

**For discussion
on 16 May 2022**

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

Update on Smart City and Digital Economy Development

Purpose

This paper seeks to brief Members on the Government's latest efforts in promoting the development of smart city and digital economy in Hong Kong.

Background

2. The Government has been actively promoting the development of smart city and digital economy in Hong Kong through multi-pronged policies and measures. Together with the resources earmarked in this year's Budget, we have injected over \$150 billion into the development of innovation and technology (I&T) over the past four years or so, including promoting the development of digital economy, to build Hong Kong into an international I&T hub.

The Development of Smart City

3. The Government published the first edition of the *Smart City Blueprint for Hong Kong* and the updated version *Smart City Blueprint for Hong Kong 2.0* (Blueprint 2.0) in 2017 and 2020 respectively. Blueprint 2.0 has set out over 130 smart city initiatives, apart from the six smart areas, namely "Smart Mobility", "Smart Living", "Smart Environment", "Smart People", "Smart Government" and "Smart Economy", the initiatives that deal with the epidemic under the new normal and the Smart Village Pilots have also been included in a bid to build Hong Kong into a more advanced and livable smart city which brings convenience to the public and businesses.

4. Since the release of Blueprint 2.0, various bureaux / departments (B/Ds) have been actively taking forward their initiatives with a view to using I&T in addressing city management challenges and improving people's livelihood. Currently, over 40% of work has been completed or is ongoing (see Annex for details), and the remaining work is also at the implementation

stage. The following sections highlight the development of some major smart city infrastructures and the progress of the newly added initiatives under Smart Village Pilots that are being taken forward by the Government.

The Infrastructure Projects of Smart City

5. Smart city infrastructure is an important catalyst and key element in driving smart city development. After a few years of preparations and constructions, Hong Kong's smart city infrastructures are being put into service progressively, which include:

Government Cloud Infrastructure Services and Big Data Analytics Platform

6. The launch of the Next Generation Government Cloud Infrastructure Services (GCIS) and the Big Data Analytics Platform (BDAP) in September 2020 has greatly facilitated the system connectivity and data interchange among departments and assisted departments in implementing more projects using innovative technologies such as artificial intelligence and big data analytics. The GCIS and BDAP have so far supported over 350 digital government services and 15 projects for conducting big data analytics. Apart from continuing to increase the system capacities of the above infrastructure facilities and cover more digital government services, the Government will also launch a Shared Blockchain Platform in the middle of this year to facilitate the application of this advanced technology in government departments on all fronts.

One-stop personalised digital services platform "iAM Smart"

7. Launched in December 2020, the one-stop personalised digital services platform "iAM Smart" now has over 1.3 million registered users, with 42 government departments and public organisations as well as 10 private organisations providing more than 200 online services on it. The services provided include COVID-19 vaccination records and electronic testing records, eHealth, eTAX, vehicle licence renewal, application for working family allowance, checking of electricity and gas bills, etc. It is expected that more than 220 online services provided by public and private organisations will be accessible through "iAM Smart" by end-2023.

The Fifth Generation Mobile Communications Services

8. Local commercial 5G services were launched in the second quarter of 2020. To facilitate the extension of 5G networks, the Government launched a pilot scheme in March 2019 to open up about 1 000 government premises suitable for mobile network operators to install 5G base stations, and then further opened up about 500 government premises through a “demand-led” model in January this year. At present, Hong Kong’s 5G networks cover more than 90% of the population. The Communications Authority has so far assigned about 2 100 MHz of new spectrum for 5G services. In May 2020, the “Subsidy Scheme for Encouraging Early Deployment of 5G” under the second round of the “Anti-epidemic Fund” was launched to subsidise public and private organisations in their adoption of 5G technology. So far, more than 130 projects have been approved under the Scheme, covering various aspects and applications such as construction, commerce, entertainment, healthcare, education and environmental protection.

Multi-functional Smart Lampposts Pilot Scheme

9. Under the Multi-functional Smart Lampposts Pilot Scheme, some 400 smart lampposts with smart devices will be installed by phases in four urban locations with higher pedestrian and vehicular flow (namely Central / Admiralty, Wan Chai, Yau Tsim Mong and Kwun Tong / Kai Tak Development Area), with a view to collecting real-time city data such as air quality and traffic flow, enhancing city management as well as supporting the development of digital infrastructure for 5G services. Among them, over 70 smart lampposts have been in operation in Kwun Tong, Kowloon City and Kai Tak Development Area.

10. We will continue to arrange the installation works in various districts by phases and expect that the installation of some 300 remaining smart lampposts will be completed in 2023. Besides, we are facilitating the mobile network operators to select suitable smart lampposts and install 5G radio base stations for trial at Kwun Tong Town Center, with a view to using smart lampposts more effectively in enhancing the 5G network services.

Data Centres

11. Data centre is an indispensable and important infrastructure for smart city development. The Government has been proactively implementing a number of initiatives which include providing land for the development of high-tier data centres, encouraging conversion of industrial buildings and use of industrial lots to develop into high-tier data centres, as

well as providing support and inter-departmental co-ordination services through the Office of the Government Chief Information Officer (OGCIO)'s Data Centre Facilitation Unit to enterprises which are interested in setting up data centres in Hong Kong, so as to promote Hong Kong as the prime location for data centres in the Asia Pacific region.

12. The business of the data centre industry has been growing fast in Hong Kong in recent years. According to relevant market research conducted recently, the gross floor area of data centres in Hong Kong has increased from about 465 000 square metres in 2015 to about 799 000 square metres in 2021, representing an average annual growth rate of around 9.5%. These measures will not only facilitate the development of local data centre industry, but also provide staunch support for the growth of digital economy.

Use of I&T in Combating COVID-19

13. In the past two years or so, the Government has been making use of technologies to launch various initiatives to assist in its anti-epidemic work. These include the use of the “StayHomeSafe” mobile app with geo-fencing technology, the development of the “Interactive Map Dashboard on the Latest Situation of Coronavirus Disease in Hong Kong” in collaboration with the industry, the launch of “LeaveHomeSafe” mobile app, and the online booking system and registration system for Community Testing Centres in Hong Kong, the online booking system for the COVID-19 Vaccination Programme, the Central Vaccination Database, the COVID-19 Electronic Vaccination and Testing Record System, “QR Code Verification Scanner” mobile app to tie in with the implementation of the “Vaccine Pass”, and the “Hong Kong Health Code” system, etc.

14. Hong Kong's achievements of using I&T in combating COVID-19 have been internationally recognised. The International Exhibition of Inventions of Geneva 2022 has announced its winners earlier. Hong Kong has received multiple awards, of which at least 17 awards are directly related to the fight against the pandemic and four projects even won the Gold Medals. Among them, the COVID-19 sewage monitoring device facilitates the authority to take samples of sewage for COVID-19 monitoring, and uses the amount of virus contained in the sewage as the scientific basis for anti-epidemic work. The “IoT-enabled Mobile Modular HEPA Unit (MMHU): Together, We Fight the Virus” jointly developed by the Electrical and Mechanical Services Department, Hospital Authority (HA) and the I&T industry also won the Silver Medal. The invention facilitates the conversion of ordinary wards into isolation wards in a speedy and efficient manner.

More than 400 MMHUs have been deployed in 16 hospitals and community treatment facilities.

15. The Innovation and Technology Commission launched the “Public Sector Trial Scheme” in 2020 to provide funding support for production of prototypes or samples for trial in the public sector to facilitate the realisation and commercialisation of local research and development results. Among them, the anti-microbial coating technology developed by the Hong Kong University of Science and Technology for use in public buses, residential care homes for the elderly and lifts, etc. has been widely applied in the community. Recently, the relevant technology has released a new multi-level anti-microbial polymer coating which can effectively kill a variety of bacteria for five years and eliminate 99.9% of infectious viruses, including the Omicron mutant strains.

16. We will continue to leverage I&T to support the anti-epidemic work, and at the same time provide impetus for the revival of economy and promotion of digital economy development under the new normal brought by the pandemic.

Smart Village Pilots

17. Blueprint 2.0 has put forth smart village pilots in rural areas. The Government set up an inter-departmental working group on smart village pilots in March 2021 to explore the use of I&T and smart devices in addressing the specific environmental and daily life issues faced by residents living in rural or more remote areas. Relevant departments have already commenced a number of pilot projects, including the provision of free Wi-Fi services in more than 100 village premises to facilitate access to the Internet by villagers and tourists, as well as to support the development of other smart village pilot projects. The Government also encourages telecommunications operators to extend fibre-based networks to villages in remote areas through the “Subsidy Scheme to Extend Fibre-based Networks to Villages in Remote Areas”, which will expedite the broadband service and facilitate the development of 5G mobile network for 235 villages by phases from 2021 to 2026.

18. In addition, the HA provides telehealth services for the elderly living in remote areas via the mobile application “HA Go” and its Clinical Management System, thereby avoiding the inconvenience caused to the elderly and their family members or carers in having to travel long distances for medical consultation. Among which the St. John Hospital in Cheung

Chau has commenced its pilot services since September 2021 for selected patients who need to attend follow-up consultations at Pamela Youde Nethersole Eastern Hospital. The HA will further promote telehealth services in other village premises. To strengthen flood monitoring in rural villages, the Drainage Services Department has completed the installation of water level sensors at 20 rural drainage facilities to facilitate the monitoring of some flood-prone locations in villages and the timely implementation of flood mitigation measures.

19. The Agriculture, Fisheries and Conservation Department (AFCD) has also commenced the trial use of robotics and artificial intelligence technology for the detection of hill fire in country parks. It also updated the surveillance system at the Tin Fu Tsai Fire Lookout in July 2021. In addition, the AFCD is exploring the use of video analysis and artificial intelligence technology for monitoring the appearance of wild pigs. The Civil Engineering and Development Department is also exploring the use of technology device to identify vehicles entering closed roads in South Lantau without valid closed road permits. The Transport Department has replaced eight traffic signal controllers in Tung Chung, and has connected them to the Area Traffic Control Centre to enable remote adjustment of traffic signal timings to suit the traffic situation.

Development of Digital Economy

20. The Government understands that digitalisation is an inevitable trend in driving the economy towards high-quality development. We are actively promoting the development of Hong Kong into a smart city and boosting the development of digital economy through a data-driven approach.

21. The target of the Government is to collect useful data and make it available to the public so as to support city management and encourage industry players and research and development organisations in pursuit of innovative applications. On open data, the Government announced the new open data policy in September 2018 to release government open data in machine readable formats for free use through the “data.gov.hk” portal. The objective is to inspire innovation in the industry to develop more innovative applications so as to bring convenience to the public and create more business opportunities. The “data.gov.hk” portal also launched city dashboards in 2019 to facilitate the public to understand city-related open data and their applications more easily. At present, over 4 900 different datasets under 19 categories of public data and about 1 800 Application Programming Interfaces are available on the portal. The Government’s open data policy is well

received by the industry and the number of downloads exceeded 21 billion in 2021.

22. To proactively promote digital transformation within the Government, we have rolled out a series of initiatives as follows:

- (i) The TechConnect (block vote) supports government departments in carrying out technology projects to enhance operational efficiency and improve public services. As at the end of March 2022, a total of 121 technology projects proposed by 32 departments/offices under TechConnect have been given funding support, involving a total sum of around \$560 million.
- (ii) The Public Sector Trial Scheme under the Innovation and Technology Fund provides funding support for production of prototypes or samples for trial in public sector organisations so as to facilitate the realisation and commercialisation of local research and development (R&D) results. As at the end of February 2022, 375 projects have been granted with funding support, involving an amount of about \$716 million and benefiting over 180 organisations to participate in over 510 trials.
- (iii) The OGCI established the Smart Government Innovation Lab (“the Innovation Lab”) in April 2019 to encourage and invite industry players to assist government departments in their adoption of various information technology solutions. As at the end of March 2022, the Innovation Lab has matched over 60 business needs of various departments with solutions and arranged over 90 thematic workshops during the process.

Moreover, the Government has also introduced the Technology Voucher Programme which supports local enterprises / organisations to use technology services and solutions so as to improve productivity or to upgrade and transform the business processes. As at the end of February 2022, 10 052 applications have been approved, involving a funding support of about \$1.56 billion.

Developing Financial Technology (Fintech)

23. Hong Kong is a world’s leading international financial centre as well as a Fintech hub in the region. The Government has been striving to

promote Fintech development, including the applications of Distributed Ledger Technology in different areas such as trade finance, cross-border connectivity and insurance policy authentication. Currently, eight virtual banks, four virtual insurers and one virtual asset trading platform have been granted with relevant licences and authorisation to provide innovative financial services in Hong Kong. More than 1.2 million accounts have been opened by these eight virtual banks by the end of 2021. As one of the major Fintech infrastructure projects in Hong Kong that foster digital economy, eTradeConnect has been successfully bridged with the Trade Finance Platform of The People's Bank of China earlier, which laid the foundation for banks in Hong Kong and the Mainland to digitise cross-boundary trade finance. With the future introduction of the results of the research on central bank digital currency, the capital flow of international trade settlement will be facilitated, thus achieving the full circulation of cross-boundary trade information and funds.

24. The Hong Kong Monetary Authority is currently developing the Commercial Data Interchange (CDI) through which enterprises, particularly small and medium enterprises (SMEs), can authorise service providers to furnish the banks with trade and operational data of the enterprises. The banks can then make more objective and precise credit assessments, thereby reducing the need for SMEs to provide collateral and facilitating them to obtain trade finance more efficiently. The CDI has entered the pilot stage and is expected to commence operation by the end of this year.

25. The Government is also actively promoting the development of electronic payment and electronic commerce through provision of expedient and convenient means to make and collect payments electronically. Various electronic payment options are now accepted by the Government for bill settlement. Most common types of government bills that the public settle, such as taxes, rates and government rent, water charges; as well as the payment counters and self-service kiosks installed at the Immigration Department, Official Receiver's Office and the Transport Department, etc., already accepted payments made through Faster Payment System (FPS). The public may scan the QR code with their mobile devices to settle the aforementioned payments. The Government will extend the FPS services to payments for all online government services gradually with effect from second half of this year. Currently, over 80% of Government departments provide FPS service as payment option. More public services, including toll rates of tunnels and bridges, booking fee of leisure facilities, charge of Government carparks, and other services such as licence-related payments will be supported by FPS payment in the next two years to bring further

convenience to the public.

26. Regarding the co-operation with the Mainland, the Government has also been co-ordinating and promoting the development and application of information and communications technology with Guangdong through the Hong Kong / Guangdong Expert Group on Co-operation in Informatisation (EGCI), as well as implementing collaboration initiatives to tie in with the development of the Greater Bay Area into an international I&T hub for promoting the development of digital industries. The work of EGCI includes strengthening the innovative development of new generation digital technologies such as 5G, big data, artificial intelligence, cloud computing and blockchain in the region, as well as enhancing the co-operation between the two governments and facilitating the exchanges among the industry, academia and research sectors of the two places with a view to supporting the development of smart cities in the Greater Bay Area. The HKSAR Government and the People's Government of Guangdong Province are exploring to promote the development of smart cities and digital economy in the Greater Bay Area by facilitating cross-border data flow through consolidating Hong Kong / Guangdong open data resources (such as cross-boundary-related transportation data) and adopting appropriate digital technologies.

Strengthening the I&T Talent Pool

27. Talent is the key pillar in promoting the development of I&T and digital economy. The Government has adopted a multi-pronged approach to attract, nurture and retain talent to strengthen the I&T talent pool. To cultivate students' interest in I&T at early age, the "IT Innovation Lab in Secondary Schools" and the "Knowing More about IT" programmes provide funding for secondary and primary schools respectively to organise IT-related extra-curricular activities. In addition, the Government, the Hong Kong Science and Technology Parks Corporation and Cyberport also introduce various schemes such as the STEM Internship Scheme, the Innovation and Technology Scholarship and the Research Talent Hub, etc. to attract and support university students to pursue further development in I&T. On the other hand, the Reindustrialisation and Technology Training Programme subsidises local enterprises on a matching basis for their staff to receive training in advanced technologies, covering "Industry 4.0" process training, blockchain, data analytics and cyber security, etc.

28. The Government launched the FinTech Anti-epidemic Scheme for Talent Development in 2020 to subsidise local Fintech companies to create

nearly 1 000 full-time positions with a view to enriching Hong Kong’s Fintech talent pool. We have also provided Fintech training courses for financial practitioners, with over 1 200 beneficiaries so far. With a view to facilitating talent admission to Hong Kong, the Technology Talent Admission Scheme handles applications that involve the admission of non-local talent to undertake R&D work in Hong Kong expeditiously, covering 13 technology areas such as artificial intelligence, data analytics, Fintech, 5G communications, etc. The Global STEM Professorship Scheme supports universities in attracting world-renowned I&T scholars and their teams to undertake teaching and research work in Hong Kong. The Government will further increase the annual quota of the Quality Migrant Admission Scheme, as well as explore the extension of the Immigration Arrangement for Non-local Graduates to cover graduates of Hong Kong universities’ campuses in the Greater Bay Area.

Way Forward

29. The Government is actively promoting the development of smart city and digital economy. We will continue to implement the various initiatives set out in Blueprint 2.0 and plan to conduct a comprehensive review on the progress and achievements with a view to preparing the Blueprint 3.0 in 2023. In the meantime, B/Ds will continue to keep abreast of the latest development in smart city and I&T, update their development goals and related initiatives under Blueprint 2.0 regularly, and introduce new initiatives from time to time to match with the latest situation of smart city development in Hong Kong. We have uploaded the progress of individual initiatives under Blueprint 2.0 to the dedicated Smart City Portal (www.smartcity.gov.hk) and will update it timely to facilitate members of the public to understand the latest progress of various smart city initiatives.

30. In order to gain a more comprehensive understanding of the overall economy and the individual segments so as to enhance efficiency and promote innovation, we need to collect, digitalise, organise and analyse various data in the economic system. For enterprises, digitalisation is conducive to business upgrade and transformation, stimulate innovation and enhance competitiveness. As such, the Government announced in this year’s Budget that a “Digital Economy Development Committee” led by the Financial Secretary will be set up with the aim of accelerating the development of digital economy in Hong Kong and promoting digital transformation of various industries. Members of this Committee will comprise industry practitioners, experts, scholars, and relevant government officials. We are now actively

taking forward the preparatory work for the Committee.

Advice Sought

31. Members are invited to note the contents of this paper and comment on the development of smart city and digital economy in Hong Kong.

**Innovation and Technology Bureau
Commerce and Economic Development Bureau
Financial Services and the Treasury Bureau
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Implementation of Blueprint 2.0

Some of the initiatives that were completed in 2021 or are ongoing:

(a) Smart Mobility

- A new version of “HKeMobility” mobile application was launched in March 2021 to facilitate commuting and route planning by the public;
- The Smart Traffic Fund of \$1 billion has been set up to promote research and application of vehicle-related I&T, and applications were invited since March 2021. As at March 2022, 14 projects have been approved under the funding scheme, involving a total funding amount of around \$80 million;
- Automated parking system projects have been commissioned in batches starting from 2021;

(b) Smart Living

- The Geospatial Lab was established in May 2021 to encourage all sectors in the community to harness the use of spatial data that brings convenience to daily life and creates business opportunities for enterprises;
- The “smart toilet” pilot programme has been launched at 10 public toilets of the Food and Environmental Hygiene Department since the third quarter of 2021 to make use of Internet of Things technology to enhance toilet management and utilisation rate;

(c) Smart Environment

- The \$200 million Green Tech Fund has been launched to promote the research and development, as well as application of decarbonisation and green technologies. As of the end of December 2021, 14 projects have been approved under the Fund, involving a total grant of around \$69 million;
- Unmanned surface vessels have been employed to monitor water quality in reservoirs;

(d) Smart People

- Training on science, technology, engineering and mathematics (STEM) education have been organised for curriculum coordinators, etc. of primary and secondary schools. They are encouraged to coordinate more subject-based, cross-disciplinary

and STEM-related learning and teaching activities of relevant subjects inside and outside the classroom. A total of about 6 300 and 5 400 participants from 500 secondary and 400 primary schools respectively have signed up the courses;

- The “IT Innovation Lab in Secondary Schools” and the “Knowing More About IT” programmes have been launched to provide funding support to all publicly-funded secondary and primary schools in Hong Kong to enhance the training of secondary and primary students in IT knowledge outside the curriculum. So far, about 360 secondary schools and 140 primary schools have submitted applications;

(e) Smart Government

- The Big Data Analytics Platform has been launched to improve public services and facilitate B/Ds’ operations. Relevant facilities and the platform have so far supported over 350 digital government services and conducted big data analytics for 15 projects;
- The first generation of “Smart Prison” - Tai Tam Gap Correctional Institution commenced operation in May 2021. It makes use of I&T to promote the modernisation of correctional facilities, with a view to enhancing the efficiency of custodial management and the security of institutions, as well as the effectiveness of rehabilitation programmes;

(f) Smart Economy

- Implemented the Banking Made Easy Initiative to streamline regulatory requirements for remote onboarding, online finance and online wealth management;
- Support local enterprises/organisations to adopt technological services or solutions to enhance operational efficiency and provide distance business related IT solutions through the Technology Voucher Programme and the Distance Business Programme under the Anti-epidemic Fund.