsterdam) incl. transport, energy and health • App-based Civic engagement platforms for vocal, problem-solving citizens • Non-emergency services reported and requested through smart phone	• Centralized clearinghouse supporting Open Data for developers	• Socrata Open Data Network	• Initiatives primarily from the Dept. of Technology and Dept. of Environment
Free Wi-Fi	• All residents have internet access including free, city-wide Wi-Fi	• Fiber and smart mesh comms network	• Microsoft, Boingo, Ruckus Wireless	
*SF Electric Drive	• Incentives and info for consumer EV uptake • Programs transitioning businesses to EV fleets • PG&E proposal to build addt'l charger stations	• Web & app connected EV charging stations	• ChargePoint • PG&E	• ChargePoint: programming • PG&E: infrast.
SFpark	• Installation of smart parking meters that accept payments by credit card and phone • Dynamic pricing: prices adjusted based on demand	• Installation of sensors to each parking space to know when they were being used, and for what length of time • An app to help drivers find parking	• Streetline (parking space in-ground sensors) • Federal funding	• Initiative implemented by the SFMTA (San Francisco Municipal Transportation Agency)
Smart City Platform	• Dedicated Internet of Things network that will provide low-cost, energy-efficient and two-way connectivity for smart-city programs	• SIGFOX wireless network	• SIGFOX	• Collaboration between the Department of Technology, the Mayor's Office of Innovation, the San Francisco Public Library, and other critical leadership

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3. San Francisco: Case Study

The program consists of incentives to encourage adoption of EV'S by consumer and businesses with the installation of 25,000 Level 2 chargers and 100 DC fast chargers at strategic locations.



Deep-Dive

- SF Electric Drive is aimed to increase EV adoption in the Bay area
- Several programs and incentives have been rolled out to encourage adoption, such as a recently announced collaboration between BMW and PG&E, who will pay EV drivers $1,540 annually to charge their EVs at hours off peak demand
- Pacific Gas & Electric has proposed a $653.8 million build-out of EV charging stations throughout northern and central California using ratepayer dollars ($.70/customer/month)
- The effort would contribute 25,000 Level 2 charging stations to the California EV infrastructure (supporting California's goal of 1.5M EV by 2025)
- Consumer advocates argue that such significant investment in an unproven technology should not be passed on to ratepayers; other EV charging stations owners and operators, (e.g. ChargePoint) insist PG&E's proposal is monopolistic in nature and will restrict competition in EV infrastructure

Stakeholders

Stakeholders	Benefits	Risks/Contributions
EV Users	• Increased access to charging points • Reduced range anxiety	• Utility bill charge, less if not rate based
Non-EV Users in PG&E Service Area	• Increased incentive to adopt EVs with infrastructure build-out	• If no intent to adopt EV, paying for a service with no personal impact due to rate basing for all customers in service area
Municipality of SF	• Avoided investment through private infrastructure build-out • Steps toward meeting state emissions goals	• Regulatory approval and oversight
PG&E	• Additional rate base-able infrastructure assets if they have their way	• Risk that EVs don't meet adoption goals, stuck with oversupply of EV infrastructure
ChargePoint	• New EV locations to operate	• No involvement in ownership or capital investment of EV Stations

Takeaways

- SF Electric Drive and the associated proposals from industry players such as PG&E and ChargePoint represent the single largest push to build-out EV infrastructure and encourage adoption of electric vehicles
- California is making a bet on EVs as the low-emission vehicle of the future

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4. Guadalajara: Profile

The city has become an entertainment and media ICT hub through the development of a world leading center of innovation and creativity in the creative arts known as Ciudad Creativa Digital (Digital Creative City).



Key Themes	**Entertainment and media, Internet of Things, Education**
Key stakeholders	National Government (ProMexico)
Smart City Use Cases	Citizen services, city administrative services, city operations services
Smart City Framework pillars	Smart Government, Smart Living, Smart Economy

Smart City Strategy Summary

- Focus on fostering education, knowledge-sharing and business around the **digital creative arts**
- Leverage infrastructure, financial private and public investments and support from national government to **accelerate the organic growth of a digital cluster**
- Partner with Carlo Ratti, Director of MIT Senseable City Lab to design the City
- Emphasize **urban planning, mobility and sustainability** to create a unique and attractive city

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4. Guadalajara: Use Cases Overview

The city has become an entertainment and media ICT hub through the development of a world leading center of innovation and creativity in the creative arts known as Ciudad Creativa Digital (Digital Creative City).



Projects	Description	Technology	Fund. / Partners	Org Framework
Citizen Services	• Opportunity for citizens to digitally organize and collaborate on city initiatives	• Collaboration Platform	• Cisco	• Ciudad Creative Digital
*City Administrative Services	• Consists of multiple projects aimed at monitoring and administering city-wide services	• Citywide Wi-Fi • Smart+Connected City Operations Center		
Miscellaneous City Operations Services	• Although services haven't been defined, there are a wide-range of possibilities involving connectivity for parking, traffic management and waste management	• To be determined with finalization of projects		

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4. Guadalajara: Case Study

The implementation of free public Wi-Fi has been instrumental for the city's vision to be known as a center of creativity as it enables its population—especially the underprivileged—to learn and contribute on a global scale.



Deep-Dive

- One of ten cities chosen to participate in IEEE's Smart Cities Initiative
- Initiative relies on participation and contribution of Guadalajara's tech industry
- The impetus for the Wi-Fi was for Guadalajara to embrace the Internet of Things, smart grids, e-health and augmented reality leveraging its extensive tech industry and free Public Wi-Fi
- Guadalajara intends to provide 24 hour wi-fi access and implement in 125 parks and public spaces throughout the city
- Guadalajara is uniquely positioned to implement various smart city initiatives by utilizing a mesh network to communicate with smart devices, collect data and manage infrastructure assets such as streetlights and traffic signals
- Along with other Smart-City initiatives, Guadalajara is partnering with Cisco to implement the first steps including city administration projects, such as smart building design and connection of city systems to miscellaneous sensors
- Wi-Fi network will also provide access and control of for smart public safety operations, parking, traffic, lighting and waste management.

Stakeholders

Stakeholders	Benefits	Risks/Contributions
Citizens of Guadalajara	• Free public Wi-Fi • Future potential for smart city initiatives	• Privacy and data security concerns
Municipality of Guadalajara	• Provide citizens with useful technology infrastructure • Collect data on usage • Establish base system for eventual mesh network and smart device deployment	• Capital investment in public Wi-Fi system
Cisco	• Test smart city initiatives in a city uniquely suited to the deployment of a widespread suite of technologies	• Opportunity to build the foundational ICT enabled framework • Test bed for new technology solutions

Takeaways

- By installing an extensive public Wi-Fi network, Guadalajara preemptively prepared itself to become a smart city by establishing a base for the mesh network necessary to deploy smart devices throughout the city
- Creating a mesh network for device connectivity is a fundamental first step for any city interested in wide-scale smart project deployment

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5. Bogota: Profile

Bogota set out to reinvent the city by engaging with its citizens through a crowd-drive campaign known as “Set the Heartbeat of Bogota” that fostered ideation and resulted in project proposals.



Key Themes	**Citizen engagement, efficient transportation, government transparency**
Key stakeholders	Chamber of Commerce with high citizen engagement
Smart City Use Cases	Public transit, open data, Internet access
Smart City Framework pillars	Smart Mobility, Smart Government, Smart Living

Smart City Strategy Summary

- **Addressing traffic congestion** through congestion pricing, the largest Bus Rapid Transit system in the world, extensive and systemic design of bike paths, a bike sharing system and deployment of an electric fleet of taxis
- **Attention to digital inclusion** by providing free access to public Wifi, Centers of Digital Inclusion (targeting women), declaring October as the month of ICT (with hundreds of related activities), a program to invest in ICT proposals (Bogota Piensa TIC) and the creation of a Masters in Free Software.
- Tackling key issues through a **wide, but focused range of systemic, city-wide initiatives**

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5. Bogota: Use Cases Overview

Bogota set out to reinvent the city by engaging with its citizens through a crowd-drive campaign known as "Set the Heartbeat of Bogota" that fostered ideation and resulted in project proposals.



Projects	Description	Technology	Fund. / Partners	Org Framework
Electric or Hybrid Public Transit	• Bogotá boasts the largest fleet of EV taxis in South America and one of the largest internationally	• Electric Vehicles	• BYD (Taxi) • Volvo (Bus)	• Dept. of Transport
*Open GIS Data	• In order to assist, public admin, business mgmt. and tourism, Bogotá developed a database of geospatial data.	• Open Data Network	• Undetermined	• Specific spatial data group with oversight from city government
Improved Internet Access	• As a matter of driving gender equality and citizens' access to the internet, Bogotá is ensuring connectivity to classrooms in women's centers across the city	• Laptops, LED televisions and other classroom tech	• Mayor, Secretary of Women, Women's Inclusion Center	• Mayor of Bogota and Secretary of Women

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5. Bogota: Case Study

Since 2004, Bogotá has provided open-source GIS data to government officials and citizens in order to deploy city management and improvement projects through geospatial data analysis.



Deep-Dive

- The Infrastructure of Spatial Data for the Capital District (IDECA) institutionalized the management of geographical information by developing official policies and standards for the city of Bogotá
- Several useful applications implemented through open-source geospatial data analysis
- Principal application created, *Tu Bogotá* shares information related to housing or investment: Initiative makes land values more transparent for citizens in order to address housing issue
  - Other uses include displaying nearby landmarks for tourism and the in-app ability of alerting city of areas that may need attention from a civil service
- Bogotá's other applications act as the foundation to administer other geographically dependent services (waste management, emergency services, etc.): Maps Portal, Registration System of Geographic Items and Management System of Geographic Metadata

Stakeholders

Stakeholders	Benefits	Risks/Contributions
Citizens of Bogotá	• Access to geospatial datasets to create useful applications for citizens, such as Tu Bogotá	• Data privacy, security concerns related to open source
Municipality of Bogotá	• Ability to crowdsource the generation and analysis of geographical information to aid in city management	• Over-reliance on technology and virtual evidence to inform city management activities

Takeaways

- Availability of high quality geographical information is often taken for granted--ability to leverage GIS analysis is dependent upon high-quality, accurate data
- GIS can save cities tremendous time and effort on activities such as city planning, water management and municipal reporting
- City support of the GIS industry creates well-paying, highly skilled jobs that in turn provide citizens and officials with useful geographical information and tools

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6. London: Profile

London is focused on delivering value to its citizens and visitors through digital initiatives that improve the city. It has leveraged open data to combat problems such as traffic and healthcare management.



Key Themes	**Open Data, Efficient Transportation**
Key stakeholders	City of London
Smart City Use Cases	School attendance, traffic management, healthcare management
Smart City Framework pillars	Smart People, Smart Mobility, Smart Living

Smart City Strategy Summary

- **Adaptive Urban Logistics** to address congestion and pollution and provide a holistic digital view of infrastructure
  - Backed by the London Mayor's Office, a Smart City Challenge is being run by companies like Transport for London and IBM, who are offering a total prize of £750,000 for developers and entrepreneurs to use the Internet of Things, the cloud and other technologies to address the biggest infrastructure challenges faced by Londoners.

- **Digital and Organizational Integration** to integrate a digital infrastructure with an associated performance management framework

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6. London: Use Cases Overview

London is focused on delivering value to its citizens and visitors through digital initiatives that improve the city. It has leveraged open data to combat problems such as traffic and healthcare management.



Projects	Description	Technology	Fund. / Partners	Org Framework
London Schools' Open Data	• Interactive map including schools and their attendance	• Open Data platform that marries multiple data sets	• Datapress	• Greater London Authority (transport, policing and fire/emergency) works with local authorities and corp. partners
Mobile Enabled Traffic Management	• Traffic management systems that move beyond fixed data sensors by gathering info from mobile, Twitter, Bluetooth, SatNav, etc.	• Cooperative system (CoSy) marrying multiple sources of data	• Not Determined	
*Health Connection Database	• Improve the communication with the National Health Service and Londoners through a single point of access • Modeled after New York's 311 system	• Advanced CRM including multi-channel requests and case-handling	• Originally Microsoft, later replaced by a custom solution from Optevia	

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6. London: Case Study

In 2014, the UK National Health Service rolled out an IT patent care system to address operational flaws in their legacy system, an initiative that leveraged ICT to make critical and visible changes..



Deep-Dive

- After spending almost $15.4 Billion of taxpayer dollars to implement a patient record system for all of England, the National Health Service (NHS) eventually scrapped the plan for the original system in 2013
- The Health and Social Care Information Centre (HSCIC) re-built the national IT system for patient care (known as "NHS Spine") and rolled it out in late 2014
- The database hinged on a Smart City effort to establish shared architecture, standards and other national services for citizen needs.
- Data privacy was considered an utmost concern in the implementation of the initiative
- In response to the prior failure, the new system emphasizes public oversight of HSCIC's management of the IT system, including open access to salaries and other project management data
- Over the next five years, the HSCIC has established goals to revolutionize health and social care leveraging of technology, data and information

Stakeholders

Stakeholders	Benefits	Risks/Contributions
UK Citizens	• Eventual open-access healthcare data to better inform decision making	• Billions of pounds wasted on inefficient system implementation
UK Government	• Modernization of patient record IT management system • Access to troves of data for informing public health policy	• Known as one of the worst IT system implementations in history • Billions of dollars wasted • Loss of public support for initiative
IT Service Providers	• For firms who successfully salvaged implementation, the eternal gratitude of the UK Government	• Eyesore for firms and IT systems (Microsoft CRM system, etc.) incapable of enabling roll-out

Takeaways

- Although eventually successful, the NHS IT system overhaul is a case study on the inefficiency of government in managing large-scale, transformational initiatives
- $15.4 Billion in taxpayer funds were spent on a project with an original budget of $9 Billion, without delivering sufficient end-results

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7. Barcelona: Profile

Barcelona is a pioneer in smart city solutions and has projects focused on smart water, open government, energy sufficiency, and connected tourism.



Key Themes	**Open data, citizen engagement, zero-emissions transportation**
Key stakeholders	City Council of Barcelona
Smart City Use Cases	Smart Water, open government, energy, tourism
Smart City Framework pillars	Smart Environment, Smart Government, Smart Economy

Smart City Strategy Summary

Barcelona is a smart city that applies innovative solutions in its management of services and resources, in order to improve the quality of people's lives.

- **Automation and open data** focus to drive self-sufficiency and data programs
- **Social networks** to connect tourists and locals and improve city experience

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7. Barcelona: Use Cases Overview

Barcelona is a pioneer in smart city solutions and has projects focused on smart water, open government, energy sufficiency, and connected tourism.



Projects	Description	Technology	Fund. / Partners	Org Framework
Smart Water Projects	• Automatizing, testing and remotely controlling irrigation systems, fountains and sewage	• Remote Irrigation • Telemetry water system	• Wonderware • Elecnor • Abertis	• Water utility manages partners
Open Government	• Electronic administration service that promotes public access to data including web access and 44 "Citizen's Attention" kiosks	• Open data platform • Kiosks for open access	• Cisco • Microsoft • Bismart	• City manages partners
Energy Self-Sufficiency	• Set of projects aimed at producing and managing the city's own energy	• Microgrids, connected buildings	• Endesa/GDF Suez • Schneider Electric	• City manages partners
Connected Tourism	• Social networks connecting tourists and locals	• GIS of Tourism • Smart Shopping	• None	• Government of Catalonia

*Barcelona is also doing other projects such as: connected urban lighting management platform, installing defibrillators in all public spaces, open data platform, developing 40+ apps for citizens, City Operating System platform, smart city campus, automatic refuse collection system, smart public irrigation systems, public Wi-Fi network, optic fiber network, recharging stations for electric vehicles, electric taxi fleet, shared biking system, biking lanes, smart traffic signals and crossings, smart parking and smart bus stops.

7. Barcelona: Case Study



Barcelona's smart water project connected 178 irrigation points in Barcelona to a centralized, internet-controlled system to improve citywide water irrigation efficiency.

Deep-Dive

- $230M investment of taxpayer funds to remake an industrial neighborhood called 22@Barcelona
- Barcelona restructured its irrigation system into a smart water management system which utilizes in-ground sensors to monitor humidity, temperature, wind velocity, sunlight and pressure
- Gardeners can plan watering cycles on soil and climate conditions to optimize water delivery
- System implemented with user interface available on smartphones, tablets and computers.
- Irrigation data is open source to public
- Actual cost of $382,000 for initial investment for Phase 1 is estimated to save the city $555,000 annually while reducing water consumption by ~25%.
- Software platform that manages smart water initiative was implemented across the city—tracks and analyzes other municipal assets, such as lighting, energy, bike service and transportation

Stakeholders

Stakeholders	Benefits	Risks/Contributions
City of Barcelona	• Substantial yearly $ savings and reduced water footprint • More efficient irrigation management tools for city employees	• Although Barcelona's smart water initiative provided a rapid ROI, not clear if the overall capital investment in 22@Barcelona ($230 Million) will be recouped
Citizens of Barcelona	• More efficient allocation of their tax dollars, at least in the smart water initiative • Beautified public spaces • Access to interesting data on city irrigation through an slick GUI	• Unclear if allocation of taxpayer funds for overall 22@Barcelona program demonstrated was economically efficient

Takeaways

- Expedient method for cities to save time and money on city irrigation with a relatively small initial capital investment
- Extends to other aspects of water management, such as smart storm water management. By monitoring environmental conditions, flow and sediment deposits in the municipal sewer system through strategically placed sensors and GIS capabilities, cities can intelligently and efficiently manage storm water flows, storage and discharge

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8. Singapore: Profile

Singapore is pushing to become the world's first "Smart Nation", based heavily on its communications infrastructure (with very high Wi-Fi penetration) and a data-driven culture.



Key Themes	**Efficient transportation, open data, Internet of Things**
Key stakeholders	National Government (Singapore is a city-state)
Smart City Use Cases	Intelligent transport, open data, fiber network, micro-grids
Smart City Framework pillars	Smart Mobility, Smart Government, Smart Living, Smart Environment

Smart City Strategy Summary

- Singapore Smart Nation Program vision is comprised of key building blocks: **Smart Government and Industry**, **National Platform** (Smart Nation Operating System to process, analyze and share data), and **Key Enablers** (IP build up, tech and industry build up, manpower build up)
- Singapore wants to become a **global test-bed of innovation**, attracting talent, investment and ideas
- **Experimentation** and creation of next-gen interactions and **communities, business models and solutions**

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8. Singapore: Use Cases Overview



Singapore is pushing to become the world's first "Smart Nation", based heavily on its communications infrastructure (with very high Wi-Fi penetration) and a data-driven culture.

Projects	Description	Technology	Fund. / Partners	Org Framework
*Intelligent Transport System	• Automated traffic and simulation management • Public transit rider tracking aiding congestion • System to help effectively allocate traffic	• Highway Monitoring • Public Transit Tracking • Variable pay-per-use fee	• Surv. cameras • Urban Engines • Mitsubishi	• 2 Singaporean Transportation Authorities
Open Data Pilot	• Pilot aggregating multiple streams of data into a single platform	• Open Data flexible API	• MIT	• National Government
Fiber Network	• Fiber comms network connected to above-ground sensors for traffic, safety, weather, etc.	• Fiber connection	• Net Link	• Energy Market Authority partnering with private companies
Microgrid and Test-Bed Applications	• Offers microgrid for testing platform for third parties around the areas of energy analytics, energy storage and grid asset management	• Microgrid • Third parties developing Applications	• Microgrid: Alstom • Apps: Organized by EMA	

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8. Singapore: Case Study

Overtime, Singapore has implemented a sophisticated Intelligent Transport System that consists of a number of initiatives that work in tandem to monitor and manage traffic flow.



Deep-Dive

Highway Monitoring

- Singapore's Expressway Monitoring Advisory System detects accidents, vehicle breakdowns and other incidents to report to response teams
- Started with basic metrics supporting highway transit times and incidence response; now details traffic times based on multiple routes and spreading to arterial roads in 2017
- A key technology is Variable Message Signs which adjust graphical and color representations of highway congestion

Electronic Road Pricing

- In 1975, a small area of the city implemented road pricing; overtime, the system has become more digital, tolling users based on an identifier card
- The tolling system adapts pricing based on the road's usage
- Has been able to decrease congestion during heavy traffic periods due to prices that automatically adjust
- The next generation Electronic Road Pricing will be satellite-based

Stakeholders

Stakeholders	Benefits	Risks/Contributions
LTA and ISTT	• More efficient oversight of transportation systems	• Investments in infrastructure
Community	• Decreased commute times • Decreased pollution (due to more efficient driving) • Better incident management (quicker response times)	• Tax, toll fees • Enablement of mobility initiatives through community support

Takeaways

- EMAS has focused on major thoroughfares first and is now spreading to arterial thoroughfares; demonstrable success of pilot projects is key to mobilizing community support for innovative initiatives
- Besides positive societal benefits like decreased congestion, reduced pollution, the electronic road pricing has a substantial revenue benefit for the City/county of Singapore

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9. Yokohama: Profile

Launched in 2010 by the Environmental Planning Unit of Yokohama, the Yokohama Smart City Project (YMCP) hopes to reduce CO_2 by 30% and then 60% by 2025 and 2060.



Key Themes	**PV generation, battery storage, energy efficiency / carbon reduction, EV**
Key stakeholders	National Ministry of Energy, Trade and Industry
Smart City Use Cases	Energy management, energy efficiency, smart house
Smart City Framework pillars	Smart Living, Smart Environment

Smart City Strategy Summary

- The main focus of the YMCP is to demonstrate **energy management and demand response** across the city
- The use of **renewable energy** sources is also a priority for the city
- The city introduced a **Community Energy Management System** (CEMS) to achieve efficient energy management by linking each EMS, such as in homes and buildings, and stationary energy storage
- The city will provide **2,000 electric vehicles and charging stations** for the transport sector

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9. Yokohama: Use Cases Overview

Launched in 2010 by the Environmental Planning Unit of Yokohama, the Yokohama Smart City Project (YMCP) hopes to reduce CO_2 by 30% and then 60% by 2025 and 2060.



Projects	Description	Technology	Fund. / Partners	Org Framework
Energy Management System	• Smart Community Energy Management System (CEMS) governs HEMS, BEMS and SCADA (for large batteries)	• Improved prediction, planning, control and evaluation for generation and storage	• Toshiba • TEPCO	• City of Yokohama partners with corporation and utility
Energy Efficient Buildings	• High energy efficiency through generation and storage equipment selling surplus to grid • High-efficiency, zone-specific lighting and HVAC systems	• PV, Micro co-generation, absorption chiller, latent thermal storage, human detection for light/HVAC	• Taisei • TEPCO	
*Isogo Smart House	• Displayed demand response technology and the effectiveness of energy conservation	• Single fuel cell system across multiple houses	• Tokyo Gas Co.	

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9. Yokohama: Case Study

The Isogo Smart House was designed to correlate distributed generation, fuel cell technology and demand management. In 2014, Tokyo Gas announced peak time load was reduced by approx. 50%.



Deep-Dive

- Tokyo Gas was responsible for constructing the 24 "dormitories" that it uses as corporate apartments, an approximately 3,400 sq. m (37,000 sq. ft.) area acting as an exemplar of clean and demand-driven energy
- Key to the construction was the PV solar generation and solar thermal / gas hot-water systems which enabled energy sharing across the building
- Critical to these systems is how they are interconnected with both the consumers and the grid's Community Energy Management System (CEMS)
- Residents are able to monitor their own usage leveraging displays that are populated with their home's data
- Integrating the BEMS, HEMS and CEMS leads to decreases in CO2, operating costs and peak power loads while providing increased energy security for the consumer

Stakeholders

Stakeholders	Benefits	Risks/Contributions
Tokyo Gas	• Piloting its proprietary systems and devices • Opportunity to sell/allow testing to other companies • Energy savings from demand response and alternative generation	• Construction costs • Operating costs (beyond normal gas/power supply)
City of Yokohama	• Incremental increase in Smart City reputation • More innovation in the city as a result of additional testing	• Marginal costs incurred due to any specific PV or other infrastructure investments

Takeaways

- Aligning a smart city need with a business need (corporate dormitories) helped manage the cost of piloting
- Demand response become more effective when customers are provided relevant data

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10. Amsterdam: Profile

Amsterdam has numerous initiatives that focus on improving key indicators of city performance (e.g. pollution, energy saving, connectivity) and establishing proof of concepts like fuel cell technology.



Key Themes	**Smart products, energy efficiency / carbon reduction**
Key stakeholders	City of Amsterdam
Smart City Use Cases	Smart Traffic Management, Energy Product Retrofit
Smart City Framework pillars	Smart Mobility, Smart Environment

Smart City Strategy Summary

- **Gamifying** energy saving behaviors
- Developing the **Amsterdam Arena,** one of the most innovative stadiums in the world

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10. Amsterdam: Use Cases Overview

Amsterdam has numerous initiatives that focus on improving key indicators of city performance (e.g. pollution, energy saving, connectivity) and establishing proof of concepts like fuel cell technology.



Projects	Description	Technology	Fund. / Partners	Org Framework
Smart Traffic Management	• Communication across three regional, road-management systems; decreases traffic 10%	• Traffic Supply Chain Management Platform	• TrafficLink	• Governance through Liander (utility), KPN (telecom), City of Amsterdam and Amsterdam Economic Board
Energy Product Retrofit	• New, digital streetscape solutions in Amsterdam's shopping district • New logistics model for waste/recycling	• LED streetlight dimmers • Solar compactors • LED billboards	• Vodafone, JCDecaux, Philips, Cisco	
Smart Stadium Management	• Crowd control at Amsterdam ArenA • Open Cloud offers third parties a "Living Lab"	• Crowd mgmt. through mobile device tracking	• Huawei	
Re-Heating through Wasted Heat	• Pilot investigating how heat from a hospital's data center can be used for local heating	• "Energy Atlas" (a GIS) combines utilities' geographic+energy data	• Liander and Nuon (utilities), hospital	

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10. Amsterdam: Case Study

The Smart Stadium Management project at Amsterdam ArenA is part of a larger partnership between the city of Amsterdam, Ajax Soccer Club and the Huawei communications company. Because Smart Stadium Management is a novel application of ICT, it was selected as an initiative to profile in more depth.



Deep-Dive

- Smart Stadium Management is part of an effort to make the ArenA the world's most innovative stadium
- CEO of ArenA set expectations with stakeholders declaring significant cooperation will be required to achieve city's goal
- Success has been largely due to careful attention to align stakeholder interests
- 5 goals to guide ArenA's development

1) Mobility and accessibility for patrons
2) Superb visitor-experience to the arena
3) Sustainable construction and ongoing operations
4) Premier entertainment and fan experience
5) Safe and secure stadium design

Stakeholders

Stakeholders	Benefits	Risks/Contributions
Huawei	• "Living Lab" offers opportunity for Huawei to test new innovations • Brand presence at Ajax matches for three years in offline and online media • Aligns with product/brand strategy for greater Europe	• Open-access wireless LAN infrastructure; free Wi-Fi reported for 2015 • Analytics infrastructure to monitor mobile devices • Potential Power over Ethernet solution
Ajax Soccer Club	• Fan experience with free Wi-Fi in stadium • Additional brand-recognition in Chinese market	• Online/offline advertising slot to Huawei
Municipality of Amsterdam / Amsterdam ArenA	• Improved experience for visitors • Attractive option for concerts/entertainment events • Opportunity for third-party innovation with "Living Lab"	• Access to physical infrastructure for construction

Takeaways

- Although the partnership between the stakeholders is somewhat complex, by aligning incentives, the Huawei, Ajax and the Municipality of Amsterdam are able to communicate across initiatives
- By investing in the open access Wi-Fi infrastructure, Huawei expects to use the data gleaned from this project to enable the development of testing of additional initiatives. Huawei expects to collect mobile device data from consumers as they use the free Wi-Fi in the stadium (Freemium)
- Consumers and the city can see tangible benefits from the investment in the installed technology

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11. Hamburg: Profile

The City of Hamburg has developed partnerships to create a smart city and drive innovation across parking, port logistics, city lighting, traffic, the government, and the environment.

Key Themes	**Connected networks, data transfer, sensors**
Key stakeholders	City of Hamburg, Cisco
Smart City Use Cases	Port Logistics Network, Smart Parking, Traffic Management, Street Lights
Smart City Framework pillars	Smart Mobility, Smart Living

Smart City Strategy Summary

- **Connected city** over at intelligent IT platforms will provide improvements across many city functions
- **Sensors, cameras, and an intelligent infrastructure** gather data in a way that is easy to understand

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11. Hamburg: Use Cases Overview

The City of Hamburg has developed partnerships to create a smart city and drive innovation across parking, port logistics, city lighting, traffic, the government, and the environment.

Projects	Description	Technology	Fund. / Partners	Org Framework
Intelligent Port Logistics Network	• IT platform which gathers data and allows the port to communicate with bridges and road signs • Smart port logistics that will decrease costs by 70% over 7 years	• Intelligent IT platform • Data and logistics • Intelligent infrastructure (Bluetooth, WLAN, cloud, IoT)	• City of Hamburg • Cisco	• City of Hamburg working with Cisco and internal city groups (ex. Hamburg Port Authority) to create a smart city
Smart Parking	• Sensor-enabled Smart Parking for cargo trucks that will speed traffic flows and reduce pollution	• Sensors • Mobile alerts		
Traffic Management	• Integrated traffic management system to improve the flow of cars and trucks, prevent traffic jams, and reduce potential incidents by 30%	• Sensors and cameras • Data network • LED message boards		
Smart Street Lights	• Connecting street lights to sensors to know when there is traffic and turn lights on and off accordingly. Reducing annual carbon emissions by 12,000 tons	• Sensors on street lights • Data network		

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11. Hamburg: Case Study



The City of Hamburg's smartPort Logistics project is modernizing Hamburg's Port Authority (HPA) IT infrastructure and streamlining and optimizing port logistics to improve traffic flow, infrastructure, and trade flow.

Deep-Dive

- In 2009, HPA began upgrading its core information technology infrastructure with an IP-based sensor project
- In 2011, HPA installed 300 roadway sensors to monitor traffic across major roadways in the port area and added Wi-Fi hotspots in strategic locations
- The SAP HANA Cloud Platform was used to create a real-time connection to the port's stakeholders (shippers, trucking, rail, customs, warehouses, etc.) through a mobile business cloud
- Truckers can view telematics data on their devices such as travel time, alternate routes, and the schedule for bridges being raised and lowered
- HPA has the most cutting-edge production optimization information system for rail logistics in the world
- In 2014 the Port of Hamburg achieved its best ever total turnover of 145.7 million tons

Stakeholders

Stakeholders	Benefits	Risks/Contributions
Hamburg's Port Authority	• Fast and streamlined port traffic • Simpler port logistics with no delays • Larger quantities of goods can be trans-shipped in the port area • Decrease costs by a targeted 70% over 7 years • Double capacity by 2025 without doubling the space	• Tech outage or security risks • Model for other rail logistics

Takeaways

- Logistic industry's most impressive IoT project to date will serve as a model for others
- Part of Hamburg's smart city initiative to connect people, processes, data, and things to drive innovation and improve the lives of its citizens
- Positive press will encourage more advances and wins for the HPA

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12. Copenhagen: Profile

Copenhagen is a best-in-class example of a Smart City because of a) initiatives that touch all aspects of city services/infrastructure, b) multiple partnerships across industries and c) good communication surrounding projects' progress.

Key Themes	**Sustainability, green transportation, traffic safety, open data, carbon neutrality**
Key stakeholders	City of Copenhagen
Smart City Use Cases	Energy Data Sharing, Traffic Management System, Sensor Networks for Traffic Data
Smart City Framework pillars	Smart Environment, Smart Mobility

Smart City Strategy Summary

- As Copenhagen looks to the future, it intends to focus on **a more data-centric environment** including placing an **increased emphasis on data marketplaces and decision making tools**

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12. Copenhagen: Use Cases Overview

Copenhagen is a best-in-class example of a Smart City because of a) initiatives that touch all aspects of city services/infrastructure, b) multiple partnerships across industries and c) good communication surrounding projects' progress.

Projects	Description	Technology	Fund. / Partners	Org Framework
*Energy Data Sharing	• Buildings are connected to the district heating/cooling system and coordinates storage and production according to building needs	• Smart Grid Data	• Hofor (Utility) • Architecture and Design firms	• City of Copenhagen involving other governmental authorities
Traffic Management System	• Traffic management system will marry disparate data sources and act as a foundation for overviews of traffic, predictive capabilities and insight into traffic responses	• All-encompassing traffic system	• Partner not determined	
Sensor Networks for Traffic Data	• Implement new data sensors to provide real-time data on vehicles, pedestrians and cyclists • Initiative aims to increase safety and efficiency	• Bluetooth/WiFi Antennas • RFID antennas • Traffic Sensors & Apps	• Partner not determined	

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12. Copenhagen: Case Study



Although many Smart Cities share data with the public, fewer have enabled real-time sharing of energy-related data. As a part of its open-access data initiative, Copenhagen has opted to share energy data. This initiative was selected to be profiled because it is feasibly the next Smart City initiative for ComEd to develop

Deep-Dive

- Copenhagen is proposing an effort to reduce waste in the district heating system through a "Smart Energy Grid", which will allow for the transfer of energy between electricity and gas grids, as well as heating and cooling networks
- The concept relies on the ability to store energy in heating/cooling and gas grids in the short term and to switch between electricity and heat production rapidly depending on the energy requirements of end-users
- Heat supply can be optimized for demand in real-time.
- The system relies on both sensors within the distribution network and end-user energy consumption data to inform plant operator decision making
- Through the modernization of their district heating system, Copenhagen projects a 70% energy savings and 45% cost savings
- A Danish case study projects that heat transmission costs within "Smart Energy Grid" average only $2.80 per MWh

Stakeholders

Stakeholders	Benefits	Risks/Contributions
HOFOR/CTR/VEKS	• Energy grid operators can more efficiently monitor distribution networks and allocate generation resources to match demand	• Build-out of the "Smart Energy Grid" necessary
Citizens Copenhagen	• Reduced energy bills cost and energy consumption • Reduce localized pollution • Remove risk of individual boiler or A/C failure	• Reliance on energy grid for heating/cooling, no self-sufficiency
Municipality of Copenhagen	• Ability to meet 2025 climate plate through energy grid and generating source retooling	• Regulatory oversight and crisis management

Takeaways

- Copenhagen intends to extend the concept of "Smart (Electric) Grid" one step further, to that of a "Smart (Energy) Grid"
- By monitoring distribution system data as well as end-user energy consumption, Copenhagen's Smart Energy Grid can optimize both electricity and heat generation for the city
- By converting CHP plants to renewable energy sources such as net-zero carbon biomass and solar water heat, the city can further reduce its carbon footprint.

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Smart City Strategy Project

Inventory of Current Smart City Initiatives

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Prepared by:	Kerry May, Jodie Washington

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Table of Contents

Initiative	Brief Description	Primary Point of Contact
ANPR	Automatic parking monitoring and compliance throughout the Ipswich City Council region, including high risk areas such as schools.	Barbara Dart
Bin Compactor	Automating the service of skip bins by recognising and notifying when a bin is almost full.	Rod Sippel
Body Worn Video/Audio Camera	Council introduced a Body Worn Video/Audio Camera for officers to wear when attending to Council business.	Glen Gellatly
Building Management System	Building Management System is used for air-conditioning monitoring and control in Hayden, IGIC, Administration, Civic Centre, GAL buildings. It can be used for security, lighting and energy monitoring, however it is not currently used for these functions.	Neal Van Kerkvoort
Corporate ITS	An Intelligent Transport System (ITS) that manages traffic operations on motorways and surface streets.	Adam Gwatking
Farm Cams	Enabling remote upload of images from concealed cameras deployed in areas of high risk for illegal activities.	Janine McKay
Finding Rover App	Finding Rover (launched in Australia by RSPCA Queensland) is a facial recognition app for dogs which assists in reuniting lost dogs with their owners.	Barbara Dart
Firestation 101	Fire Station 101 is Australia's first fully city-funded start-up incubator and accelerator hub that will drive the new economy and help to create the jobs of the future.	Matthew Schultz
Flashing School Zone Signs	Flashing School Zone Signs (FSZS) are located on roads around selected schools, and flash the 40KM speed limit on school days only.	Adam Gwatking
Flooded Road Warning Signs	A monitoring tower has a sensor that monitors the volume of water flowing in the creek. When the water level reaches a certain height a pre-programmed message is displayed on the Variable Message Sign (VMS) signs either side of the creek.	Adam Berry
Flood Warning Gauges	Ipswich City Council (ICC) owns and operates a network of stream and rainfall alert stations throughout the greater Ipswich region. Council's regional alert station network links into the Bureau of Meteorology (BoM) flood telemetry system, which BoM use to provide flood and weather warnings to Councils and the general public.	Adam Berry/Rob Ketelaars
GPS Tracking – Waste Trucks	Actively monitor waste truck positioning as they transverse across the Ipswich City Council region.	Chris Theron
GPS Tracking – Vehicle Fleet	Investigations currently underway into potential GPS tracking systems for Council's vehicle fleet. No timeframe has been identified on when this may be approved for delivery.	Shane Gillett
GPS Tracking – Street Sweepers	Monitoring and reporting of street sweeper activities across Ipswich City Council region.	Jeff Kearton
ICC Libraries	Council's Library have commenced a program of replacing a number of key systems with a focus of delivering a better customer experience when using Library services	Sylvia Swalling

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Initiative	Brief Description	Primary Point of Contact
Interactive Kiosk – Cobb & Co	Cobb and Co Museum's interactive kiosk allows visitors to play 2 videos 24/7.	Kim van der Kevie
Ipswich Bin App	Ipswich Bin App provides residents with features such as bin day reminders, waste sorting tips and important information on other events and services coming up in their area.	Kay Clarke
Irrigation Control System	Centralised monitoring and control of irrigation systems installed within sporting fields across Ipswich City Council region.	Reuben Embrey
MyIpswich.com	MyIpswich is a customer portal offering Ipswich City Council customers 24/7 access to report a range of service requests and enquiries	Jodie Washington
Parking Meters	Implementation and maintenance of parking meters capable of providing parking receipts and accepting multiple forms of payment.	Shane Gillett
Park LED Lights	Lighting retrofit in public spaces across the Ipswich City Council region.	Adam Gwatking
Public Wifi Access Points	Council has rolled out free public Wi-Fi to a number of Council managed sites, including three libraries and the Ipswich Art Gallery. It is expected that free public Wi-Fi will also be available at Orion Lagoon precinct, Springfield Central in the future.	Steven Sylvester
Safe City Program	A monitored CCTV network spanning across areas within the Ipswich City Council region.	Larry Waite
SMARTair Locks	Council has SMARTair locks installed at 23 locations within Ipswich.	Zach McCallum
Traffic Count Boxes	Council has 12 traffic count boxes used to collate a range of vehicle related data.	Tim Salomon

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

ANPR

Automatic parking monitoring and compliance throughout the Ipswich City Council region, including high risk areas such as schools.	Commenced: 2011/12 Expected completion: Ongoing	Barbara Dart	Department: Health, Security and Regulatory Services Branch: Strategic Policy and Systems

Overview

In response to concerns regarding community safety, a program of work was commenced to provide parking monitoring and compliance in a way that increased efficiency by automating compliance processes.

Vehicles with the ANPR system installed actively travel across the region, targeting high risk zones for parking compliance. Vehicles also work to be a visual deterrent to parking non-compliance.

Stakeholders

ICT Branch: Coordinator of IT related activities

Benefits and Challenges

Council has already achieved the following benefits:

- Increased revenue
- Increased parking compliance

During implementation, Council worked with the vendor to develop the ANPR solution and was the initial site of installation. As such, it did take some time to get up and running, however Council had a direct input into the solution development.

Technology Overview

- Currently an on premise installation. This type of installation is no longer the vendor's roadmap and Council will be moving to the vendor's Cloud solution within 6 months. The Cloud solution will involve a real time upload of data from the ANPR vehicles (currently a USB needs to be removed from the car and plugged into our network for upload).
- Data is imported into Pathway.
- Car hardware, including cameras. When Council moves to the Cloud solution, hardware will need to be upgraded.

Vendors

Sensen: Product developer, problem management

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Bin Compactor

Automating the service of skip bins by recognising and notifying when a bin is almost full.	Commenced: 2016 Expected Completion: Unknown	Rod Sippel	Department: Works, Parks and Recreation Branch: Waste

Overview

In order to automate a notification to service a skip bin, Council are soon to pilot a device which will recognise and notify Council staff when a bin is full.

The pilot device has a SIM loaded and is attached to the bin's hydraulics. Once the device registers a pre-determined pressure setting, an email message is forwarded to the general Ipswich Waste email address, notifying that the bin is three quarters full and requires servicing.

This device will soon be deployed at the Orion Lagoon as part of the pilot process.

An older device is currently deployed with a customer, however this device relays a text message when it registers that the bin requires servicing.

Stakeholders

Ipswich Waste customers: Hiring of the skip bins

Benefits and Challenges

As this initiative is only in its pilot stages, there are no achieved benefits or challenges. However, it is anticipated that servicing of bins can be more precise and cost effective for the customer, as well as more efficient for Ipswich Waste.

Future Considerations

A wider implementation could be considered, should the pilot be successful.

Technology Overview

- Compactor
- Mobile device with SIM

Vendors

Superiorpak: Supplier of compactor

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Body Worn Video/Audio Camera

Council introduced a Body Worn Video/Audio Camera for officers to wear when attending to Council business.	Commenced: 2014 Completed: 2015	Glenn Gellatly	HSRS / Local Laws

Overview

Council initiated a project centred on delivering video and audio recording capability that could be worn by an officer when attending to Council business.

The objective of the project was to provide body worn recording capability that could be easily and conveniently utilised by officers to improve safety concerns and increase transparency when interacting with the community.

The project conducted an analysis of available technologies and sought advice from other Councils on what had worked and what had failed. Ultimately the WolfCom solution was selected as it provided the closest alignment with Council's objectives.

Selected Compliance Officers were trained in how to use the device and subsequently assisted the remaining officers with questions and use.

Stakeholders

- COO(HSRS): Sponsor
- Compliance Manager: Operational Responsibility
- Compliance Officers: User of the technology

Benefits and Challenges

Council has already achieved the following benefits:

- Provides evidence
- Increases transparency and officer decision making
- Improves safety

Council have encountered the following challenges:

- Stability of device (eg. attached to clothing)
- Storage of data
- Device Software rollout
- Cables and charging

Future Considerations

- Maintenance of fleet
- New technologies/hardware

Technology Overview

- WolfCom Vision Body Worn Camera (http://wolfcomusa.com/wolfcom-vision/)

Vendors

- Signal One, supplier of the WolfCom Vision Body Worn Camera

Building Management System

Building Management System is used for air-conditioning monitoring and control in Hayden, IGIC, Administration, Civic Centre, GAL buildings.	Commenced: 2000	Neal Van Kerkvoort	WPR/City Maintenance

Overview

The Building Management System (BMS) is used to monitor and control the air-conditioning systems for key ICC buildings. These buildings are Hayden Centre, IGIC, Administration Building, Civic Centre and Art Gallery. BMS was introduced to centralize the management of air-conditioning, as previously each building had its own stand-alone air-conditioning control system.

BMS can be used for security, lighting and energy monitoring, however it is not currently used for these functions.

The BMS provides:

- The ability to check the status of the building each morning
- A system alert to users if there are any issues identified. (note: user must be logged into the system to see alert)
- A temperature report to assist with investigations into concerns about temperatures within the building
- The ability to manage temperature during public holidays, weekends, and outside business hours
- The ability to program an override of the normal controls, or manually override the normal controls

If an issue is identified, then Council staff advise the BMS Contractor for investigation and resolution.

Stakeholders

- Neal Van Kerkvoort: ICC Technical Officer with access to BMS
- AusTech Building Automation: Vendor of BMS
- Grovesnor: Technical Contractor for fault investigation and resolution

Benefits and Challenges

Council has already achieved the following benefits:

- Reduction in energy consumption, and energy costs
- Easier to monitor and control from one system

Council have encountered the following challenges:

- Implemented using existing controls and wiring in buildings (old equipment)
- Still not utilizing all the system's functionality, particularly lighting, security and energy monitoring

Other Considerations

- Utilise broader alert notification options, including email, SMS and recorded message
- Differences between the buildings limit how broadly the system's functionality can be used

Technology Overview

- BMS is installed on a Council server, utilising the existing controllers and modules on the plant room switchboard of each building.
- System upgrades are coordinated by the vendor and are usually performed yearly/biyearly.
- Work is currently underway to centralize the management of the buildings' lighting, however it is the opinion of the WPR Technical Officer that the other systems currently used for managing building lighting are a better fit than BMS.

Vendors

- AusTech Building Automation: Vendor of BMS
- Grovesnor: Technical Contractor for fault investigation and resolution

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Corporate ITS

An Intelligent Transport System (ITS) that manages traffic operations on motorways and surface streets.	<Year and Duration of Implementation >	Adam Gwatking	Department: Works, Parks and Recreation Branch: City Maintenance

Overview

In order to alleviate traffic flow issues, Council has implemented Department of Transport and Main Road's software, STREAMS. This software enables the monitoring and control of traffic signals.

Council is currently undertaking an upgrade of traffic signals which will improve the flexibility in signal timings.

Council is also assisting in the development of Emergency Vehicle Priority; enabling emergency vehicles to reach their destination quicker and safer by way of priority green signals through intersections. When a job is accepted, GPS calculates the most direct route to the destination; when the vehicle is fitted with EVP, STREAMS calculates and works to provide priority green signals as the vehicle transverses the route.

Stakeholders

Department of Transport and Main Roads: Information sharing, vendor

Benefits and Challenges

Council has already achieved the following benefits:

- Easier monitoring and control of traffic signals

Council are encountering the following challenges:

- Australia as a whole is fairly behind leveraging new technologies in this space

Future Consideration

Council has submitted an expression of interest with Department of Transport and Main Roads. This expression of interest is to take part in a trial to retrofit cars and infrastructure within the region to leverage technology advances in cars (the introduction of apps). Initiatives such as identification of pedestrians crossing, collision deduction, automatic accident reporting to 000, warning systems are all being considered as part of the trial.

Technology Overview

- STREAMS – software for monitoring and control of traffic signals

Vendors

Department of Transport and Main Roads: Software supplier

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Farm Cams

Enabling remote upload of images from concealed cameras deployed in areas of high risk for illegal activities.	Commenced: 2015 Expected Completion: Unknown	Janine McKay	Department: Works, Parks and Recreation Branch: Business Improvement and Support

Overview

A concealed camera alternative to the Council's current fleet of covert cameras, these devices use wireless connectively to remotely upload images. Current covert cameras required staff to travel to the site of the camera, remove the SD card for manual upload of images. Farm Cam would enable swifter identification of and enforcement against activities.

Once captured, images can be sent to a pre-programmed email address.

Council's covert cameras operate to identify illegal activities, instances of property damage as well as identify animal species in the area of the camera's placement.

Stakeholders

Health, Security and Regulatory Services: Transfer of responsibility once solution is implemented

Benefits and Challenges

While Council has identified benefits in being able to remotely access the data being captured, issues with the inability to encrypt the data opens Council up to an, as determined by the Chief Operating Officer of HSRS, unacceptable risk. Safe City has been tasked with attempting to encrypt the data. At last update, this work was still ongoing.

Technology Overview

- Camera hardware
- SIM cards

Vendors

Professional Trapping Supplies: Hardware supplier

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Finding Rover App

Finding Rover (launched in Australia by RSPCA Queensland) is a facial recognition app for dogs which assists in reuniting lost dogs with their owners. Ipswich is the first Australian city to roll out the Finding Rover app.	August 2014	Barbara Dart	HSRS/Strategic Policy and Systems

Overview

Finding Rover is a free app that can be downloaded onto any Apple or Android phone. People photograph their dogs' face and provide their contact details and important information about their animal in the event they are missing.

In the event a person finds a lost dog, they can take a photo of the dog and use Finding Rover to analyse the face against all dogs held on record to locate a possible match.

The app is used in animal shelters all over the USA and Canada.

Stakeholders

- RSPCA QLD: Launched the app in Australia, and partnered with Ipswich City Council to promote the app
- Ipswich Dog owners: Use the app to register their dog's details
- Ipswich Animal Management: Promotes the Finding Rover app, but does not use the app in day to day operations

Benefits and Challenges

Council has already achieved the following benefits:

- Alternative channel for dog owners to report or search for their missing dog

Council have encountered the following challenges:

- Uptake of the app by the general public

Future Considerations

- Ability to integrate Finding Rover software with Council's software

Technology Overview

- Third party app, available for mobile devices

Vendors

- Finding Rover: promoter of Finding Rover app and website

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Fire Station 101

Fire Station 101 is Australia's first fully city-funded start-up incubator and accelerator hub that will drive the new economy and help to create the jobs of the future. www.FireStation101.com.au	Launch: Late 2015	Matt Schultz	Economic Development and Marketing

Overview

Fire Station 101 is a place where people and businesses can meet, share, learn and grow as part of the South-East Queensland start-up ecosystem. It is a venue for new digital technology business mentoring, development, co-working, and potential investment.

Fire Station 101 is located in a central highly visible location, occupying 516 sq.m. of floor space with 55 desks accessing high speed internet connectivity over fibre, and high capacity Wi-Fi.

Stakeholders

- Ipswich City Enterprises Pty Ltd: Council-owned company, developer of Fire Station 101

Benefits and Challenges

Council has already achieved the following benefits:

- Catalyse the formation of digital start-ups in Ipswich and Western Corridor region
- Provide practical support to tech start-ups as they grow to become competitive businesses
- Support the development of a local ecosystem that supports tech start-ups
- Enhance Ipswich's positioning as a city with a strong digital focus
- Help Ipswich and Western Corridor region diversify its economy from mainly traditional industries to knowledge-intensive industries that generate export income and create jobs globally

Future Considerations

-

Technology Overview

- Dual NBN fibre link
- 10 x Cisco Wi-Fi Meraki access points
- Cisco Telepresence
- Telstra Voice Over IP

Vendors

- Cisco

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Flashing School Zone Signs

Flashing School Zone Signs (FSZS) are located on roads around selected schools, and flash the 40KM speed limit on school days only. In 2007 Council commenced the installation of FSZS and to date have 42 FSZS installed at 21 schools throughout Ipswich. In 2012 the Department of Transport and Main Roads (TMR) commenced the installation of FSZS and to date have approximately 900 signs, with approximately 600 additional signs to be installed over the next few years.	Commenced: 2007 as a pilot	Adam Gwatking	WPR/City Maintenance

Overview

In 2007 Council commenced a pilot to install flashing school zone signs (FSZS) at 21 locations out of approximately 105 schools (67 primary and 38 high schools) within Ipswich City Council's boundary.

State Government's Department of Transport and Main Roads (TMR) began implementing FSZS from 2012, and as at the end of 2015 had installed the signs at 17 locations within Ipswich City Council's boundary.

TMR and Council use different technology to deliver FSZS, and it is expected that TMR will transfer the management of TMR FSZS within Ipswich City Council's boundary to Council from 2022.

The objective of the initiative was to improve safety around schools, by ensuring visibility of the speed limit on an official school day.

Stakeholders

- Ipswich schools with Council managed FSZS: school has a FSZS, and will need to be aware of any changes to the current processes
- Department of Transport and Main Roads: operates FSZS at other Ipswich locations and will need to be aware of any changes to the current processes

Benefits and Challenges

Council has already achieved the following benefits:

- Improved safety around schools

Council have encountered the following challenges:

- Technology is becoming old, and system doesn't allow proactive monitoring, or timely reactive monitoring
- Manual and time consuming process to upload calendars for each location
- TMR use different technology to manage their FSZS
- TMR expects to transfer responsibility for their FSZS to Council in 2022

Future Considerations

- The business has identify possible future options such as:
  - Transfer responsibility of ICC's FSZS to TMR
    (Note: TMR advise they do not have the funding to action this proposal)
  - Upgrade of infrastructure (minimal upgrade vs full scale swap out)
  - Upgrade of Monitoring System (options include Excel Technology Group system (existing), J1 LED, J1 LED with hardware upgrade, Artcraft using Speedboard system, Transmaxx STREAM software)
  - Note: document relating to these options has been added to the Share >Current Smart City Initiatives folder
- Current recommended approach: Bring current FSZS fleet up to a satisfactory standard, and to install a more robust/proactive system that will send alerts of the status of the signs.
- Ability for the sign to communicate with approaching vehicles

Technology Overview

- Each location has a master sign and a slave sign. The master sign has a modem connected to the Telstra 2G network.
- Master communicates to the slave via a radio frequency link (FR232 link)
- A monitoring system (one modem in Council and one modem at Contractors) is used to reactively fault find and to upload calendar information. It communicates to the 2G modem in the master signs similarly to a mobile phone call.
- The signs run on a Circuit Switched Data Protocol (CSDP).
- There is a solar system on each sign which charges a battery.
- Telstra's 2G network is due to be switched off by the end of 2016. The Optus 2G network is expected to be available until 2020, however the CSDP is not compatible with Optus.

Vendors

- Excel Technology Group: supplier and installer of the current signs

Flooded Road Warning Signs

Flood warning signs are located on Albert Street and Smith Street, Goodna. A monitoring tower has a sensor that monitors the volume of water flowing in the creek. When the water level reaches a certain height a pre-programmed message is displayed on the Variable Message Sign (VMS) signs either side of the creek.	Commenced: 2015 Completed: January 2016	Adam Berry	WPR/Sports, Recreation and Natural Resources

Overview

Four flood warning signs and two monitoring towers were installed at two locations in Goodna in 2015. The towers' sensors monitor the level of water in the creek and once it reaches a certain parameter, a message is displayed on two Variable Message Sign (VMS) signs.

The sensor will monitor when the water level has returned to a certain threshold and the message will be disabled. The sensor thresholds can be changed remotely.

Stakeholders

- Cr Tully: Division 2 Councillor representing Goodna
- Road users within location of signs

Benefits and Challenges

Council has already achieved the following benefits:

- Visual warning to drivers regarding water across the road due to localised flooding

Council have encountered the following challenges:

- Building understanding of system within Council
- Other sites were considered, however funding was not available
- Location of signs was impacted due to existing service connections (eg. Queensland Urban Utilities, Optus, Telstra, Energex) and limitations on site access (ie. Cranes vs power lines)

Future Considerations

- The data recorded could be used to assist with flood modelling of the catchment.
- The VMS board can be upgraded to allow bigger/ scrolling text and flashing lights.
- Towers can report back to a DataOnline.IO website, allowing for the generation of real time alarms when roads with warning signs become inundated.

Technology Overview

- Next-G Modem and SIM card (in Master only)
- Solar power and battery (System will SMS a predefined list of phone number if battery levels drop below a predefined set point)

Vendors

- Prospect Group/Artcraft: Suppliers and installers of the flood warning signs and monitoring towers

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Flood Warning Gauges

Ipswich City Council (ICC) owns and operates a network of stream and rainfall alert stations throughout the greater Ipswich region. Council's regional alert station network links into the Bureau of Meteorology (BoM) flood telemetry system, which BoM use to provide flood and weather warnings to Councils and the general public.	Commenced: 2015 (6 month process) Completed: 2016	Adam Berry Rob Ketelaars	WPR/ Sports, Recreation and Natural Resources Branch and City Maintenance Branch

Overview

There are 38 flood warning gauges in rivers and creek with the majority within ICC boundaries, and a number outside of ICC boundaries. Eleven gauges were installed as part of a previous roll out, and new State Government grant funding allowed the roll out of the remaining gauges. A number of existing gauges (6-8) were replaced to meet new flood level, and to ensure all sites used the same technology.

The data recorded in the gauge is transmitted to a receiver at the Hayden Centre, and into the Environmon system.

Once in the Environmon system, the data can be used to assist with flood modelling for river and creek catchments. Improved flood modelling can inform better decisions which can minimise the risk to people and property.

Stakeholders

- Adam Berry: Engineer, Floodplain Management – uses the data to assist with flood modelling
- ICC Disaster Management Group: use Environmon modelling scenarios to plan and respond to flood/weather events

Benefits and Challenges

Council has already achieved the following benefits:

- Records historical stream and rainfall data that can be analysed and incorporated into Council's planning instruments
- Create historical data that can be incorporated in future revised Australian Rainfall and Runoff (AR&R) publications
- Develop and calibrate flood management tools for the Ipswich region

Council have encountered the following challenges:

- Short implementation period as funding was via a State Government grant
- Funding timeframes didn't always fit Council's procurement timeframes

Future Considerations

- No further considerations provided

Technology Overview

- Flood warning gauges are powered by battery and transmit raw data to a receiver in the Hayden Centre
- Raw data is transferred to the Environmon system for analysis

Vendors

- Prospect: Fabricator and installer of the product
- Hydrological Services: supplier of internal components

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

GPS Tracking – Waste Trucks

Actively monitor waste truck positioning as they transverse across the Ipswich City Council region.	Commenced: 2011 Expected Completion: Ongoing	Chris Theron	Department: Works, Parks and Recreation Branch: Waste

Overview

In order to actively manage the waste truck fleet, trucks have GPS tracking devices. GPS tracking enables office based staff to:

- Identify a truck nearby who could complete an ad hoc or urgent service
- Record and report on driver behaviour
- Record and report on truck drive times

As office based staff are able to track waste trucks in real time, Council can react more swiftly to instances of missed bins etc.

Stakeholders

Ipswich City Council residents: Receive services

Benefits and Challenges

Council has achieved the following benefits:

- Ability to locate trucks in real time

Council have encountered the following challenges:

- Issues have been experienced with Wastedge equipment, with limited support from the vendor.
- Issues with Wastedge equipment have limited the GPS tracking of waste trucks.
- Issues with Wastedge equipment have limited the reporting capability from the system.

Future Consideration

Wastedge is currently being replaced by another GPS tracking system, known as Intellitrac. This replacement work commenced several weeks ago, with a staged implementation anticipated across the entire fleet.

Technology Overview

- Wastedge: SaaS for office staff
- Wastedge: Ruggedised tablets deployed in trucks which have the application installed with SIMs
- Intellitrac: Device under cab to provide GPS tracking capability

- Intellitrac: SaaS for office staff
- Intellitrac: Small tablets for receiving messages sent by office staff

Vendors

Australian Software Professionals: Outgoing GPS system supplier, problem management

Intellitrac: Replacement GPS system supplier, problem management

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

GPS Tracking – Street Sweepers

Monitoring and reporting of street sweeper activities across Ipswich City Council region.	Commenced: Approximately 2005 Expected Completion: Unknown	Jeff Kearton	Department: Works, Parks and Recreation Branch: City Maintenance

Overview

For some time, Council has had the ability to monitor and report on the activity of the city's street sweepers.

Using Imarda 360, Council are able to identify at what locations the street sweepers have been, and the times that the truck's brushes have been deployed. Should a resident lodge a complaint against a street sweeper, Council is able to investigate the data and respond to the resident.

Data could also be used to identify areas of high activity for sweeping, which may indicate areas requiring maintenance or more frequently scheduled sweeping.

Stakeholders

Residents: Identification of sweeping required

Benefits and Challenges

Council has already achieved the following benefits:

- Ability to substantiate resident complaints.
- Ability to generate reports based on sweeper usage.

Technology Overview

- Tablet inside cab; able to receive messages sent to staff if required
- Imarda 360 - software

Vendors

Imarda: Supplier

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

ICC Libraries

Council's Library have commenced a program of replacing a number of key systems with a focus of delivering a better customer experience when using Library services	Commenced: 2016 Expected completion: 2017	Sylvia Swalling	ASDCE/Library

Overview

The program to replace old systems, and/or purchase new systems has provided opportunities to deliver services that improve the customer's experience.

Some of the initiatives include:

- Kiosks for self-service check outs (also including payment of Council accounts)
- Smart furniture for self-service returns
- Dynamic App – allows users to search for item and check it out
- Smart lockers – for collect of items at key non-Library locations
- Validation of Council library memberships on State Library's portal

Stakeholders

- ICT Branch: Working with Library to move some functions to Council's ICT infrastructure
- Library Branch: Owners of the processes

Benefits and Challenges

Council is expecting to achieve the following benefits:

- Better customer experience
- Reduced exposure to ICT risks
- Less reliant on key staff

Council have encountered the following challenges:

- Duplication of ICT in Council and at Libraries
- Technology being introduced is new to Council

Future Considerations

- Management of procurement process via eDi (ordering of stock)

Technology Overview

- See Library Functional View of Systems document in Share>Current Smart City Initiatives folder

Vendors

Multiple: See Library Functional View of Systems document in Share>Current Smart City Initiatives folder

Interactive Kiosk – Cobb and Co Museum

Cobb and Co Museum's interactive kiosk allows visitors to play 2 videos 24/7.	Commenced: 2012 1 month implementation Completed: 2012	Kim van der Kevie	Unknown

Overview

The local Councillor requested the installation of an interactive kiosk at the Cobb and Co Museum so visitors can view two videos.

Stakeholders

- Division 10 Councillor: requestor of the kiosk
- Cobb and Co Museum visitors: users of the kiosk

Benefits and Challenges

Council has already achieved the following benefits:

- Provide visitors with the ability to play two videos relating to the Cobb and Co history

Council have encountered the following challenges:

- Technology used for the kiosks are unstable and prone to overheating

Future Considerations

- There is no planned for any future enhancements

Technology Overview

- Standalone PC with an embedded Windows 7 thin client
- Arcade controller that uses a batch command with 2 buttons
- Restarts automatically at 5 am every day to reduce overheating

Vendors

- Data#3: Provides technical support

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Ipswich Bin App

Ipswich Bin App provides residents with features such as bin day reminders, waste sorting tips and important information on other events and services coming up in their area. The app is available for Apple and Android devices.	Commenced: 2014 3 months implementation Completed: 2014	Kay Clarke	WPR/Waste Branch

Overview

Council partnered with Socket Software to release an Ipswich Bin App. The app platform is owned by Socket Software and was branded for Ipswich City Council. As at 30 April 2016, Ipswich Bin App has been downloaded 7279 times.

The objective of the app is to provide residents a range of features including bin day reminders, waste sorting tips and important information on other events and services coming up in their area.

Stakeholders

- Residents of Council: residents can download the app and use the features available

Benefits and Challenges

Council has already achieved the following benefits:

- Timely access to bin related information by Ipswich residents
- Push notifications can be sent to subscribers of the app

Future Considerations

- There are currently no future enhancements planned for the app

Technology Overview

- Specific technology details are available if required

Vendors

- Socket Software: App developer, and provider of ongoing support

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Irrigation Control System

Centralised monitoring and control of irrigation systems installed within sporting fields across Ipswich City Council region.	Commenced: 2008 Expected Completion: Ongoing	Reuben Embrey	Department: Works, Parks and Recreation Branch: City Maintenance

Overview

In response to a period of drought, Council implemented irrigation control systems to assist in the adherence of water restrictions.

Two systems were put in place, one to monitor soil moisture by way of copper wire infrastructure, the other to control scheduling. Council is moving more towards the control of irrigation.

Sensors can identify if the sporting field has received a predetermined number of millimetres of rainfall; should this be met, irrigation will not take place. Further control of the irrigation scheduling can occur remotely. Each system is integrated with a modem which receives schedule changes.

The irrigation initiative being undertaken is an ongoing improvement process, with additional sporting fields being identified as future sites for the irrigation control. Additionally, upgrades of hardware are currently being quoted to move off a 2G network.

Stakeholders

Sporting Clubs: Consultation, input into irrigation schedules, minimum softness requirements

Benefits and Challenges

Council has already achieved the following benefits:

- Decreased costs of water consumption
- Increased time savings due to remote capability
- Ability to adhere to water restrictions, when restrictions are in place

Technology Overview

- Software installation (MAIT and IMMS)
- Copper wiring infrastructure
- Sensors
- Modem/SIM cards

Vendors

Hunter: Product supplier, problem management

Various irrigation suppliers: Identified during tender process, supplier of irrigation materials

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

MyIpswich.com

MyIpswich is a customer portal offering Ipswich City Council customers 24/7 access to report a range of service requests and enquiries	Commenced: Stage 1 - March 2015 Complete: Stage 1 - February 2016 (however ongoing development of functionality)	Jodie Washington Rena Tottle	FCS/ ICT Branch

Overview

Council launched an online services customer portal called MyIpswich to provide a 24/7 channel to submit a range of service requests.

Customers are required to create an account from which they can view FAQs, submit a request (via a guided interview), monitor and update their service requests, subscribe to FAQs and manage their contact details.

The service requests created via MyIpswich are automatically raised in the Customer Engagement System (CES) for a Council Officer to action.

As at May 2016, approximately 810 users have created a MyIpswich user account and raised approximately 10% of the total service requests per day.

Stakeholders

- Councillors: Approver of MyIpswich functionality impacting customers
- HSRS: Business area owning the content relating to FAQs and guided interviews
- WPR: Business area owning the content relating to FAQs and guided interviews
- Services Queensland (Contact Centre): Business area responsible for providing support for service requests submitted via MyIpswich
- ICT Branch: Business area coordinating the delivery of MyIpswich, including the in-house development of the guided interviews
- CES users: Council staff managing the service requests generated via MyIpswich within CES

Benefits and Challenges

Council has already achieved the following benefits:

- An additional interactive channel available to customers 24/7
- Customers doesn't need to know Council's process to be able to submit a request

- Ability to manage interactions with a customer within one system

Council has encountered the following challenges:

- One of a number of Council systems that has customer contact records (eg. Pathway, Horizon, spreadsheets)
- Limitation of other systems (that offer a user account function) to authenticate using MyIpswich user credentials

Future Considerations

- Expanding range of services available
- Investigating a payment gateway
- Creating an App

Technology Overview

- MyIpswich customer portal delivered via Oracle Service Cloud
- Oracle Service Cloud is a SaaS product with an Australian Data Centre
- Guided interviews are delivered using Oracle Policy Automation (OPA)
- Site is mobile responsive and appears 'app like' when viewed on a mobile phone

Vendors

- PaykelSDS Pty Ltd: License provider and implementation partner for Oracle Service Cloud
- Oracle: Oracle Service Cloud vendor

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Parking Meters

Implementation and maintenance of parking meters capable of providing parking receipts and accepting multiple forms of payment.	Commenced: 2011 Expected Completion: Ongoing	Shane Gillett	Department: Works, Parks and Recreation Branch: Business Accounting and Asset Management

Overview

In response to the ageing parking meter infrastructure, Council resolved to develop and implement parking strategy for the Ipswich City Council region.

The strategy development involved representatives from Infrastructure Services (traffic management and overall owner of the strategy), Works, Parks and Recreation (operation of the parking meters) and Health, Security and Regulatory Services (parking compliance).

Meters were identified and installed to replace the ageing infrastructure; it was the priority to implement meters that at least functioned. The meters were upgraded approximately 2 years ago to accept card payments.

Faults and other maintenance requirements are easily identified and a SMS is sent to the technician to rectify.

Council has approximately 600 parking spots across the region managed by the parking meters.

Stakeholders

Infrastructure Services: Contributor to and owner of strategy

Works, Parks and Recreation: Contributor to strategy

Health, Security and Regulatory Services: Contributor to strategy

Benefits and Challenges

Council has achieved the following benefits:

- Increased revenue as malfunctioning machines are quickly fixed.
- Higher traffic turnover – flow of traffic for businesses within the CBD. Easy access to stores when needed.
- Improved reporting – ability to identify areas of low usage, and able to adapt parking times to fill spots (ie, sites have been changed from 4 hours to 9 hours where usage of those parking spots were low).

- Improved reporting – ability to substantiate claims of malfunctioning meters during infringement reviews.
- 55% occupancy rate across the system.

Council has encountered the following challenges:

- Resident resistance: No one wants to pay for parking
- Useability of the machines – this concern was why a simpler installation was carried out.

Future Considerations

A review of the parking strategy will occur during the next 12 months – this review would include parking meters. During this review, it is expected that it would be identified if there is demand for further 'smarts' (ie, sensors to determine if parking spots are available).

The contract with the vendor is also about to expire.

Technology Overview

- Parking meter hardware
- MyParkfolio software

Vendors

Australian Parking and Revenue Control Pty Ltd: Supplier and maintenance of the parking meters

Armaguard: Collect revenue from the meters

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Park LED Lighting

Lighting retrofit in public spaces across the Ipswich City Council region.	Commenced: 2015 Expected Completion: Ongoing	Adam Gwatking	Department: Works, Parks and Recreation Branch: City Maintenance

Overview

To address an increased need for energy efficient street lighting, Council commenced a program of work to retrofit and install LED lighting within public spaces. With funding from the Australian Government's Community Energy Efficiency Program, the program seeks to:

- Improve lighting quality
- Lower operating costs
- Lower greenhouse gas emissions
- Lower hazardous waste disposal

Connectivity to the lighting infrastructure enables the identification of faults, and operation of lighting functions. Lighting schedules are able to be applied, allowing for dimmer lights during hours when those areas will see little use.

Stakeholders

Australian Government: Funding

Energex: Information sharing, infrastructure owner

Benefits and Challenges

Council has already achieved the following benefits:

- Improved lighting quality in public areas.
- Lower electricity costs.

Council are encountering the following challenges:

- Energex are reluctant to invest to LED technology without extensive piloting of various products.

Future Consideration

- React to, and normalise after, incidents (crime, traffic accidents etc.) by decreasing and increasing illumination.
- Camera installation within the lighting infrastructure.
- Duress speaker installation within the lighting infrastructure.
- Solar panel installation around pole.

Technology Overview

- LED lighting attached to a combination of newly installed poles and current poles.
- Specifically installed poles are capable of a greater weight load, allowing for the sensor installation (remote monitoring and operation).
- Gateways (remote connectivity; receives and distributes data to LED lights).

Vendors

LED Roadway Lighting Ltd: Product supplier for NXT luminaire (Queens Park)

Dawson's Technical Services: Installation (Queens Park)

Gerard: Product supplier for LED retrofit

Pensar Construction Group: Installation (LED retrofit)

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Public Wi-Fi

Council has rolled out free public Wi-Fi to a number of Council managed sites, including three libraries and the Ipswich Art Gallery. It is expected that free public Wi-Fi will also be available at Orion Lagoon precinct, Springfield Central in the future.	Commenced: Libraries – 2012 Orion Lagoon – 2016 Expected completion: 2016	Libraries – Steven Sylvester	CCS/Library Services Branch

Overview

Free public Wi-Fi was rolled out to at the Central, Redbank Plaza and Redbank Plains libraries in January 2012. Library members use their Library membership number and PIN to access the Wi-Fi, which allows a two hour session with no maximum data limits, although speed limits do apply. Library Services does not currently collect and analyse public Wi-Fi data.

Planning is underway to rollout free public Wi-Fi at the Orion Lagoon precinct. The precinct will have nine Wi-Fi access points providing comprehensive mesh coverage, and will be powered by a fibre based Internet service from the Polaris Data Centre.

The rollout will also include a Wi-Fi Analytics platform which will provide a comprehensive set of wireless location tracking, reporting, analytics, stakeholder communications and marketing capabilities.

Stakeholders

- Current Library members: users have access to free Wi-Fi at three Council libraries
- Users of Council Wi-Fi: users will access the free Wi-Fi, and the analytics platform will collect information from their use, or push (generic and location/context messages) to them
- Business owners: the free Wi-Fi may attract visitors to the Orion Lagoon precinct increasing trade for their business

Benefits and Challenges

Council has already achieved the following benefits:

- No cost access to Wi-Fi for Library members.

The intended benefits of the Orion Lagoon Wi-Fi are:

  - Flagship positioning for Council as a leader in digitally enabled services with the potential to roll this out across other Council areas

- A leadership position for Council to engaged with their citizens in the Greater Springfield community with a focus on efficient community communication through leveraging digital capabilities
- The ability to provide world class digital capabilities to tenants in the Orion Lagoon area to significantly increase the Lagoon's attractiveness and lay the foundation for potential revenue generation
- Ability to collect data from a wide variety of sources around which decisions and plans can be made to gain significant operational efficiencies while maintaining full ownership of the data and as such being able to manage future sue of the data

Future Considerations

- Discussions have commenced regarding the transitioning of Library Services' ICT arrangements to Council's ICT Branch
- Centralising all Council's free public Wi-Fi onto the same platform and name
- A new mobile Library with free public Wi-Fi will be rolled out prior to 30 June 2016.

Technology Overview

- Library free public Wi-Fi is accessed by users using a captive portal delivered via a pfSense server (Linux). The portal is integrated with the Library's Horizon system which hosts the membership records.
- The Library free public Wi-Fi network is ADSL provided by Cisco and is hosted in the IGIC Building. The platform was purchased specifically for the project by Library Services Branch, after which Council elected to replace their previous Wi-Fi platform with Cisco.
- At Orion Lagoon precinct, nine Wi-Fi Access points are available powered by a fibre based internet service from the Polaris Data Centre.
- Wi-Fi Analytics platform will provide a comprehensive set of wireless location tracking, reporting, analytics, stakeholder communication and marketing capabilities.

Vendors

- Data#3: managing the supply, install of Wi-Fi and Analytics
- Cisco: vendor supporting the Library free public Wi-Fi

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Safe City Program

A monitored CCTV network spanning across areas within the Ipswich City Council region.	Commenced: 1994 Expected completion: Ongoing	Larry Waite	Department: Health, Security and Regulatory Services Branch: Safe City

Overview

In response to unacceptable levels of crime in Ipswich and to improve community safety, an integrated program of crime prevention and monitoring activities was commenced, comprising:

- An extensive fibre optic communication and public safety surveillance monitoring system;
- A surveillance centre that operates 24 hours a day, recording and monitoring 110 colour pan tilt zoom cameras, in Ipswich Central, Goodna, Redbank, Booval, Bundamba, Brassall and Rosewood;
- Safe City security officers that provide support to users of the city by patrolling Ipswich Central and surrounding mall areas; and
- Monitoring and responding to incidents in hot spot areas in Ipswich Central five days per week.

The success of Safe City has been widely recognised. Based on this success, the expansion of the Safe City network will continue with future areas already identified.

Stakeholders

Queensland Police: Notification of crimes, information sharing

Security Companies: Coordination of security activities

Benefits and Challenges

Council has already achieved the following benefits:

- Multiple instances where camera footage assisted the justice system in prosecuting offenders.
- A sense of community safety in public areas where Safe City cameras are present.
- International recognition.

Council have encountered the following challenges:

- Concerns around breaches of privacy.

Technology Overview

- Fibre optic network
- Camera hardware - Elbex
- Monitoring software - Genetec

Vendors

Elbex: Maintenance and installation of cameras

Genetec: Software supplier

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

SMARTair Locks

Council has SMARTair locks installed at 23 locations within Ipswich.	Commenced: 2014 Expected completion: Ongoing	Zach McCallum	HSRS/Safe City

Overview

Council has SMARTair locks installed at 22 toilet facilities within parks, and the Queens Park Nature Centre demountable building.

SMARTair is used at the toilet facilities to automatically unlock the facility at 6am and relock at 7pm.

The Queens Park Nature Centre's demountable is fitted with a SMARTair lock with a non-networked swipe card reader. Building users are issued with a pre-programmed swipe card, which allows access to the facility based on the pre-programmed timeframes.

The SMARTair lock has a small USB battery powered box on the exterior of the door, with an override switch and a swipe card reader. The SMARTair locks are programmed using SMARTair TS1000 application, however a portable programming device needs to be attached via USB to each SMARTair lock to program/reprogram the device.

SMARTair TS1000 provides basic reporting on low battery notification, date/time of lock and unlock, swipe card access date/time and lockdown date/time activated by a security guard, cleaner etc.

Stakeholders

- WPR: responsible for the facilities
- HSRS: responsible for the security of the facilities
- Total Building Maintenance (TBM): contractor responsible for maintenance of the facilities
- General public: users of the facilities

Benefits and Challenges

Council has already achieved the following benefits:

- Reduction in costs as the security guards don't need to attend these locations to lock and unlock the facility each day
- Facilities open and close on time (sometimes there were delays as the security guards were responding to other issues)
- Provides the ability to manage people's access to Council facilities outside set hours via swipe card rather than keys

Council have encountered the following challenges:

- Ongoing damage and vandalism to device
- Delay in obtaining parts from overseas

Future Considerations

- Expansion of the SMARTair locks is at the discretion of the facility owner, WPR
- HSRS would like to use SMARTair locks at other non-networked swipe card locations, particularly for sporting clubs using Council-owned facilities
- Ability to remotely program the SMARTair locks

Technology Overview

- SMARTair TS1000
- Portable programmer
- Battery powered USB box on lock

Vendors

- Assaabloy Group: manufacturer of the SMARTair locks
- River City Locksmith: supplies, installs and maintains the SMARTair locks

Smart City Strategy Project
INVENTORY OF CURRENT SMART CITY INITIATIVES

Traffic Count Boxes

Council has 12 traffic count boxes used to collate a range of vehicle related data.	1997	Tim Salomon	Infrastructure Services/Infrastructure Planning

Overview

Council commenced using the traffic count box in 1997, and to date have 12 traffic count boxes used to collect data relating to vehicle numbers, vehicle types and vehicle speed on monitored roads.

The change to air pressure in rubber tubes on the road is recorded and this data is saved in the traffic count box located on the side of the road. This information is used for road design and planning of road infrastructure.

Stakeholders

- Queensland Police: requests traffic count data, to inform traffic investigations

Benefits and Challenges

Council has already achieved the following benefits:

- Contributes to better decisions relating to road design and planning of road infrastructure
- Access to historical data from 1997 to present

Council have encountered the following challenges:

- Lifting of the rubber tubes, and vandalism of the traffic count boxes
- Low level battery is only detected when data is downloaded

Future Considerations

- Current technology uses lasers instead of rubber tubes to collect data

Technology Overview

- Traffic count boxes uses a change in air pressure in the rubber tubes to produce the data
- The data is recorded in the traffic count box and is manually downloaded to a laptop
- The data is exported into an Excel spreadsheet
- The technology hasn't changed since they were introduced in 1997

Vendors

- Metro Count: supplier of the traffic count boxes and rubber tubes

Item 15.7 / Attachment 9.



Background

From 4th to 18th June a delegation from Ipswich City Council visited a number of cities in Japan and USA to gain an understanding of the smart city related initiatives being undertaken by these cities. The cities visited included Tokyo, Fujisawa and Yokohama in Japan and Seattle, San Francisco and Austin in the USA.

Key topics discussed during these site visits related to:

- Internet of Things and smart city technologies
- Open Data and Data Analytics
- Open Innovation
- Entrepreneurship, Start-ups, and City Economic Development
- Public Private Partnerships, Business Models and Funding Models
- Digital Education
- Smart Buildings and Design
- Parking and Transport.

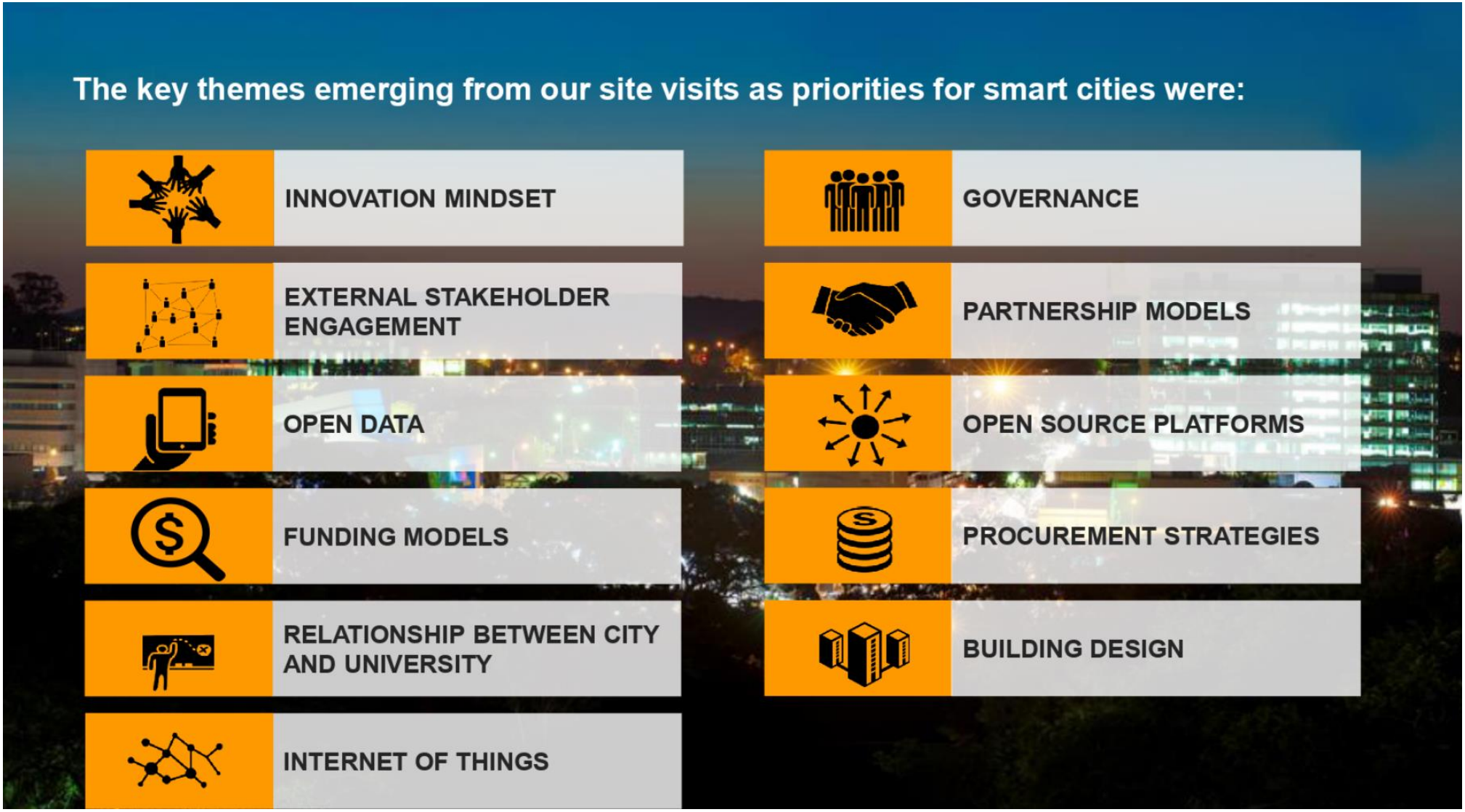
The insights from these site visits will be used to help inform the Ipswich Smart City Project (Blueprint and Implementation Plan) and other initiatives being undertaken by Council under its Digital Transformation agenda. The purpose of this deck is to highlight the key themes and insights from these site visits and meetings.

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Itinerary Summary

Day	Date	Location	Client	Accenture Host
Day 1	4th June, Saturday	Depart Brisbane to Tokyo		
Day 2	5th June, Sunday	Tokyo		
Day 3	6th June, Monday	• Fujisawa • Yokohama	• Fujisawa Smart City Tour • Yokohama Local Good Project	
Day 4	7th June, Tuesday	• Tokyo • Travel from Tokyo to Seattle	• Accenture Digital Innovation Centre	
Day 5	8th June, Wednesday	Seattle	• Amazon • Microsoft Smart Building • Boeing Factory Tour	
Day 6	9th June, Thursday	Seattle	• International Living Future Institute Meeting – Living Building Challenge • Bullitt Centre Tour • District 2030 Meeting • Socrata Meeting	
Day 7	10th June, Friday	• Travel Seattle to San Francisco • San Francisco	• Mayor's Office of Civic Innovation Meeting • San Francisco Metropolitan Transit Agency - Smart Parking Meeting • Galvanize Site Visit	
Day 8	11th June, Saturday	Travel San Francisco to Austin		
Day 9	12th June, Sunday	Rest Day		
Day 10	13th June, Monday	Austin	• IoT / Smart City Summit Conference • CIO of Chicago – Meeting • Chaotic Moon Studio Tour	
Day 12	14th June, Tuesday	Austin	• IoT / Smart City Summit Conference	
Day 13	15th June, Wednesday	Austin	• IoT / Smart City Summit Conference	
Day 14	16th June, Thursday	Travel Austin / Los Angeles / Brisbane		
Day 15	17th June, Friday	Travel		
Day 16	18th June, Saturday	Arrive Brisbane		

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The key themes emerging from our site visits as priorities for smart cities were:
INNOVATION MINDSET
EXTERNAL STAKEHOLDER ENGAGEMENT
OPEN DATA
FUNDING MODELS
RELATIONSHIP BETWEEN CITY AND UNIVERSITY
INTERNET OF THINGS
GOVERNANCE
PARTNERSHIP MODELS
OPEN SOURCE PLATFORMS
PROCUREMENT STRATEGIES
BUILDING DESIGN

KEY THEMES – INSIGHTS FROM CITIES

1. Innovation Mindset

Theme: Innovation is a mindset, not a function.

- **City of Chicago:** Government needs to be creative and adaptive. Innovation needs to be a core competency for all in the organisation. This brings with it an expectation that some efforts will fail.
- **City of Austin:** Plan for disruptions and be able to absorb that disruption. Plan for experimentations. "Melt the frozen middle" – engage managers who are going to be able to impact / drive the change. A Smart city recognises that it is not a single idea or technology – it is an attitude and approach.
- **City of Baltimore:** "be the best at doing something second" and borrow good ideas from other cities.
- **US Department of Homeland Security:** There is a need to innovate for the digital divide.
- **Different City Models for Innovation** – eg. San Francisco has an Innovation Office and Chief Innovation Officer. Chicago no longer does. Regardless of model, the key is for the innovation topic to have a "seat" at the Executive table.
- **Chaotic Moon Studio** – Have a mindset of "what are we going to invent today?" Need a spirit of innovation, willingness to fail, and push out of comfort zone. Other factors when thinking about the city to live in - liberal, affordable, university, challenging thought, spirit of exploration and open mindedness.

2. Governance

Theme: The smart city governance model needs to include external partners, surrounding municipalities, and citizens.

- There is a need to co-design, co-produce, co-evaluate a smart city with stakeholders.
- Governance needs to be very formal and clearly documented.
- Governance needs to combine policy and implementation perspectives.
- Innovation and management need to be integrated not in separate lanes. Innovation needs to "sit" at the operational table.
- Governance should not be structured in silos but in collaborative circles.
- Need to take a "total cost" approach and match up the portfolio of projects – eg. savings from smart buildings / cost efficiency can be reinvested in public engagement initiatives. Bank the savings to use for other things eg. put savings in an innovation fund
- A smart city "veneer" needs to overlay over other projects.

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KEY THEMES – INSIGHTS FROM CITIES

3. External Stakeholder Engagement

Theme: Responsibility and processes for engagement with external stakeholders need to be clearly defined.

- **San Francisco:** The Mayor's Office of Civic Innovation was started with a mandate to make Government more transparent. Originally the office focussed on open data but the office has evolved to focus more on partnerships. The office acts as a bridge between city government and entrepreneurs, industry, starts ups, research orgs etc to solve problems the city is facing.
- **Chicago Smart City Collaborative:** Provides the citizen engagement engine of solutions with residents. It is a civic organization devoted to improving lives in Chicago through technology.
- **City of Austin** - has opened its doors up to what its challenges are. There has been a conscious outreach to innovation centres across the city
- **City of Dallas** - Focus is on next generation careers – the vision for a smart city is a lot more than sensors. City is taking a "best minds" approach and has brought together a range of companies including higher education institutions.
- **All:** A Key challenge is the stakeholder management of multiple levels of government, different agencies etc

4. Partnership Models

Theme: Cities do not have the capacity, capability, R&D budgets to create a smart city by themselves.

- **Fujisawa Sustainable Smart Town:** Is a joint project between private and public sectors. FSST Council comprises 21 organisations - Panasonic is the lead organiser of the Fujisawa SST Council, there are 11 other "organisers" in the council, 4 members of the council (of which Accenture is 1) and 5 in the Advisory Board.
- **San Francisco:** "Start up In Residence Program" – this program builds an ecosystem of companies thinking about civic problems. The start up comes in and works with a government employee to focus on a particular issue for 3 to 4 months. The focus is on breaking down barriers and bringing in new entrants.
- **City of Chicago** – Has been working on development of partnerships for scalability, capability and for particular solutions eg. UI Labs
- **Chicago City Digital:** A smart city incubator that works with public, private and academic partners, to identify programs / pilots that focus on value which can only be unlocked through collaboration of partners and data to improve the design, creation, use, interactivity and impact of urban infrastructure.
- **Baltimore** - Collaboration is a critical piece. City problems are not going away quickly and there is a need to accelerate and move fast by bringing in the start ups, NGOs , uni's etc.
- **Seattle District 2030:** is a PPP not for profit focused on facilitating, convening and educating building owners on smart buildings. The aim is to have all buildings carbon neutral by 2030

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KEY THEMES – INSIGHTS FROM CITIES



5. Open Data

Theme: Open data is not just a check the box exercise. It is about sharing the value of the things that government does and should be considered as one aspect of the service delivery responsibilities of executives in the City.

- **City of Austin:** Data isn't just smart because you measure it – it is about having the people with the right skills to analyse and interpret it. You can't just have a fire hose and "vomit" data. It needs to be organised in a way people can find it, catalogue it, that residents, entrepreneur, non profits, media etc can access it. Open Data is an "And". You have all of your traditional means of communicating with stakeholders and providing information and then you add data as a layer. You need to be able to tell stories with the data and draw in more citizens by using the data to tell stories about the city. It gives industry the opportunity to experiment and make valid use cases, improve city services and provide social value.
- **Yokohama City:** Open Data focuses on 3 pillars – (1) making data publicly available to the community, (2) working to undertake research, survey citizen opinions etc and (3) providing opportunities to think about the future and providing avenues for exchange. The Open Data Consultation Service provides a 1 stop point of contact for open innovation questions. The coordinator handles all of these inquiries from startups, citizens, externals.
- **San Francisco:** The view is that data held by government is property of the public. Government has the databases holding the data. Any data that can be made public must be made public. Chief data officer - Joy Bonaguro – has done a lot of work to put governance around data, drive data based decision making, create legal frameworks etc. Joy brings a very human approach to data. Eg. She blogs around data and tells stories about the data sets. There are currently around 378 data sets available online.
- **Chicago:** Started by focusing on how to use data to improve city operations. Focused on city problems eg restaurant inspections, green infrastructure solutions to address flooding problems before moving into analytics.
- **Copenhagen:** In terms of revenue streams from data, the view of cities is that the data is stored by the city but owned by the people. There is an example in Copenhagen where the City is building a private data exchange experiment with Hitachi where they are opening city data but also adding private data, eg. banking data, real estate data etc. The view is that this could become a marketplace where people would pay for the convenience of accessing that data in the one place. This is not revenue for the city, but Hitachi would then get a cut of that.
- **Lessons Learned:** (1) Privacy and security - respect and assure the data. Have to be on guard and make sure you have the protocols in place to make sure the data with privacy and security requirements doesn't get out there, (2) Data discovery- have a hypothesis in mind and then be able to find the data (3) Service - support data stores, eg. be clear on how frequently updated (4) Need to be able to share data across other levels of government and other areas close by to share the data. (5) Have goals, performance and outcome measures.

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KEY THEMES – INSIGHTS FROM CITIES

6. Open Source Platforms

Theme: The magic of a Smart City is in the connectedness. Lay out a reference architecture at the start so you can connect initiatives as they come online.

- **City of Austin:** Avoid being locked into systems that don't allow you to innovate and evolve. Use the intelligence and creativity of systems NOT a proprietary platform.
- Open source technology needs to be:
  1. Agile adaptive and easy to communicate
  2. Supported by strong community
  3. Inspires innovations and new technology

7. Funding Models

Theme: Look at using a range of funding models for different initiatives.

- **Chicago** – Utilise co-development models eg. UI Labs
- **Chicago** - Look at non-profit models eg. city digital was established utilising grant funding and corporate partners (although there is a need to work through procurement implications)
- **Chicago** - Be clear on the cost of maintaining the relationships. As a city work out what are you willing to pay for and what are you not willing to pay for. Do the modelling to understand how to maintain / sustain the relationships and be mindful of the long term costs.
- **Austin** – once we know what organisations are using our open data for, we can look at options around monetisation and licencing principles.
- **Austin** - Look for other benefits of smart city initiatives eg.if programs have made parts of the city safer or reduce risks of fire, work with insurance companies to lower insurance premiums
- **Dallas**: Energy efficiency efforts need to extend to other commercial and residential partners. Energy savings can be reinvested into an innovation fund for other initiatives
- **City of Columbia** - Need to determine what can we fix on our own and what will need external partners. Explore private foundation grants and corporate funds.

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KEY THEMES – INSIGHTS FROM CITIES

8. Procurement Strategies

Theme: Procurement approaches need to be faster, more agile and enable engagement with start ups in a way that does not involve a lengthy RFP process.

- **San Francisco:** In the first year of the "Startup in Residence Program" the process was open ended and there was no contract between the city and the startup. The arrangement was treated like an internship. The problem was that departments wanted to procure the services of the start up at the end of the program but there wasn't an easy way to procure. The application process has evolved and now been designed to mimic steps in tender process – Departments provide the challenge statement, a contract is provided, no money changes hands. Contract itself is different from a normal contract. The city gets a year free licence and then after that negotiates terms. IP remains with the start up.

9. Relationship between City and University

Theme: Universities and research organisations play a key role in providing talent, R&D and capacity for smart city initiatives.

- **Metrolab Network** – Cities and Universities Partnering to Tackle Urban Challenges – this is a network of 34 city-university partnerships focused on bringing data, analytics and innovation to city governments. Its members include 34 cities, 3 countries and 44 universities. The Networks mission is to pair university researchers with city policy makers to undertake research, development and deployment projects that improve infrastructure, public services, and environmental sustainability.
- **Dallas** - Focus is on next generation careers – the vision for a smart city is a lot more than sensors. City is taking a "best minds" approach and bringing together a range of companies including universities
- **Galvanize** - Galvanize is "where you can become a developer, data scientist, or build a tech startup." Galvanize provides a full stack curriculum - constantly updating curriculum. Industry alignment is key. Data science and analytics course focuses on collecting and organising data - machine learning, software engineering, statistical analytics. Data engineering focuses on structuring decisions / solutions.
- **Austin** - City has been intentional about recruiting smart talented students.

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KEY THEMES – INSIGHTS FROM CITIES



10. Building Design

Theme: Improving collaboration, innovation, efficiency and productivity through smart building design and education.

Amazon: Key design features included:

- Each building has its own name and peculiar design (Nessie, Day 1, Big Foot etc) which create environmentally friendly workspaces that help inspire collaboration and innovation
- District energy exchange - recycling the heat from a nearby building to heat office space
- Whiteboards in the elevators
- Bird noises in the foyer, running water / streams outside / green features to create an Amazonian feel
- Focus on integrating with the local community – eg. private Amazon spaces that can be used by the public, banana cart, art developed by kids from a local shelter in the foyer
- Pieces of local public art have been commissioned for prominent outdoor areas in the campus
- There is a "university of Washington outpost" in the campus area (bringing students to the precinct and creating a more vibrant feel at the same time as integrating with research)

District 2030: is a PPP not for profit focused on facilitating, convening and educating building owners on smart buildings. The aim is to have all buildings carbon neutral by 2030

MicroSoft: Key design features included:

- Aggregating data from all buildings on campus and looking at leading indicators of out of the norm machine failure, fault prediction, energy consumption - saving 10-20% through building energy consumption
- The campus is 96% compostable for rubbish.
- Connected and intelligent buildings that interact with business systems. People centric buildings that feel and react to your presence. Building information is linked to your "fitbit", it knows your calendar, knows where your next meeting is and helps you to get to that meeting (eg. automatic lift, information in the foyer).
- Focus is on being able to interact with spaces and have "organisational agents" that act on behalf of the organisation. Like a Siri but for the organisation. Eg. if you want policy information about what whether you can have a party in the park you can just ask the organisational agent and it will know all of the policy details of the organisation.
- A big focus on smart buildings is on understanding who is in a space and whether that person is authorised to be there – creating the connection between the physical world and the IoT world.
- Focus on the visitor check in experience, having lobbies with a "feel" like a lounge room and screens to not only help you enter the building but also help you exit the building eg. with taxi info, flight info etc

Fujisawa Sustainable Smart Town: Will be a smart town with 1000 households when all stages are complete including community facilities, social services, education, and commercial precincts are also within the community. The town is based on a Smart Life Concept and is based around 5 themes:

- Energy – energy from the sun – self creating and self consumption of energy
- Security – ensuring safe and secure living through a virtual gated town
- Mobility – total mobility lifestyle for non-driving residents to become more active and drivers to be eco-friendly
- Wellness – lifestyle to improve health and communications in daily life
- Community – strong person-to-person networks and enjoyment of the greater connection with the community

The Living Future Institute: provides assistance to help cities reach their climate goals.

Seattle Bullitt Centre:

- The Bullitt Centre is the largest "living building" in the world. It uses "state of the shelf" products that can be purchased by anyone.
- Human behaviour is one of the key drivers in getting the Energy Use Intensity (EUI) of the building from the standard 92 to an EUI of 16. Plugs, heating and lights play a major role in shrinking the EUI
- The building produces its own energy, is its own water utility, and provides it own waste management. It does not rely on municipal infrastructure It has internal and external blinds to regulate sunlight, and warmth. Windows are triple glazed. Composting toilets use 3 tablespoons of water.
- City of Seattle policy was changed to provide incentives for living buildings – eg. added floor area ratios and height that creates more leasable area
- The building is constructed using only approved products - chemicals / toxins on that are not allowed by the Living Future Institute are not used in living buildings. Natural and exposed materials are used in construction. Materials also come from local producers to reduce transport and emissions. The building is influencing local manufacturing and the economy - inspiring new stories and businesses and manufacturers to change their product lines to produce locally & remove toxins
- Cleaning of the building occurs during daytime to save energy on lights at night
- Many of the structural elements are reversible so at the end of the life of the building the building can be disassembled
- All staff have work stations with 3 feet of an opening window
- Companies in the building who lease space each have an energy allotment. There are incentives for using less energy and penalties for using more than the allotment.

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KEY THEMES – INSIGHTS FROM CITIES



11. Internet of Things

Theme: Technology is a means to an end. Use cases need to be developed relevant to the city that squeeze the value from the technology.

- **City of Chicago:** Looking at how to develop a "fitbit" for the city through the "array of things". The city had limited real time detailed information coming on environmental data eg. on air quality, humidity, light, temperature, etc. Developed an "array of things" that has 42 nodes in the pilot and will rollout to 500 nodes each carrying 30 sensors. The city is currently undertaking a 3 week consultation process around the privacy policy for the array of things. In deciding where the sensors will go, there are a number of considerations, but the focus is really around the problems trying to be solved:
  1. Do we have a partnership in the community – eg. with a not-for-profit, a church etc?
  2. Is there an academic research angle in the community?
  3. Is there a policy or operational area the city wants to explore?

  Chicago captures and geocodes every tweet in Chicago. Eg. a series of tweets about people potentially getting food poisoning from a restaurant is interesting. The city is working towards using data to drive resource allocation. All cities face the same problem of having a smaller resource pool than the size of the problem they are trying to fix. They started by using the data the city had and are now working towards gathering new data through new data sources
- **City of Austin:** In the next few years there will be 26 sensors for each person on the planet and 10 devices for each person. Focus is to connect sensors and devices in the smartest way possible. The city will behave holistically - to sense see feel on a real time basis if we do it the right way. If you are going to invest make sure the infrastructure has more than one purpose.

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Item 15.7 / Attachment 9.

