Using the Power of People and Technology to Establish "Smart Cities"

La Fabrique de la Cité is a French urban innovation think tank dedicated to bringing the concept of "smart cities" to reality. HEB Construction recently brought the Chair of La Fabrique de la Cité, Cécile Maisonneuve, to New Zealand to present on what makes a "smart" city and the lessons our cities can learn from other cities around the world grappling with urban growth and development. The article below draws on information from Cécile's presentation and the broader work of La Fabrique de la Cité.

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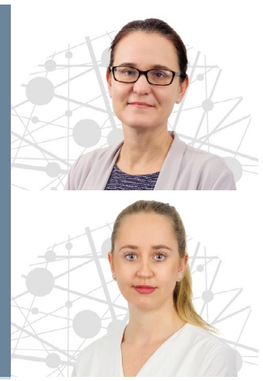

INTRODUCTION

How to make our cities smarter, better and more innovative has been a hot topic over the last decade. "La Fabrique de la Cité" translates to "The City of Tomorrow" and its mission is to bring together professionals (including scientists, entrepreneurs, planners and academics) and government organisations to research and create conversations about what makes a smarter city and what cities of the future could look like.

La Fabrique de la Cité focuses on five key areas: mobility, urban planning and construction, energy, the digital revolution, and new usages. The digital revolution in particular has provided new opportunities to rethink how we can make our cities more liveable. As Cécile points out:

> *"Because of the digital revolution we are going through we won't maintain, we won't build, we won't operate, we won't manage our cities the same way we used to do. We will need to have a transversal approach and an innovative approach to urban issues."*

WHAT IS A SMART CITY?

There is no universal definition for what makes a smart city. The smart city concept has emerged as a strategy to mitigate urban issues generated by population growth and rapid urbanisation. The concept of a smart city goes to the heart of what makes a city thrive, and that makes it context-dependent and inherently difficult to articulate. As Cécile explains, when you ask urban stakeholders what they want for their city, they do not say "smart" or "connected" in so many words, but they want a city that is "liveable", or that "enables growth".

The simplest way to explain the concept of a smart city is to think of it as a tool to help a city to fulfil its potential for the future. The use of information technology to improve the quality and efficiency of urban environments is critical. But the idea of a smart city is about much more than just technology. A smart city operates in a forward-looking way in terms of its economy, people, governance, mobility and environment. It is about putting an integrated network of systems in these areas that together contribute to a more sustainable and liveable city. The first step in the process is to articulate a coherent vision for the city.

IT STARTS WITH A VISION

Many cities around the world have started to establish "smart city plans", which articulate the city's vision for a smarter future (for example, the Smart London Plan and the Smart City Wien Framework Strategy (City of Vienna)).

Australia has taken a slightly different tack. The Australian Government has developed a Smart Cities Plan which contains some high-level principles to guide its cities in what is essentially a top-down approach. In 2016 the Australian Government established an AUD $50,000,000 smart city fund dedicated to projects allocated across the country. Ultimately, each city will need to come up with its own smart city vision – and some Australian cities have done just that, for example the Newcastle City Council Smart City Strategy 2017–2021.

So how does New Zealand measure up? In 2015–2016 LINZ undertook the Smart Cities Programme, which developed 13 smart technology projects across Auckland, Wellington and Christchurch. The focus was project-specific rather than articulating any national strategic approach or vision.

By New Zealand standards, Wellington is ahead of the pack. In 2010 the Wellington City Council developed "Wellington Towards 2040: Smart Capital", part of the vision for Wellington that the Council has been evolving since the early 1990s. Although it has not been updated since 2010, arguably Wellington is already reaping the benefits of having a clearly articulated guiding strategy and a framework in place to achieve these objectives.

Auckland is in the process of preparing the second version of the Auckland Plan. Its focus is more on spatial issues in terms of how the city will physically grow and change over the next 30 years. Auckland Conversations took a step in the right direction in opening up discussion on what makes a smart city, and there is a lot of work being undertaken in various areas to make Auckland more "liveable". However, Auckland has also recently dropped its "world's most liveable city" objective, and it still lacks a coherent and integrated smart city vision to guide its various initiatives.

NO "ONE SIZE FITS ALL SOLUTION"

There is no blueprint for what makes a successful smart city. Case studies undertaken by cities around the world show that each city needs to find its own interpretation of what makes a smart city. Public input is critical to this process.

La Fabrique de la Cité's work has identified a wide range of innovative tools that can assist in building a smart city, including:

Reinventing the road network: New functions are assigned to the road network so that, depending on the time of the day, traffic intensity or specific events, the road network adapts itself dynamically through a solar-powered display mechanism allowing road markings to be turned off, usage to change, and the public space of the road to be maximised. Usage data allows for the management of the thoroughfare in real time, as well as for the dynamic pricing of the various services.

> *Dynamic road marking is already being used for peak-hour traffic contraflows and traffic safety, but it also provides a great opportunity to maximise and adapt the public space of the road network for pedestrians, special events and parking as well as vehicles.*

Data-driven cities: Harnessing and creating value from the prodigious amounts of data cities now produce, store and analyse. A regulatory framework that is conducive to urban optimisation and innovation is the first critical step.

> *Boston, with a population of approximately 650,000 people, has implemented a series of unique systems providing for in-depth analysis of the city's performance. For example, the partnership between Waze (Google) and Boston now provides drivers, cyclists and pedestrians with city traffic status updated via a mobile app that allows 400,000 users to reroute if needed. Boston's Traffic Management Centre also uses the data gathered by Waze to control the city's 550 traffic lights.*

Rethinking governance and delivery: Collective and inclusive decision-making processes involving the public sector, the private sector, non-profit organisations, the academic world and citizens. Top-down thinking has had

Continued

its day. Decision makers need to understand that bringing all stakeholders together massively increases the chance of successfully delivering urban projects.

> *Amsterdam Smart City is the vehicle for projects by Amsterdam Economic Motor in cooperation with Liander (an electricity supplier). Amsterdam Smart City is the facilitator of initiatives involving citizens, companies, knowledge institutions and local public authorities. The partnership-based collectives develop and deliver local projects based on innovative technologies (e.g. smart energy meters, electrical charging ports for ships at the port) in order to cut CO_2 emissions.*

Capitalising on underutilised areas that need to be regenerated in response to a changing economy: Many cities have underutilised areas such as ports and industrial areas in need of regeneration. La Fabrique de la Cité has studied several European cities that have successfully brought such public assets under the control of a single publicly-owned, privately-driven authority that develops the asset for long-term public gains rather than short-term political ones. The objective of this model is to capture the value of underdeveloped and underutilised urban areas to finance the development of those assets, as well as other urban infrastructure such as transport and water.

> *Copenhagen used a publicly-owned, privately-driven corporation to redevelop its port area. Over the past 25 years Copenhagen has not only transformed its waterfront but also used the proceeds of land disposition and development to finance a metro system across the city.*

TWO SUCCESS STORIES

La Fabrique de la Cité's research shows that some cities have been more successful than others in implementing their smart city visions. Two success stories from opposite sides of the Atlantic are Pittsburgh and Lyon.

Pittsburgh

In approximately three decades following its population peak in the 1950s, Pittsburgh lost half of its population (from over 600,000 to around 300,000 people), largely due to the decline of the industrial sector. The steel industry had also left behind considerable environmental degradation. City officials realised that a dramatic rethink was required to fill the gaping hole its once-thriving industry-based economy had left.

In the late 1990s city officials entered into an agreement with charities, universities and corporates to use technology, artificial intelligence and robotics to rebuild the city. This initiative was greatly assisted by the fact that Carnegie Mellon University in Pittsburgh had, and still has, one of the best Artificial Intelligence departments in America. Funds were available to undertake research, through key corporate stakeholders such as Google and Uber, to test real people on real streets so as to see how people actually move – in other words, a "living lab". Through these partnerships, mobility and transportation policies were reinvented.

Over the past 20 years Pittsburgh has transformed itself, and in 2016 it was ranked the 62nd most sustainable city in the world in the overall index rankings (Sustainable Cities Index 2016 – Arcadis). Notably, neither Auckland nor Wellington made the top 100 list.

Lyon

Lyon has had a strong strategic planning focus since the late 1980s. The "Schéma Directeur Lyon 2010" (Lyon 2010 Plan) was drafted in the early 1990s and has been updated numerous times. This strategic document contains the long-term policy for urban, economic and social development of the Lyon metropolitan area, a conurbation which includes 71 local authorities.

The Lyon Smart City process was launched over 10 years ago as one means of implementing Lyon's strategic vision. The strategy hinges off "community strength" by deploying an approach to innovation built on the "working together" model:

- Methods based on open innovation to build new urban services with the help of users.
- An agile approach that includes and anticipates digital evolution.
- Robust public-private-citizen co-productions that encourage innovation and experimentation.
- Very close contact with the population through the activation of new forms of citizenship.
- An approach and actions that are shared and without barriers, in collaboration with territorial partners.

The first active step of the Lyon Smart City strategy was the rollout of self-service bicycles, but since then the strategy has resulted in:

- more than 100 innovative projects;
- over 250 diverse partners, including 13 European cities; and
- over 60,000 jobs in both the design/research and digital technology/creative industries (Lyon Smart City, Grand Lyon La Metropole, Greater Lyon Business).

The major urban projects carried by the city (including the Lyon Confluence Urban Development Project, Lyon Part-Dieu, and Lyon Gerland, Carré de Soie) have become "life-size" areas of experimentation to imagine and develop new ways of living and working in the city.

THE WAY FORWARD – LESSONS FOR NEW ZEALAND

New Zealand cities and towns have some way to catch up if they want to be hailed as leading smart cities. It is clear from La Fabrique de la Cité's work that there is no blueprint for success. What constitutes a smart city depends on context and the formation of a clear vision. Collaboration at all levels – central and local government, institutions, corporations and citizens – is necessary to ensure the necessary buy-in to make that vision become a reality.

The journey towards becoming a smart city is a continuing one. Smart cities are not perfect. The very technology and changes put in place to solve urban issues can create new problems. For example, in New York, Uber and other similar services have transformed the way that people are transported around the city. However, the number of hours when there are "empty" cars on the road (cars which only contain one driver) has increased by 80 per cent, and congestion has also increased. In this way, the smart solution has actually worsened mobility in some respects and created what Cécile describes as a "modernity paradox". Remaining agile in responding to a dynamic urban environment is key to the long-term success of any smart city strategy.

For further information, see La Fabrique de la Cité <www.thecityfactory.com>.