Cities as Living Labs

Creating Innovative, Connected Cities

Trends

Cities are becoming increasingly connected. Advances in communications technologies have seen more and more people, connecting to networks. Now large numbers of devices, sensors and objects – collectively known as things – are connecting to the Internet. This development represents a shift, from networks based upon people, to one based upon things. The result is known as the Internet of Things.

Humanity is becoming increasingly urbanised. In 2014 the United Nations reported that 54 percent of the world’s population lived in urban areas and projected this to increase to 66 percent of the world’s population by 2050.¹ Australia, despite its vast size and relatively small population, is one of the most urbanised countries in the world, with 75 percent of the population living in the 20 largest cities.²

It can now be said that humanity has entered an urban age. The combined trends of urbanisation and connectivity place the idea of the connected city as central to supporting social, economic and environmental sustainability.

² Department of Infrastructure and Regional Development. State of Australian Cities 2014-15 (pdf: 9MB)
The Role of Local Government

Local governments across Australia face similar demands in maintaining various types of infrastructure and networks; public transport, lighting, power, roads, and sewerage among many others. This maintenance accounts for a large proportion of expenditure and population growth only exacerbates the issue as increased levels of sustainable funding have to be found to build further infrastructure and meet future service demands.

Local governments are under increasing pressure to do more with less. One way of achieving this is by providing existing services more efficiently. Another way is to create new types of services that meet demands in innovative ways, perhaps bypassing inefficient legacy approaches.
From Smart Cities...

A **smart city** is one that uses technology to better manage its resources, to improve service delivery, reduce costs, and create growth opportunities. Examples include sensor networks to improve traffic flows and reduce water usage, as well as encouraging developers to use open data to create new apps for better town planning or public transport. These methods make the most of existing assets alleviating the demands for expensive new infrastructure. New apps can also fundamentally change services such as planning approval processes to reduce processing times and costs.

... To Connected Cities

Smart cities solve only part of the problem. The key to realising further gains is transitioning from smart cities to connected cities. Connected cities allow for increased value and efficiencies to be extracted from shared data and intelligent systems. They can also address the challenges of efficiently building, managing and sustaining areas of high population growth.

Citizens and businesses often operate across local government boundaries. To deliver effective services to the community in an efficient manner requires a combined strategic approach from local governments. To achieve this a common platform is required to allow for knowledge sharing, improved efficiencies and to drive growth.

Enabling the Transition

The movement towards connected cities requires a coordinated and holistic approach. New ideas need to be fostered and supported. Traditionally, labs were closed places where research was contained and outcomes slowly released to the community. Cities on the other hand are living and dynamic environments. Therefore, innovation needs to be located within this context.
A Living Lab

Cities need to become living laboratories. Living labs bring together Internet of Things (IoT) infrastructure installed throughout the community that enables data collection, aggregation and decision support. The infrastructure should provide an open platform for innovation that brings together service providers with problem owners to address and respond to the challenges and opportunities of the urban landscape.

Creating the Connected City

Turning cities into living labs provides many opportunities for local governments. For example, local governments can monitor and better manage maintenance routines, extract the most from otherwise idle assets, and even implement measures to control the times of peak demand for various services and infrastructure such as congestion charging or variable costs for hard waste collection.

The city as a living lab can drive accountability through the widespread monitoring of various parameters. This will show contractor performance in near real-time, and by sharing this data with other councils in the ecosystem there will be invaluable opportunities for cross-referencing to achieve best practice.
Like any new idea the connected cities concept comes with its own potential problems. Technology is only a means to an end and must not be the driver of any initiative. Local government officials and technology experts need to come together to identify both the big issues and the best solutions. Only once the shared problems and pain points are identified then the best technology approaches and solutions can be developed.

Other considerations for a successful transition are ensuring integration with existing local government systems, policies and practices. The ability to scale a technology solution to meet the requirements of dense inner metro areas as well as the large geographical expanses of outer metro and regional local governments is also essential.

A system designed specifically for an inner metropolitan area will probably not translate well to a rural town, for example: they will have different scopes, budgets and types of infrastructure. However, they will have commonalities that can be shared for better outcomes that need to be identified as the first stage of transition. Any solution must be open rather than proprietary so that participants do not feel locked into a particular vendor or technology. Solutions must be flexible and adaptable to a broad range of input data and provide equally flexible reporting and analysis.
Technology experts will need to understand the fundamental ways in which local governments work and their constraints. Key considerations include the political and administrative processes, which will inform the design of any technology-based solutions. This process could also improve management and decision-making by local governments through easily implemented data and analysis tools.

To realise connected cities a long term, comprehensive strategic approach is required. This would allow the development of an open platform that would enable the capture, analysis and integration of a diverse range of inputs across a local government’s portfolio of responsibilities. The platform should not be developed for a single specific need or outcome, but must respond at many levels to many problems and provide solutions to each.

The most important stakeholders are the citizens and local businesses who will ultimately pay for, and have to benefit from new and more efficient services. The best methods for engaging their participation needs to be identified. Local governments must provide the long term planning vision and the political messaging to get all stakeholders on board.

**Turning Cities into Living Labs**

The connectivity between people, places and things is increasing at an astounding rate. The Internet of Things is emerging in many areas and its applications are sprouting across the country in sectors as diverse as emergency management, healthcare and logistics.

There is now a genuine opportunity for local governments to position themselves as creators of the connected future. Turning cities into living labs will drive the innovations necessary to manage growth, increase efficiency and enhance service delivery.