CITY OF MELBOURNE

House of Representatives Standing Committee on Infrastructure and Communications: inquiry into the role of smart ICT in the design and planning of infrastructure

City of Melbourne response

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GPO Box 1603
Melbourne VIC 3001
Telephone   (03) 9658 9658
Facsimile   (03) 9654 4854
DX210487

ABN 55 370 219 287

1. Overview

The City of Melbourne welcomes the opportunity to provide a response to the House of Representatives Standing Committee on Infrastructure and Communications' inquiry into the role of smart information and communication technology (ICT) in the design and planning of infrastructure.

We recognise the critical importance of smart ICT in all facets of our services and operations. Indeed, our vision is for Melbourne to function as a smart city: where the city utilises ICT to enhance liveability and to achieve our sustainability goals.

The City of Melbourne is already a global leader in civic engagement and urban innovation. Our citizens participate in city governance and we effectively leverage technology to maintain our status as one of the world's most liveable cities. We aspire to achieve a similar level of global recognition for our ability to utilise the opportunities presented by smart ICT.

But we do not simply consider ICT as an enabler of our own efforts in infrastructure management. Importantly, it is also a means of working with external stakeholders to jointly address the issues facing the city or to meet their own business needs.

This position is based on an understanding that to address all types of urban imperatives; such as traffic, water and energy management, health, safety and business, the best ideas are more likely to be generated from outside a government organisation than within it.

Into the future, we will therefore have to balance a shift from being predominantly builders of ICT systems to consumers of services provided by third parties. Being smarter about how we procure and develop these services and products will help unleash innovation and provide opportunities for local start-up businesses to gain exposure in the fast growing global smart city sector.

2. About Melbourne

Melbourne is Victoria's capital city and the business, administrative, cultural and recreational hub of the state. The City of Melbourne's city centre covers 37.6 sq. km and has a residential population of around 125,000, with an additional 730,000 people working, studying in or visiting the city each day. The City of Melbourne encompasses the Melbourne CBD, Southbank, Docklands and eleven of Melbourne's inner-city suburbs. The City of Melbourne serves its municipality through five service streams, as outlined in Table 1.

Table 1: City of Melbourne service areas

DELIVER COMMUNITY SERVICES	ACTIVATE CITY	ADVANCE MELBOURNE	DESIGN, BUILD AND MANAGE ASSETS	REGULATE
Care for the older, vulnerable and people with disabilities	Events	Urban planning and design	New infrastructure	Building regulation
Waste collection	Arts and Culture Programs	Sustainability initiatives	New parks and gardens	Car space management
Child care, maternal and child health, family and youth services	Tourist services	City Research	New buildings and developments	Planning regulation
Library services and community centres	City Marketing	Business support and development	Renewal and maintenance of existing buildings	Food and public health regulation
Recreations services and facilities		International relationships	Renewal and maintenance of infrastructure	Event regulation
City safety			Renewal and maintenance of parks and gardens.	Local Law regulation
Community support groups			Street and public place cleaning	

In 2013 the Gross Local Product of the City of Melbourne economy was $86.7 billion including 438,972 local jobs, 7.49 million sq. metres of office space and 1.39 million sq. metres of retail space. The City of Melbourne is a major contributor to the Victorian and Australian economies, accounting for 27% of Victoria's Gross State Product, and 6% of Australian Gross Domestic Product. Melbourne is a centre for global business, education and cultural institutions, attracting a diverse vibrant and fast-growing community.

In the Grattan Institute's *Mapping Australia's Economy* Report, cities are said to be the backbone of the Australian economy, with CBDs and inner city areas critically important to the nation's prosperity. The report states that national policy and infrastructure interventions need to "respond to our economy's spatial dimension, including by minimising barriers to highly productive activity in inner city areas". It suggests that the largest dividends to public investment in infrastructure are achievable if applied to these areas.

3. The City of Melbourne's general response to the inquiry

A number of powerful trends have emerged over the last two decades or so to shape the innovation landscape for cities. Rapid developments in ICT, smart and mobile devices, sensing, cloud computing and other internet technologies, along with the human capital that exploit them, have created new possibilities for collaborative action. Complex urban challenges can now be addressed by smart communities – comprising hyper-connected, technologically agile and often entrepreneurial innovators – that are the new agents of change and generators of knowledge.

The City of Melbourne's smart city priorities recognises the potential of these technologies and the opportunities for collaboration they enable. It has established a Smart City Office, incorporating components of research, innovation and geographic information systems and works with industry, the university and community sectors to encourage experimentation and the generation of ideas and solutions to infrastructure management issues.

Our priorities are:

- open data
- engagement with and the involvement of external players
- the development of urban spaces that are ICT enabled
- high bandwidth connectivity, both wired and wireless
- utilising ICT to enhance performance
- to respond to both the positive and negative disruptive impacts of emerging ICT enabled business models on the city
- to exploit ICT to encourage co-ordination and shared service delivery between governments

In light of these priorities, we urge the Committee to consider the following needs for local government:

- development of interoperability and standardisation arrangements
- resolution of legal and regulatory uncertainties arising from new applications of smart ICT in the public domain, while addressing the security and privacy demands of citizens
- support for the implementation of pilot projects and other forms of experimentation
- support for investigations into the lowering of costs or different business models for ICT implementation for cities
- support for initiatives that facilitate the transfer of knowledge between cities and other ICT stakeholders
- support for initiatives that build public awareness of the emerging benefits of ICT in the public domain
- support to ensure the deployment of ICT does not distract from the look and feel of cities

4. City of Melbourne use of ICT – current and anticipated

The City of Melbourne employ a range of ICT applications for multiple functions and purposes, including asset management, integrated parking, design, mapping, modelling, public tools for wayfinding and community engagement.

The following case studies present an indication of the extent to which the City of Melbourne currently engages in smart ICT initiatives.

CityLab

City of Melbourne established CityLab an innovative practice in 2013 that enables the City to be faster, leaner, more productive, more innovative, more collaborative and more agile. Working with internal and external partners, CityLab

provides a means by which new approaches and technologies can be prototyped and tried within a risk-controlled and creative environment.

CityLab has successfully designed and delivered a number of projects with corporate, government and academic partners such as open data with the developer and academic community, sensor deployment for the Internet of Things project with Arup and Melbourne University, the Maker exploration project with Second Muse and the Melbourne maker community and more recently the Accessible Navigation Project with Studio Thick and members of the accessibility community.

CityLab has built strong working relationships with Melbourne's university sector. PHD students from Melbourne University are working on developing a framework for assessing the likely impacts (both positive and negative) of applying new technology to solve city problems. CityLab has also facilitated a number of design studios in collaboration with RMIT Masters of Design, Innovation and Technology focused on the "Turning Basin" (2014) with Dr Carlo Ratti and "Accessibility at QVM" (2015). It will also be involved with a design studio on 'Future of Local Government' from RMIT School of Communication Design.

Pedestrian Counting

The City of Melbourne's pedestrian counting system measures pedestrian activity by transmitting data from 28 wireless pedestrian counting sensors across the city to a central server and a visualisation website. The web-based tool is specifically designed to allow public users to visualise pedestrian patterns at all locations at any given time and day. It is a valuable tool for a range of data users. Retailers for example might be interested in the data to identify staffing and resource requirements or to develop marketing strategies to maximise their exposure.
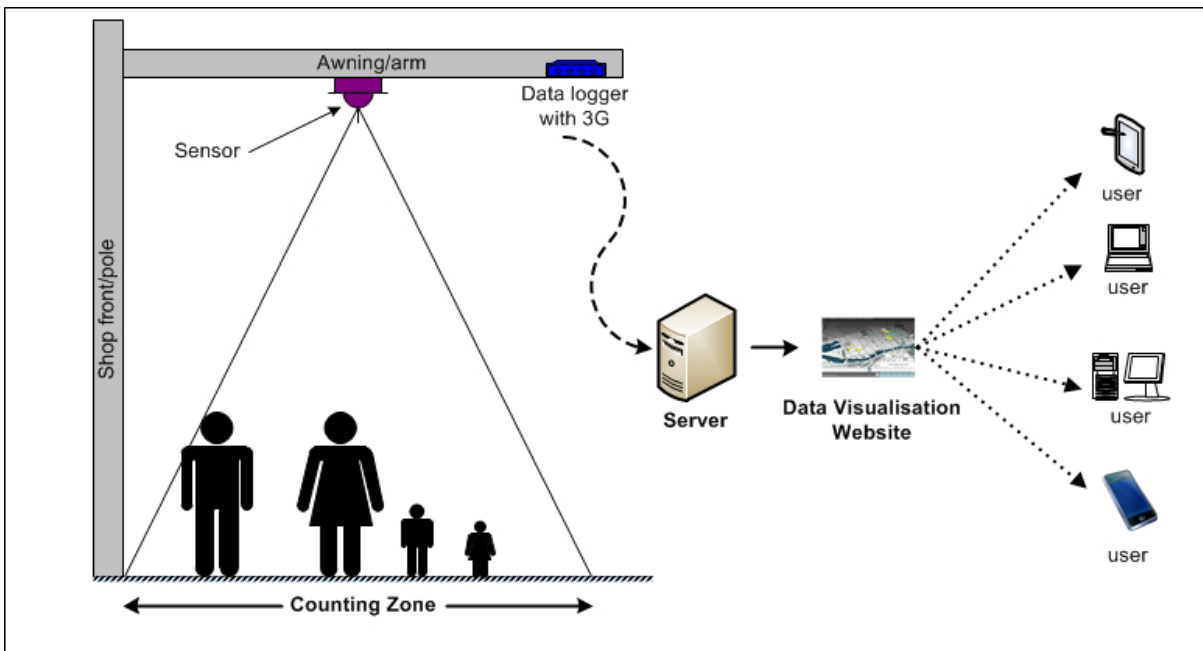
The City of Melbourne's Pedestrian Counting System

An open data portal

The City of Melbourne has developed an open data portal to make publicly available the information gathered to support our services to the community and to encourage it reuse by the city. The City of Melbourne has committed to this initiative to foster greater transparency and accountability, to drive innovation and economic opportunities for Melbourne whilst creating a more cost effective, efficient and responsive government.

All appropriate data collected and stored is made available in machine-readable formats while safeguarding sensitive information and rigorously protecting privacy. Appropriate open licensing is in place to facilitate data use.

Free Wi-Fi coverage within the municipality

The City of Melbourne has partnered with the Victorian Government to launch a five year pilot of free public Wi-Fi in the city aimed at further developing the tourism and education sectors, increasing social inclusion and encouraging new business models.

Internet of Things research

The City of Melbourne has partnered with ARUP and University of Melbourne School of Electrical and Electronic Engineering on a three year Australian Research Council project on "Creating a Smart City through the Internet of Things". The City of Melbourne worked with the research team to install solar powered sensors in Fitzroy Gardens and Docklands to collect real-time data on temperature, light and humidity.

IBM Smarter Cities Challenge

The City of Melbourne has recently been awarded an IBM's Smarter Cities grant to assist the City better understand how to engage our communities in anticipating and coordinating responses before, during and after extreme events to minimize impacts on health and safety, infrastructure and our economy.

IBM will contribute the skills and expertise to address this critical challenge with the City and its key stakeholders. City of Melbourne is one of two winning cities who have also been selected to receive Twitter Data alongside our Smarter Cities Challenge engagement.

This project will complement City of Melbourne's participation in the 100 resilient cities challenge funded by the Rockefeller Organisation.

Future applications

The value of ICT's contribution to City of Melbourne operations and service delivery is anticipated to grow. We are currently seeking new ways of better exploiting ICT, including:

- to undertake community engagement and digital democracy campaigns
- by developing a digital council prototype that guides all online and social media presence
- by building a secure online account system for residents and ratepayers
- by shifting high volume work to digital platforms

5. Response to the seven terms of reference of the inquiry

5.1 Identifying innovative technology for the mapping, modelling, design and operation of infrastructure

The City of Melbourne continues to utilise a range of applications to meet its mapping, modelling, design and infrastructure maintenance needs. With respect to modelling, we employ applications to model, both spatially and temporally, objects, behaviours, relationships and dependencies. With respect to design, we employ applications that enable designs to be scalable, agile, interactive, immersive and web-enabled.

The City of Melbourne encourages further research and other forms of support for the use of technologies that serve the infrastructure management needs of local government.

5.2 Identifying the new capabilities smart ICT will provide

Smart ICT is a critical component in today's urban development model. Our response to a range of contemporary urban challenges is strengthened by incorporating elements of smart ICT and we are looking to expand the use of smart ICT to new areas of service delivery and operations.

Our interest in expanding the coverage of smart ICT is driven by an appreciation of the benefits it offers. These include the ability to:

- transmit, record and present data in real time
- rapidly respond to and develop applications to issues
- undertake predictive modelling
- undertake parametric modelling
- visualise and simulate data
- optimise performance
- self-repair infrastructure

5.3 *Examining the productivity benefits of smart ICT*

The City of Melbourne recognises that smart ICT drives productivity. The productivity gains are available both internally - for City of Melbourne infrastructure managers, and externally - for partners pursuing solutions to city problems and for businesses pursuing their enterprise solutions.

Smart ICT is a resource that drives:

- faster development and deployment of plans and projects
- enhanced collaboration platforms
- better public accessibility to information
- better archiving and co-ordination of information for infrastructure managers
- the optimisation of resources
- the establishment of new ways to deliver and consume services

The City of Melbourne encourages further assessments of the productivity benefits available through the deployment of ICT.

5.4 *Harmonising data formats and creating nationally consistent arrangements for data storage and access*

The City of Melbourne strives to ensure its data systems can be integrated with existing systems.

In keeping with our priorities in open government, open innovation and collaboration, the City of Melbourne encourages further research and other forms of support into models that harmonise data formats and establish, the adoption of arrangements that ensure consistency, interoperability, security and openness at the national level.

A concern for the City of Melbourne is the fact that a wealth of multi-dimensional information becoming available through urban planning and land development processes cannot be integrated with existing statutory land administration systems (e.g. land registry) and as such we will not be able to provide the broad, accurate and accessible integrated knowledge base necessary to support multi-faceted decision making.

5.5 *Identifying international best practice in the use of smart ICT in the design and planning of infrastructure*

The City of Melbourne encourages further exploratory work to be undertaken to understand best practices from abroad, particularly from European, North East Asian, and North American cities advancing the deployment of smart ICT in infrastructure design and management.

We welcome the opportunity to work with partner cities, internationally and nationally, and encourage the Committee to note exemplar cities such as Barcelona and Helsinki and exemplar innovation models such the UK's Horizon 2020 program.

Applying the learning from other initiatives or domains would need to be undertaken in conjunction with work on ICT and smart urban technology standardisation, with involvement of the relevant standardisation bodies.

5.6 *Considering the use of smart ICT in related fields, such as disaster planning and remediation*

As discussed in section 5.2, the City of Melbourne anticipates the coverage of smart ICT to expand to new areas of local government influence. For fields such as disaster planning and remediation, we expect to benefit from a range of ICT attributes, including scenario modelling, assumption testing and instant, real-time and anywhere communication. Importantly, smart ICT will allow us to be better prepared for emergency management and to better connect with residents during emergencies.

5.7 *Considering means, including legislative and administrative action, by which government can promote this technology to increase economic productivity*

The City of Melbourne promotes the adoption of smart ICT in a number of ways. We lead by example and showcase our innovation, we welcome partnerships in ICT related initiatives including with small and start-up businesses, and we encourage the reuse of civic data. We ensure our data is widely used externally by focussing on accessibility and ease of use as guiding principles in their release and presentation.

We also support public initiatives (such as hackathons, showcasing events and public dialogue events) that draw attention to the benefits and opportunities of open data and the ICT infrastructure that harness the data.