

How Smart Are We?

Smart phones, smart cars, smart construction, and smart refrigerators: today, everything is smart. But what does a Smart City look like? How will it improve our lives? What is it that Hong Kong wants and what does it need? – By Jimmy Chow

In his book *The Road Ahead*, published in 1995, Bill Gates predicted that we would be using computers the size of a credit card one day. History proved him right, of course, but even Gates' vision has been surpassed. Today, high-speed Internet access and the proliferation of Internet of Things (IoT) devices are now leading us along the road to future smart cities.

When it comes to what characterises a smart city, futuristic scenes immediately spring to mind. Sci-fi fantasy aside, there has been a lot of talk about how Hong Kong can actually be turned into a "Smart City", with the Office of the Government Chief Information Officer having recently issued a study report on smart city blueprint for Hong Kong.



Albert Wong, a consulting director for PwC Hong Kong, which was commissioned to hammer out the study report, says that the study is a good starting point for stakeholders and the public to discuss the priority, viability, identify challenges, and collaboratively generate ideas for future implementation.

The government should take into account Hong Kong's unique circumstances, relevant policies and resources to consider feasible initiatives to promote smart city in different areas, said Wong. And after further consulting with stakeholders and collecting views from the public, the government will be set to issue a more solid blueprint in the third quarter of 2018.

The report

The study report defines the major aspects of smart cities as Smart Living, Smart Government, Smart Economy, Smart Environment, Smart Mobility and Smart People, and these are described as thus:

- **Smart Living** enhances the overall living experiences, across age groups and demographics, by focusing on improving an individual's ability to interact with electronic services, and by improving general wellbeing and health. The aim is to create a safer, more secure, accessible, and happy society.
- A **Smart Government** is able to serve its stakeholders through the deployment of supporting infrastructures that collate, analyse and present city data in the ways that can best support the stakeholders, leading to a more vibrant, dynamic and safe community.
- A **Smart Economy** is designed to strengthen the city's economy by improving the overall business climate, appeal to start-ups and investors, and facilitate sustainable economic growth.



- A **Smart Environment** changes how the government manages Hong Kong's built and natural environment in the interest of improving the quality of life for Hong Kong's citizens.
- **Smart Mobility** aims to enhance people's mobility through efficient and targeted capital deployment models and infrastructure investments.
- **Smart People** aims to fundamentally transform the way people access public and private sector services and facilitate the retooling of talents and lifelong learning.

The report has made a good number of suggestions to help achieve the goals outlined in each of the above areas. For example, it proposes to develop a strategic roadmap for Intelligent Transport Systems, and provide multi-functionalities via sensors at public transport interchange to work towards Smart Mobility.

"To achieve Smart Living and Smart Environment, we also propose to offer more digital payment options and promote green and intelligent buildings. On Smart Government, we propose to enable a more efficient building lifecycle through the use of Building Information Modelling (BIM) and set up a virtual 3D simulated platform for interactive visualisation and analysis of city data", said Wong.

To assess the feasibility of these proposals, the report advises experimenting with pilot projects, such as Smart Public Transport Interchanges or Major Bus Stops; Intelligent Signalised Junctions and Pedestrian Lights; Smart Parking; and a Smart Region Living Lab. The pilots would demonstrate the success of the programmes, convince the public of their value, and work out any difficulties before deciding whether to roll out these projects on a territory-wide basis.

"We believe Kowloon East, especially the Kai Tak Development Area, is one of several good testing grounds, where a number of smart-city projects are underway or have been proposed, such as smart water meter system and electric vehicle charging facilities, real-time parking vacancy information, smart energy grid, and so forth", Wong added.

Current projects

As one of the key smart-city projects to promote efficient use of energy, CLP Power has recently launched a one-year Smart Energy Programme. Smart meters have been installed for 26,000 selected residential customers in order for them to track electricity consumption data in real-time through the Advanced Metering Infrastructure (AMI) system.

The smart energy grid scheme also provides CLP Power with a better understanding of customers feedback towards a variety of demand-response

measures, enabling the company to explore how to effectively implement AMI in the future, and offer a service that can better cater to customers' future needs.

The AMI system also enables the power company to monitor the performance of the power grid, and automatically notifies the control centre about any abnormalities. This helps speed up power restoration and further enhances supply reliability.

Britcham's smart stake in the game

As a major stakeholder in the business sector, the British Chamber of Commerce has established Smart Cities Forum as a platform for discussion about what

would make Hong Kong a smart and liveable city today and in 2050. The committee will engage with government on ways to make Hong Kong a smart city it envisions.

Dr Anne Kerr, Chair of Smart Cities Forum and Global Head of Cities at Mott MacDonald, said many people think smart cities are only about technology. In reality, smart cities are way beyond that.

"Smart-city components have got more aspects to them. Technology is one, but that's not the only thing. It's underpinned by many components such as governance, energy, building, mobility, infrastructure, technology, healthcare and citizens", said Kerr.

"And there are also intelligent buildings. And smart cities rate high in walkability, liveability, mobility and telecommunications... But wrapping around them all is data, data and data. How we collect data, analyse

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it, and make most sense of it to turn analytics into actionable intelligence will be key”, said Kerr.

“We should be focusing on building a community by leveraging big data and by the inter-operability of components, not just a built form”, she said.

“We should be putting people first. It’s important to ensure the general public’s understanding of the benefits, their engagement, and crucially their support. Meeting and discussing with stakeholders is important. This way everyone can have a say and we can understand their aspirations and to create a roadmap”, Kerr said.

Hong Kong’s first steps to Smart

Dr Kerr said Hong Kong has what is required of future smart cities. A meaningful smart city requires that all services are interconnected and automated wherever possible via a strong, resilient and secure network. In terms of connectivity, Hong Kong takes pride as one of the top connected cities in the world with fastest Internet connection speeds.

“In terms of mobility, Hong Kong’s public transportation is fantastic. From street-level trams to the very efficient MTR network, they are convenient and can move a lot of people around. On city planning, the Hong Kong government is at the forefront of master planning future communities, making us the envy of many countries in the world,” Dr Kerr said.

PwC’s Wong also noted that Hong Kong has a good education system, world-class tertiary institutions and sufficient legal protection for intellectual property (IP) and privacy, which are the fundamentals of innovations and user confidence.

“In fact, the government can further promote innovation by making IP rules more transparent and fair for determining if the data can be redistributed or combined with any other data”, he said.

Smart private investment

Dr Kerr noted that one strong contribution to the development of smart cities is the use of Building Information Modelling (BIM) in the construction sector. BIM enables construction players – from architects to workers on site – to collaborate effectively on the same, synchronised platform. In building design, BIM and Design for Manufacturing and Assembly (DfMA) are closely aligned, she explained.

To put the concept into perspective, BIM supports a more efficient assessment of options, helps non-technical stakeholders visualise the proposed project, and reduces rework. In construction, BIM allows superior control and allows greater opportunities for design for off-site prefabrication. In the future, the use of BIM must be extended to building operations as well, said Kerr.

“Wearable robots and the use of artificial intelligence on construction sites, for example, can reduce the amount of accidents, reduce wastage, and make the industry more attractive to the younger generation”, Dr Kerr noted.

Smart spaces

As urbanisation continues, there is a growing need to improve the standard of living, access to work, and create greater access to facilities.

According to Jeremy Sheldon, Managing Director, Markets and Integrated Portfolio Services, Asia Pacific at JLL, the adoption of PropTech, or the convergence of technologies working in step to modernise and

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digitalise real estate development and management, will improve living standards, enhance productivity, and drive economic growth.

Sheldon is also Chair of the Chamber's Real Estate Committee, as well as a member of Smart Cities Forum. In the planning and building of future smart cities, built environment professionals definitely have a significant role to play, he said.

"Connectivity will be the basis of future smart cities. I think the real estate industry has to be able to plug into future smart city development. Using new technologies and systems, we can come up with efficient strategies and solutions for all participants, whether they are government, property owners, occupiers, etc.", said Sheldon.

Smart living for all ages

Smart cities employ a range of technologies, including many connected devices, to improve district-level management, governance, and long-range design and planning. For example, given the demographic condition of an ageing population, there is a growing demand for affordable housing, healthcare facilities and fitness/wellness spaces, said Sheldon.

"While we develop more flexible workplaces, with more innovative solutions, we actually can lay out business spaces that allow for multiple uses. So from a workspace for day to day business, to a space for people to gather, idea creation as well as entertain", he said.

A flexible, agile workplace provides the necessary mobility for people to a variety of work tasks without interfering with other peoples working environment. A more flexible, scalable but ultimately people-centric workspace can help cut operating costs, and lower attrition costs – as employees feel engaged with the broader organisation – and (subsequently) leads to enhanced productivity.

"Such flexibility in the workplace has spawned whole new concepts of co-working and even co-living. Such changes need to be carefully planned and executed from strategy through tactical implementation to on-going operations," said Sheldon.

Smart data use

On a granular level, building data collected can be turned into analytics that help fine-tune the processes at a greater number of building systems to lower energy and maintenance costs. One example Sheldon cited is the use of real-time sensors to sound alerts on issues like leaks, damaged equipment, or security alerts.

Compared to five short years ago, Sheldon says costs are not the barrier they used to be to prevent property owners from embracing smart building solutions. "For example, the costs of installing and running sensors in the workplace to judge occupancy can be an incidental cost now", he said

"Technological advancement is moving ahead at an extraordinary pace. The call for a sustainable future and demand from the younger generation are driving the shift towards smarter, more sustainable building solutions."

As the corporate sector increasingly demands smarter, greener office space, owners are more willing to invest in upgrading their premises,

future proofing them in order to secure good-quality tenants, he said.

During the initial planning stages of its smart cities initiative, Sheldon said as seen elsewhere in the world, the government could establish a mix of positive policies and regulations that would contribute to an environment conducive to innovation and public-private partnership.

The PwC report also suggests the government incentivise the private sector to participate in researching, designing, and providing the smart city solutions. A "champion" with sufficient authority is suggested to spearhead top-level policy making, coordinate efforts among different government units, and demonstrate to external stakeholders that the government attaches great importance to the subject.

"At the end of the day, technology adoption alone does not make our city smart, rather; it is how a people-centric approach is used in the implementation and application of new technologies," said PwC's Wong. 

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