The Institution of Engineering and Technology
Hong Kong
4412-13 COSCO Tower
183 Queen's Road
Central, Hong Kong
T: +852 2778 1611
F: +852 2778 1711
www.theiet.org/hongkong

IETHK comments to Hong Kong Government's 2014 Digital 21 Strategy

1) **In response to "Wireless infrastructure in Hong Kong":**

- The two very fundamental issues in wireless communication are connectivity and capacity. Expanding the city-wide Wi-Fi connection by doubling the number of hot spot from ten thousand should set the right direction. The Government plans to reach this target in one year but we believe this target would be easier to achieve if the Government join forces with commercial operators. We believe the five mobile operators have sufficient resources to support this aggressive expansion plan.

- Wi-Fi is a short-ranged low power consumption system that uses unlicensed spectrum for wireless communication. It is getting reasonably popular because of its low implementation cost. We like to point out that Wi-Fi is only one of the many players in the wireless world. Other co-existing technologies should also be considered while the Government is drafting the city-wide wireless grand plan. HSPA is already a matured technology. The latest digital base full packet switching LTE which is promising low interference for multiple access, better traffic congestion management, and can operate in superior data rate, could be a part of the total offering. As a matter of fact, major cellular phone manufactures in the market have already forecasted that data volume will surpass voice volume and will therefore become the mainstream. ZigBee, a technology that has received less attention from the public, has proven its capability to support point-to-point communication between smart devices such as smart meters and other equipment for energy conservation.

- While connectivity is only a part of the formula, Government should also pay attention to improving capacity. In this aspect we're referring to data rate. Network bandwidth and actual throughput are two separate issues and should be dealt with differently. The true network throughput is a compelling issue especially when using content-rich multimedia applications during peak hours such as video

streaming and online gaming. Congestion and bottleneck problem frequently happen when more users are connecting simultaneously.   The Government may consider applying a benchmarking tool to periodically audit and measure the attainable network throughput, publishing the result to show if the networks are reasonably fluent. This can increase operation transparency and induce constructive competition among operators for service improvement.

- Besides connectivity and bandwidth issues, the Government should also pay attention to other non-technical but equally critical aspects when building a 'smarter city' which was not mentioned in the Digital21 Strategy e.g. cyber security.   Hong Kong should cultivate an image that the city is 'not only modern but safe & secure' to sustain quality of living.

    - Cyber security has been a great issue in the digital age. Hong Kong has not seen a large number of cybercrime cases but they do exist and may not have been discovered yet; and we believe cybercrime is on an uprising trend.   Eavesdropping, phishing, and various forms of fraudulence can all adversely affect a city's image.   The issue is equally important in the wireless space where communication is basically free for interception. The Wi-Fi Alliances and security experts in the industry have been working on all kinds of encryption and authentication techniques.   We suggest the Government evaluate these security measures on mobile technology, including the applicability of security standards and guidelines to mobile devices. Then develop guidelines for standardized implementation. We also recommend the Government to operate a task force that will continue policing the cyber environment particularly in the wireless domain.   This could be out of the scope of Digital21 but the two are correlated.

2) In response to "For schools to drive e-learning":

- School should receive funding to build an e-Learning platform.   Having said that we all know government resources are not unlimited and there are other programs competing for funding.   Our recommendation is to make use of sponsorship and concession pricing policy given by vendors. Periodic training program conducted by industry experts will definitely balance the teachers' loading and can bring latest technological trend to students.

- Some argue that mandatory computer programming at school can stimulate creativity; but we hold a disagreement. Programming can be a skill to help develop a student's logical mind in finding a solution. However, there is no empirical and statistical evidence to prove that programming training correlates with stimulating creativity. We agree with increasing student's computer literacy level through a more general level course but mandatory programming training may not necessarily deliver a desired result. We suggest introducing programming course at an early stage in the form of an extracurricular subject to allow student to explore their interest. Advancing to any formal and higher level programming course should be on voluntary basis.

3) In response to "Creating open data and interoperability":

Our suggestions in addition to those outlined in the Digital21 Strategy are:

- Initiate a government-wide open mobile data, application, and Wi-Fi API policy; and identify standards and best practices for improved interoperability between different mobile technologies, such as 4G LTE data, Wi-Fi

- Set up a government-wide centralized mobile device management platform. For example, government promoting Wi-Fi tablets or mobile devices in use for education and learning from primary schools, secondary schools and higher education institutions. School can receive funding from the Government or through vendor's sponsorship program. See above.

- Develop an overall strategy based on the conceptual model described in the Digital 21 Strategy in Mobile Computing initiative, which could address these layers:
    - Information layer (open data and content)
    - Platform layer (systems, processes, shared platforms)
    - Presentation layer (websites, applications, third-party services)
    - Recommend guidelines for improving digital services and customer experience

4) In response to "Public sector information as default":

In general we welcome the initiative of public information to facilitate information sharing. The only potential pitfall that must be monitored is the use of personal data. The Government must reinforce the policy set out by the Privacy Commissioner for Personal Data (PCPD) in respect to protecting personal and privacy data, especially those disseminated by the Government and related to personal information. Personal information should only be given and used for a particular purpose. For this the Government must build a guideline and notify the public the appropriateness of using such data. Patch up any loopholes to avoid possible grey area to prevent resources from being exploited for any unjustified reasons.

5) In response to "The business environments in Hong Kong to foster creativities":

The resources available to engender ICT's talents that could think outside their traditional ways are scarce in Hong Kong, as compared to other well developed or developing locations including Silicon Valley in California, Shanghai, etc. Even though Hong Kong talents may be equipped with sufficient brainpower to achieve technological innovations, the excessive amount of time and effort any ICT entrepreneurs required or spent in raising resources is bound to hinder their innovative implementations for long term development. More specifically, the cost of living in Hong Kong is simply too high that talents can hardly afford to maintain their basic livings without looking for immediate financial gains. The stakes to obtain grants or loans from any institutions are too high and rigid. There is a lack of innovative schemes available from private or public fund raising institutions such as Hong Kong Stock Exchange to support ICT's starters. Those schemes available currently focus solely on the projects and their success rate, but rarely do they support the costs of living for the people who wish to devote full time on high-risk innovative ICT projects.

Recommendation:

The Government funding schemes should support junior capital pools for innovations that should also enable the successful applicants to maintain their reasonable standard of living. The Government should invest and lead these junior capital pools for high-risk innovative projects, provide financial guarantees for successful cases, streamline the approval processes, etc.

6) In response to "Made-in-Hong Kong worldwide brand names":

The economic infrastructures developed over the last centuries have made Hong Kong an international service center where overseas giant corporations can easily obtain world class services by setting up their regional headquarters here. On the contrary, local talents cannot easily break into the international scene and get support to compete with international counterparts.

Recommendations:

Private/public/government venture investments should spend more resources to support Made-in-Hong Kong branding companies, encourage and promote entrepreneurship to expand outside Hong Kong, offer both financial and technological supports to start-up groups, create resources raising apparatus in Hong Kong for junior innovators, etc.

7) In response to "Copyright issues":

Software piracy does exist in Hong Kong and companies using commercial software do have concern about legal consequences. However those companies that have factories and offices in China , have difficulty exercising similar control over them. The Hong Kong Government is recommended to connect and closely liaise with the Chinese Government, and have in place relevant policies to help tackle such cross-border copyright issues.

8) On Areas that have not been mentioned in Digital21

- In relation to the subject of quality of the network, we are unsure if there is an existing monitoring program that can periodically audit the true throughput of the service provider's network. Similar to the mechanism mentioned above in the wireless network, we suggest a dedicated unit (the Consumer Council for example) to conduct regular benchmarking among the service providers to make known their real network throughput.

- Digital technology can benefit Hong Kong residents in greater extend. For instance, utilities are collecting valuable data that can help consumers to better manage energy consumption and conservation.   The Digital21 paper did not mention the use of renewable energy. It's time for the Government to produce a roadmap after

a number of pilot projects and experiments that have been executed by both utilities. As a part of Smart Grid, electrical vehicles can make a great impact in emission reduction (in urban areas). These vehicles should further exploit their onboard communication equipment to help drivers reduce energy use, for example by delivering information about battery data, safety range, nearest charging station. A similar argument goes to Automatic Metering Infrastructure that was meant to encourage demand side management. These are very practical applications that will bring tangible benefits to Hong Kong residents. Digital21 should spearhead the use of the information to build a better image of Hong Kong.

- Population aging is a common issue in all developed countries. Hong Kong is not an exception. We would be glad to see if the ICT infrastructure can be utilized to support health care and elderly care in Hong Kong. Some suggestions are advanced equipment for quick diagnosis, full use of digitalization of medical record, dedicated spectrum for emergency response team. All these programs can effectively alleviate work load of medical staff.

- Taking mobile computing and communication one step further, the Government should start investigating mobile ad hoc networking technology (MANET). One major differentiation of MANET from its counterparts is the high mobility characteristic such as that in an inter-vehicular environment. MANET delivers a number of benefits. To name a few: dissemination of safety information, realtime reporting traffic condition so that drivers can avoid congested roads, delivering onboard infotainment, locating a parking spot, etc. This will entail the use of dedicated short range communication (DSRC) technology. Leading automobile makers are spending tremendous research effort today, although MANET is still in experimental stage. Implementation of MANET can be perceived as a landmark for a city of future.

- Waste management: recycling of scrap should also be an important part of Digital21 in maintaining a quality habitat in the digital age. As a matter of fact, this could potentially be a lucrative business that the Government should encourage.