

**For discussion on
13 June 2016**

**Legislative Council
Panel on Information Technology and Broadcasting**

Smart City Development in Hong Kong

Purpose

This paper briefs Members on the Government's plan to formulate a blueprint for building Hong Kong as a smart city and the scope of the consultancy study for this purpose.

Background

Global Developments

2. In the past few years, there is increasing interest in the concept of "smart city" among governments, business and the general public around the world. Not only does it present opportunities to improve cities and quality of living, smart city development is expected to foster technology development and business growth, both local and international.

3. Major cities around the world are pursuing smart city development having regard to their own circumstances and priorities to enhance city management and livelihood of the general public, and adopting specific policy and strategy. For example, Copenhagen is committed to building a green city and seeks to become a technology solutions leader in relevant areas as well as to export the technologies to other countries. In the case of Vienna, the city government seeks to achieve growth coupled with reduced resource consumption whilst improving quality of living through innovations in all fields. Under its Smart Nations strategy, Singapore aims to build a well-connected city by developing and employing information and communications industries. Recognised as a leader in smart city development worldwide, Barcelona pursues actively integrated town planning and extensive use of information and green technology, covering a total of 22 key areas of projects and solutions.

4. On the technical side, international standards organisations including the International Organization for Standardization (ISO), the British Standards Institution (BSI), the International Electrotechnical Commission (IEC) and the

International Telecommunication Union (ITU) are developing smart city standards to support the widespread adoption of common approaches in the implementation of smart city initiatives and services. In the Mainland, the National Smart Cities Standardization Coordination Group has been established to plan, steer and promote the development of smart city standards at national level. These standards play an important role in facilitating application and transfer of technologies and solutions among different cities and countries.

5. Apart from connectivity, open data sharing is another key component of smart city development in most cities/countries e.g. New York city, London and Estonia. It facilitates the development of smart city solutions and applications for continuous improvements to existing public services or even adoption of innovative service models, which could be initiated and developed by the public and business community in particular startups. Such data generally come from sensors and other digital devices within the city infrastructure as well as from datasets released by public and private organisations.

Government Policies

6. In the 2015 Policy Address, the Government announced its plan to use Kowloon East as a pilot area to explore the feasibility of developing a smart city. The Energizing Kowloon East Office (EKEO) under the Development Bureau has recently commissioned a consultancy study for the Kowloon East pilot project.

7. In the 2016 Policy Address, the Chief Executive re-affirmed the Government's commitment to building Hong Kong as a smart city and the Innovation and Technology Bureau (ITB) will, in collaboration with research institutions and public and private organisations, study the development of a smart city, and formulate a digital framework and standards for the development of a smart city. In response to global trend of big data analytics, ITB will also formulate policies on big data applications.

8. The overall objectives of developing Hong Kong into a smart city are:

- (a) making use of innovation and technology to address urban challenges to enhance city management and improve quality of living, and to improve sustainability, efficiency and safety of our city;

- (b) enhancing city attractiveness to global business and talents; and
- (c) inspiring continuous city innovation and sustainable economic development.

Current Situation

9. Hong Kong is well-positioned to pursue smart city development with its advanced information and communications technology (ICT) infrastructure, and is an early adopter of Internet of Things (IoT) technologies. Government departments as well as public and private organisations have been adopting sensors and related technologies in various fields to achieve their respective policy objectives. For instance, the Transport Department deploys sensors at busy roads for collection of real-time transport data, the Drainage Services Department uses intelligent ultrasonic sensors to detect water levels in manholes of different types of drains for prioritising maintenance and cleaning works to minimise flooding risks, and the Civil Engineering and Development Department uses sensors in monitoring slope conditions for landslide prevention. In addition, the Customs and Excise Department has deployed the E-Lock System as an efficient, secure and traceable customs clearance process between Hong Kong and the Mainland, which allows tracking through the Global Positioning System (GPS) and reduce customs examinations across the boundary and clearance time significantly. The Octopus card payment system, initially launched as a public transport fare payment system in 1997, is a pioneer in electronic cash payment system.

10. To enhance city connectivity, the Government has pledged to progressively expand the coverage of “Wi-Fi.HK” by doubling its number of hotspots to 34 000 within three years, covering venues including public rental housing estates, public hospitals, markets, parks, sitting-out areas, promenades, tourist spots, public transport interchanges and land boundary control points, etc. The speed of Wi-Fi connection at government venues will be doubled progressively to 3-4 Mbps and its security will also be further enhanced. In addition, we will offer free Wi-Fi services at all youth service centres and study rooms run by the Government and non-profit-making organisations. Furthermore, we will collaborate with public and private organisations to expand “Wi-Fi.HK” coverage to venues of high public patronage such as busy streets, bus stops and shopping malls.

11. Launched in 2011, the Government’s Public Sector Information (PSI) portal – “data.gov.hk” – was revamped in 2015 to provide a one-stop platform

for free access to datasets in digital, machine-readable format released by Government departments, public bodies and private organisations. At present, over 6 000 datasets are available for free access at the PSI portal.

Consultancy Study

12. Different cities have different strategies in pursuing smart city development, having regard to their respective policy, local circumstances and resources. It is imperative for us to first formulate a Smart City Development Blueprint for Hong Kong as a holistic framework. This comprises policy objectives and strategy, development plans, governance arrangements, digital infrastructure, open data sharing, and public-private collaboration. To this end, we will conduct a consultancy study in 2016-17 and the scope of the study is set out in the ensuing paragraphs.

Policy Objectives and Strategy

13. In order for the Blueprint to suit local circumstances and ultimately bring significant improvements to our quality of living as well as other objectives set out in paragraph 8 above, the consultant will recommend smart city strategies and initiatives to address major urban challenges faced by Hong Kong. The consultant will be asked to draw up a set of indicators/parameters to assess progress and improvements over time, and where appropriate, conduct comparison with other smart cities.

Development Plans

14. The consultant will need to map out long-term development plans up to 2030 for the proposed smart city strategies and initiatives. These plans should be people-centred, and should aim to make use of technology and open data to address urban challenges faced uniquely by the city with a view to improving sustainability, efficiency and safety of our city.

15. To promote the release of more datasets through the PSI portal, we will ask the consultant to map out an effective strategy for facilitating the release of more open datasets from both the public and private sectors, an example being the Market Place initiative introduced by Copenhagen recently. Where appropriate, the consultant should compile a priority list of datasets from public and private organisations that should be opened up for the initial phases of smart city development.

Governance Arrangements

16. Experiences of other cities suggest that given the nature and scope of smart city development, strong leadership and commitment are essential for ensuring sustainable and concerted efforts by relevant parties in the public and private sector. We envisage that a high-level Government co-ordination committee will be required to oversee smart city development in Hong Kong. We will ask the consultant to map out an appropriate committee structure for formulating bureau-specific or sector-specific smart city action plans and oversee their implementation.

Digital Infrastructure

17. We will ask the consultant to map out an appropriate digital infrastructure, including the following –

- (a) digital platforms and infrastructure for data collection (via sensors and other data-related smart devices), storage, distribution, transfer, sharing, analysis and applications, with reference to relevant overseas and Mainland digital frameworks such as X-Road of Estonia, the Barcelona Smart City IT Architecture, and the smart city framework of the National Development and Reform Commission of the Mainland China;
- (b) technical standards suitable for Hong Kong (with reference to international and Mainland standards);
- (c) communications and network infrastructure required to support smart city development; and
- (d) mechanisms to ensure information security and privacy protection, scalability (technological and commercial) and interoperability among components of the infrastructure, which should allow for technological changes over time.

Legal Framework

18. The consultancy will study the legal framework in other cities/countries and relevant overseas experiences which are conducive to the implementation of smart city initiatives, and identify legislative proposals, if needed, for underpinning smart city development.

Public-Private Collaboration

19. In pursuing smart city initiatives, major cities around the world have all sought to collaborate with the academia and industries. Public funding constraints aside, this helps tap the creativity and research excellence of the academia and encourage the business sector to innovate and invest in smart city solutions.

20. The consultancy will look into the possible models of collaboration, drawing reference to other countries' experiences e.g. the conventional Build-Operate-Transfer (BOT) approach, the Open Business Model adopted in Amsterdam, and the tripartite partnership among government, the academia and industries in Copenhagen. The recommended business models and collaboration framework should facilitate both the development of smart city initiatives and solutions as well as the development of innovation and technology in Hong Kong.

Crowdsourcing of Ideas

21. We will set up a dedicated portal in the initial stage of the consultancy for collating early feedback and inputs from stakeholders and the public at large.

Pilot Projects

22. We will ask the consultant to draw up a package of smart city pilot proposals in selected locations as a test bed for technology and solutions. Priority should be given to the Kowloon East area vis-à-vis the latest study by the EKEO. In formulating these proposals, the consultant should provide the following:

- (a) nature and scale of individual pilot projects;
- (b) rough indication of cost (capital and recurrent), and likely financial implications to the Government;
- (c) implementation agents and timeframe; and
- (d) opportunities for private sector participation in implementing and/or subsequently operating these pilot projects.

Next Steps

23. We expect the consultancy study to commence in the second half of 2016 for completion in March/April 2017.

24. Having regard to the recommendations of the consultancy study plus other inputs, e.g. through the dedicated portal for crowdsourcing of ideas, we will determine the priority of different areas in the development plans in consultation with relevant bureaux/departments, define the role of the Government, academia and industries, implement safeguards for data privacy in big data analytics, and so forth. We will brief Panel Members nearer the time.

Advice Sought

25. Members are invited to give their views on our plans to formulate the Smart City Blueprint for Hong Kong and the scope of the consultancy study as set out in paragraphs 13 to 22 above.

**Office of the Government Chief Information Officer
Innovation and Technology Bureau
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