Promotion of Innovation and Technology: Innovation and technology (I&T) are drivers for economic growth and the key to enhance competitiveness of our industries. In November 2015, the Innovation and Technology Bureau (ITB) was established to formulate holistic I&T policies, thereby fostering the development of I&T and related industries in Hong Kong, raising the competitiveness of Hong Kong and improving the quality of life of our citizens.

In her Policy Address in October 2017, the Chief Executive set out eight major areas to step up Government's efforts to develop I&T, namely increasing resources for research and development (R&D), pooling technology talent, providing investment funding, providing technological research infrastructure, reviewing legislations and regulations, opening up government data, bettering procurement arrangements and popularising science education. The Chief Executive also chairs personally a high-level steering committee to co-ordinate the Government's efforts to spearhead the I&T drive.

The Innovation and Technology Commission (ITC) under the ITB implements related policies and measures as well as provides software and hardware support for key players to collaborate on R&D and innovation activities. The approach in promoting I&T development is underpinned by five core strategies: providing world-class technology infrastructure for enterprises, research institutions and universities; offering financial support to stakeholders in the industry, academia and research sector to develop and commercialise their R&D results; nurturing talent; strengthening science and technology collaboration with the Mainland and other economies; and fostering a vibrant culture of innovation. The ITC also works closely with other government departments, the industrial and business sectors, tertiary institutions and industrial support organisations to promote applied R&D in different technology areas, as well as the upgrading of foundation industries.

The Office of the Government Chief Information Officer (OGCIO) under the ITB provides leadership for delivering information and communications technology (ICT) functions within the Government and enables the Government to take a proactive and leading role in championing ICT development in the community. The OGCIO has five core missions: delivering effective, secure and citizen-oriented e-Government Services to meet rising public expectations; nurturing and developing ICT talents in Hong Kong, enhancing their competency and professionalism; developing a vibrant ICT industry, promoting high-tier data centres, cloud computing services, big data and cyber security awareness; developing Hong Kong into a world-class smart city; and promoting a digitally inclusive and knowledge-based society.

Committee on Innovation, Technology and Re-industrialisation: The Committee on Innovation, Technology and Re-industrialisation was established in April 2017 to advise the Government on matters relating to the promotion of I&T development and re-industrialisation in Hong Kong. The Committee is chaired by the Financial Secretary.

Innovation and Technology Fund (ITF): The Government set up the ITF in 1999 with an injection of $5 billion to support projects that help industries develop innovative ideas and upgrade their technological level. Three injections amounting to a total of $9 billion were made in the past years. An additional $10 billion injection was approved by the Legislative Council in July 2018 to continue the operation of various funding schemes and implement new initiatives under the ITF.

There are 16 programmes under the ITF to cater for different needs: Innovation and Technology Support Programme; Mainland-Hong Kong Joint Funding Scheme; Guangdong-Hong Kong Technology Cooperation Funding Scheme (TCFS); Partnership Research Programme; Enterprise Support Scheme; R&D Cash Rebate Scheme; Midstream Research Programme for Universities; Public Sector Trial Scheme; Technology Voucher Programme; Researcher Programme; Postdoctoral Hub; Reindustrialisation and Technology Training Programme; Technology Start-up Support Scheme for Universities; Innovation and Technology Venture Fund; General Support Programme; and Patent Application Grant. As at the end of

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October 2019, 12 161 projects with a total ITF funding of $17.8 billion were approved, of which 4 070 are R&D projects. Most of the funded R&D projects were related to information technology (33 per cent); electrical and electronics (25 per cent); manufacturing technology (15 per cent); and biotechnology (8 per cent). The Government has also reserved $2 billion for setting up the Re-industrialisation Funding Scheme to subsidise manufacturers, on a matching basis, to set up smart production lines in Hong Kong.

The Hong Kong Science and Technology Parks Corporation (HKSTPC): The HKSTPC was established in May 2001 to provide one-stop infrastructural and other support services to technology-based companies and activities. It offers a comprehensive range of services to cater for the needs of industry at various stages, ranging from supporting technology start-ups through incubation programmes, providing premises and services in the Hong Kong Science Park for applied R&D activities, to providing land and premises for production in the industrial estates.

The 22-hectare *Hong Kong Science Park* located in Pak Shek Kok is an important I&T infrastructure in Hong Kong. It provides a conducive environment to nurture world-class clusters, through making available suitable buildings for lease to technology-based enterprises to carry out R&D work. Its target sectors are biomedical technology, electronics, green technology, information and communications technology, and material and precision engineering.

The Science Park provides state-of-the-art laboratories and shared facilities which help reduce the capital investment of technology companies in product design and development, enabling rapid entry of new products into the market at lower cost. They include the IC Failure Analysis Laboratory, Reliability Laboratory, Robotics Catalysing Centre and Biomedical Technology Support Centre. The HKSTPC has completed Stage 1 of the Science Park Expansion Programme and will kick-start Phase 2 of the Expansion Programme. In addition, an InnoCell is being developed adjacent to the Science Park to provide residential units with flexible design and ancillary facilities for leasing to principals of tenants and incubatees of the Science Park as well as their employees and visiting researchers from the Mainland and overseas. The InnoCell is constructed with the new modular integrated construction technology, using the concept of "assembly-in-factory/installation-on-site", thereby shortening the construction time. It is expected to be completed within 2020.

The HKSTPC manages three *industrial estates (IE)*, located at Tai Po, Yuen Long and Tseung Kwan O, which provide 217 hectares of land in total. The HKSTPC revised the IE policy in 2015. It mainly builds and manages specialised multi-storey industrial buildings for rental to multiple I&T-based industrial partners. The Government will also provide an additional allocation of $2 billion to the HKSTPC for developing a Microelectronics Centre in Yuen Long IE. The Data Technology Hub and the Advanced Manufacturing Centre being developed in the Tseung Kwan O IE are expected to be completed by 2020 and 2022 respectively.

To reinforce the role of the Science Park as Hong Kong's flagship technology infrastructure, the Government has allocated $10 billion to the HKSTPC. Of this, about $3 billion is being used to construct research-related infrastructure and facilities, whereas the remaining $7 billion is for enhancing support to its tenants and incubatees.

The Government is pressing ahead with the establishment of two InnoHK research clusters in the Science Park to attract world renowned universities, research institutes and technology enterprises to conduct more collaborative research in Hong Kong so as to develop Hong Kong as the hub for global research collaboration. The two clusters are Health@InnoHK focusing on healthcare technologies and AIR@InnoHK focusing on artificial intelligence and robotics technologies. An allocation of $10 billion has been approved to provide financial support to non-profit-making research centres set up in InnoHK. It is expected that the first batch of research institutions will set up research centres or laboratories progressively in the two research clusters in the first half of 2020. The Government will also examine the setting up of the third InnoHK research cluster to further promote global research collaboration.

Hong Kong Cyberport Management Company Limited (Cyberport): The Cyberport brings together a cluster of high quality ICT and related enterprises. Through the provision of a range of financial and professional support, the Cyberport has implemented numerous public mission programmes and organised various events to nurture start-ups over the years. The Cyberport also provides advanced technology infrastructure, runs internship programmes for ICT students and incubation programmes for new start-ups, and facilitates synergy and partnership among members of the ICT industry.

In 2018, the Government allocated $300 million to the Cyberport for strengthening support to its tenants/incubatees and promoting the development of e-sports in Hong Kong. The dedicated e-sports competition venue in the Cyberport Arcade was opened in July 2019. E-sports related facilitation schemes were also introduced in April 2019.

$5.5 billion has been earmarked for the development of Cyberport 5 which is expected to be completed in 2024.

The Hong Kong Productivity Council (HKPC): The HKPC provides integrated support services to help Hong Kong's industrial and commercial enterprises achieve a more effective use of resources and increase the value added content of products and services, thereby enhancing productivity and competitiveness. Anchored on its core competence in manufacturing technologies, information technologies, environmental technologies and management systems, the HKPC has been helping Hong Kong's industrial and commercial enterprises in technology and process upgrading, promoting re-industrialisation and helping innovative industries move up the value ladder and tap new business opportunities.

Five R&D centres: In 2006, the ITC set up five R&D centres to drive and co-ordinate applied R&D in five focus areas, namely automotive platforms and application systems; information and communications technologies; logistics and supply chain multi-tech; nanotechnology and advanced materials; and textiles and apparel. Since their establishment, the centres have been working closely with the industries in conducting industry-oriented R&D and promoting commercialisation of R&D results. As at the end of October 2019, 1 389 projects from the R&D Centres were approved at a total project cost of about $7.4 billion.

Talent: Human resources are essential to the promotion of I&T in Hong Kong. The Researcher Programme and the Postdoctoral Hub under the ITF fund eligible organisations/companies to recruit university graduates and postdoctoral talents to assist in R&D work, with an aim of encouraging them to pursue a career in I&T. As at the end of November 2019, the two programmes have created around 5 500 research positions. The coverage of the Researcher Programme and the Postdoctoral Hub will be extended to all companies conducting R&D activities in Hong Kong in 2020.

The Government also launched the Reindustrialisation and Technology Training Programme to subsidise local enterprises on a 2:1 matching basis to train their staff in advanced technologies, especially those related to "Industry 4.0". As at the end of November 2019, the programme has approved 320 public course and 19 tailor-made course applications. More than 2 000 staff were funded to receive trainings.

The Government rolled out the Technology Talent Admission Scheme in June 2018 to provide a fast-track arrangement for the admission of overseas and Mainland technology talent to undertake R&D work in Hong Kong. Apart from the tenants and incubatees of the HKSTPC and the Cyberport, the scheme was extended to companies conducting R&D activities outside the HKSTPC and Cyberport in January 2020. The areas covered are biotechnology, artificial intelligence, cybersecurity, robotics, data analytics, financial technologies and material science as well as six new areas including 5G communications, Internet-of-Things, integrated circuit design, microelectronics, digital entertainment and green technology.

The OGCIO implements an eight-year Enriched IT Programme in Secondary Schools from the 2015/16 school year with an aim to nurture young IT talent to meet future development needs. Through collaboration among secondary schools, tertiary institutions, industry and the Government, eight partner secondary schools have established enriched IT classes to provide intensive IT training to students (from secondary two to secondary six) who are interested and talented in IT. The Programme also supports secondary schools to organise IT activities to foster a pro-IT atmosphere and stimulate interest in IT in the school community. To further help young people build a sound foundation in IT to prepare for pursuing IT-related tertiary education and eventually the I&T industry, $500 million has been earmarked to implement the IT Innovation Lab in Secondary Schools initiative under the Enriched IT Programme. Financial support will be provided to all publicly funded secondary schools to set up an IT Innovation Lab to enhance IT facilities and organise more IT-related extra-curricular activities outside traditional classroom learning.

Innovation and technology co-operation with the Mainland: The Government strives to strengthen I&T co-operation with the Mainland. Hong Kong has world-class universities, tremendous strength in scientific research, international business environment, a robust rule of law and intellectual property rights protection system. Meanwhile, the Mainland has a massive market, as well as the capability of research results commercialisation and advance manufacturing. There are 16 State Key Laboratories in Hong

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Kong and six Hong Kong Branches of Chinese National Engineering Research Centres.

The Central Government affirms the solid science and technology foundation and high quality technology talents of Hong Kong. President Xi Jinping made an important instruction which supports Hong Kong's development into an international I&T hub. The Government is also actively participating in the work of developing the Guangdong-Hong Kong-Macao Greater Bay Area into an international I&T hub. Universities and research institutions in Hong Kong can apply for science and technology funding of the Central Government as well as relevant government agencies at provincial and municipal level on the Mainland, and use the funding in Hong Kong. This policy allowing cross-boundary remittance of research funding will inject impetus into the city's research sector. In addition, education institutions, hospitals and branches on the Mainland established by Hong Kong's universities and scientific research institutions, upon meeting specific requirements, would be allowed to lodge applications for exporting human genetic resources to Hong Kong independently under a trial scheme.

The Ministry of Science and Technology (MOST) and the Government of the Hong Kong Special Administrative Region (HKSAR Government) signed the Arrangement on Enhancing I&T Cooperation between the Mainland and Hong Kong in September 2018, and the Arrangement and its annex, Joint Action Plan on Mainland and Hong Kong I&T Collaboration, will serve as an action guide and framework for the two parties to take forward the various I&T co-operation initiatives in the coming few years. Both sides have been following up relevant policies and matters through the Mainland/Hong Kong Science and Technology Co-operation Committee jointly established by the MOST and the HKSAR Government.

Guangdong and Hong Kong launched the TCFS in 2004 to encourage collaboration between research institutions and industries of the two places. Shenzhen joined the scheme in 2005. As at the end of October 2019, the ITF has funded 287 TCFS projects with a total amount of about $890 million. Among the 287 projects, 125 were jointly funded by Guangdong/Shenzhen authorities and the HKSAR Government, involving ITF funding of about $260 million.

The HKSAR Government and the Shenzhen Municipal People's Government are jointly developing the Lok Ma Chau Loop into Hong Kong-Shenzhen Innovation and Technology Park (the Park), setting up a key base for scientific research, as well as relevant higher education, cultural and creative, and other complementary facilities in the Park. The Hong Kong-Shenzhen Innovation and Technology Park Limited (HSITPL), vested with the responsibilities of superstructure construction, operation, maintenance and management of the Park, is conducting two consultancy studies to facilitate Batch 1 development. The HKSAR Government has also commenced the works contract for land decontamination and advance works, and the consultancy on detailed design and site investigation of Main Works Package 1. If everything goes smoothly, our aim is to have the first building completed by end 2023.

The OGCIO takes active steps to facilitate exchange and collaboration between the ICT industries of Hong Kong and the Mainland. Leveraging the opportunities brought about by implementation of Mainland's "Internet+" and "Belt and Road" strategic initiatives, the OGCIO has been leading local ICT delegations to explore collaboration and business opportunities in the Mainland. The OGCIO also regularly takes part in major ICT exhibitions in the Mainland, providing opportunities for local ICT companies, especially SMEs, to showcase their innovative products and services and tap into the Mainland market.

The Hong Kong/Guangdong Expert Group on Co-operation in Informatisation was set up to strengthen co-operation in promoting the development and adoption of cloud computing, big data, Internet of Things, smart city and other technologies, and to explore formulation of related technology standards applicable to the two places. The OGCIO has put in place the mutual recognition scheme of electronic signature certificates between Hong Kong and Guangdong to help enhance security and reliability of cross-boundary e-commerce. Hong Kong joined the Cloud Computing Working Group of the National Information Technology Standardisation Committee and participated in formulating the Cloud Service Purchase Guideline. The guideline was published in August 2019 and will be effective from 1 March 2020.

Fostering an Innovation and Technology Culture: The ITC organises the InnoTech Month which comprises InnoCarnival, roadshows, exhibitions, guided tours, workshops, talks and technology competitions regularly to arouse interest of the general public in I&T. The ITC also supports I&T-related competitions such as the Hong Kong Student Science Project Competition and the Joint School Science Exhibition. The Innovation and Technology Scholarship recognises outstanding undergraduates who undertake science-related

degrees in local universities and encourages them to pursue I&T as a career.

The Internet Economy Summit is an annual signature event to provide a platform for the Mainland and international ICT visionaries and business leaders to share their insights on the development of Internet economy, and promote Hong Kong as a bridge connecting the Mainland and international markets.

The OGCIO has been collaborating with local ICT industry in organising the Hong Kong ICT Awards since 2006 to recognise outstanding achievements and showcase Hong Kong's ICT innovation and successes.

Encouraging Local R&D Activities: To encourage enterprises to invest more in local R&D and promote local R&D activities, the Government provides enterprises with enhanced tax deduction for their expenditure incurred in qualifying R&D activities. The deduction will be 300% for the first $2 million spend on qualifying R&D and 200% for the remaining amount. There is no cap on the amount of enhanced tax deduction. The deduction is applicable to qualifying R&D expenditures incurred on or after April 1, 2018.

Smart City Development: The Government published the Smart City Blueprint for Hong Kong in December 2017, outlining the Government's vision and mission to build Hong Kong into a world-class smart city. The Blueprint maps out development plans up to 2022 and beyond, covering six major areas, namely "Smart Mobility", "Smart Living", "Smart Environment", "Smart People", "Smart Government" and "Smart Economy" and providing a clear and concrete direction for the smart city development in Hong Kong. Three digital infrastructures in supporting Smart City Blueprint are under development.

- **iAM Smart (formerly known as eID) platform:** The OGCIO will provide iAM Smart account for all Hong Kong residents free of charge on a voluntary basis, enabling them to use a single digital identity and authentication method to conduct government and commercial online transactions. This will foster the development of a new economic service model that emphasises direct interface with residents and consumers. iAM Smart platform is expected to commence operation in the fourth quarter of 2020.

- **Pilot Multi-functional Smart Lampposts Scheme:** The OGCIO will implement a pilot scheme of replacing some existing 400 lampposts with smart lampposts in four selected districts in the territory with higher pedestrian flow, including Central/Admiralty, Causeway Bay/Wan Chai, Tsim Sha Tsui and Kwun Tong/Kai Tak Development Area. Smart lampposts installed with smart devices provide convenient data services and collect various real-time city data, enhance city and traffic management, and complement the future infrastructure development for 5G mobile communications services in Hong Kong.

- **Next Generation GovCloud and Big Data Analytics Platform:** The OGCIO will modernise existing government cloud infrastructures and adopt a new application architecture. Through implementing this new platform, bureaux and departments (B/Ds) can expedite the development and delivery of digital government services, including the big data analytics and artificial intelligence applications. The Next Generation GovCloud platform will go live in the third quarter of 2020.

We are preparing for the release of the Smart City Blueprint 2.0 (Blueprint 2.0) in 2020. Blueprint 2.0 will include the latest development of various smart city initiatives as well as some new initiatives to further smart city development.

Wi-Fi Connected City: To make it easier for the public and visitors to access free Wi-Fi services in Hong Kong, the OGCIO has been collaborating with the industry to promote public Wi-Fi services which are offered by public and private sector organisations completely free of charge or free for a certain period of time under the common Wi-Fi brand "Wi-Fi.HK" since 2014. There are over 36 000 "Wi-Fi.HK" hotspots in town, providing Wi-Fi service at an average speed of above 20Mbps by the end of 2019.

Data Centres: The OGCIO champions initiatives and measures to develop Hong Kong as a prime location for high-tier data centres in the region. The Data Centre Facilitation Unit under the OGCIO provides information and one-stop support to assist enterprises interested in setting up data centres in Hong Kong, including conversion of existing industrial buildings and industrial lots for data centre use, and works with government departments on measures to

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facilitate the setting up of data centres taking into account their unique mode of operation.

Cyber Security: The OGCIO adopts a robust management framework and maintains a comprehensive set of information security policy and guidelines with regular audits to continuously enhance cyber security within the Government. Multi-layer safeguards are in place to protect the digital assets of the Government.

A dedicated governmental computer emergency response team (GovCERT.HK), established under the OGCIO, handles information security incidents in the Government in an effective and co-ordinated manner.

In collaboration with key partners, such as Hong Kong Computer Emergency Response Team Coordination Centre, Hong Kong Police Force and Hong Kong Internet Registration Corporation Limited, the OGCIO promotes awareness of cyber security in the community and industry and provides practical advice to guard against cyber attacks through various channels and means including the Cyber Security Information Portal (www.cybersecurity.hk), seminars, contests and school visits. To further enhance Hong Kong's overall capability to deal with cyber threats, the OGCIO spearheads the Cybersec Infohub, which is a public-private-partnership programme, with funding support from TechConnect (Block Vote) under the ITB to promote cross-sector collaboration and sharing of cyber security information on a trusted platform.

E-Government: The GovHK portal (www.gov.hk), the one-stop portal of government information and e-services, was launched in 2007, followed by its account-based platform – MyGovHK in 2010 to provide single access to an array of personalised e-Government services. The GovHK portal adopts responsive web design and was revamped at the end of 2019 to further enhance user experience.

The Public Sector Information (PSI) portal (data.gov.hk) provides user-friendly functions to release government open data in digital formats for public's free consumption, such as visualisation of multiple datasets on a map, with a view to tapping creativity and wisdom of the community in developing innovative applications with open data, thereby bringing about convenience to the citizens and business opportunities to the industry. Some 4000 datasets were available on the PSI portal as at the end of 2019. The OGCIO also launched four city dashboards in December 2019 to facilitate public to visualise dynamic city data.

A new policy on opening up government data was promulgated in October 2018, stating that government B/Ds should endeavour to release their data for free public use. In accordance with the new policy, over 80 government B/Ds have published their first and second annual open data plans in December 2018 and December 2019 respectively.

The OGCIO facilitates the implementation of mobile e-Government services by providing support to government departments and developing mobile applications for departments' common use to render public services.

IT Strategy: The OGCIO formulates government-wide IT strategy and advises government B/Ds in their formulation of departmental IT strategy to address policy objectives. The OGCIO facilitates government B/Ds in planning and executing their IT-enabled change initiatives in a more agile, cost effective and co-ordinated manner by adopting cloud computing and other emerging technologies. These initiatives include:

- **Electronic Information Management:** In line with the government-wide electronic information management strategy that embraces content management, records management and knowledge management, the OGCIO is implementing common shared services such as electronic recordkeeping and collaborative workspace on cloud platform for adoption by government B/Ds.

- **Electronic Procurement:** The OGCIO is rolling out its cloud-enabled electronic procurement service to government B/Ds to enhance efficiency from the automated and integrated procurement processes. Suppliers also reap the benefits of shorter transaction turnaround time and greater business opportunities.

- **Government Human Resources Management Services (GovHRMS):** Providing common IT services to facilitate human resources management activities of staff members as well as strategic manpower planning and human resources management decision making in Government. The OGCIO monitors the development and implementation of the GovHRMS.

- **Government Data Centre Service Arrangements:** The OGCIO is building a government data centre complex with a view to consolidating some of the existing

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government data centres, leading to better economy of scale, cost effectiveness as well as greener management in the overall government data centre operations.

- **Government Electronic Communications Infrastructure:** The OGCIO establishes and maintains an advanced and secure electronic communications infrastructure for effective and efficient communications and collaboration in government operations and delivery of public services.

Digital Inclusion: To facilitate access to online information and services by everyone including persons with disabilities, the OGCIO has been implementing a Web/Mobile App Accessibility Campaign since 2011 through a multi-pronged strategy ranging from government leadership, fostering awareness, promulgating guidelines and tips, nurturing expertise and organising recognition scheme to encourage adoption of accessibility design. Since 2018, the Hong Kong Internet Registration Corporation Limited (HKIRC) has become the organiser of the Web Accessibility Recognition Scheme with the OGCIO co-organising the scheme. The HKIRC is a non-profit making and non-statutory corporation to manage and administer the registration of Internet domain names under ".hk" and ".香港" country-code top level domains.

The OGCIO has been conducting the ICT Outreach Programme for the Elderly since 2014 to help institutionalised and "hidden" elderly, and elderly receiving day care services and home care services experience how ICT can spice up their life and facilitate an active and healthy ageing. The services were further extended to cover elderly people with dementia in 2017. From 2018-19, the Programme was regularised. An Enriched ICT Training Programme for the Elderly was also introduced in February 2019 to encourage elderly persons with basic ICT knowledge to adopt digital technology in their daily living and serve as trainers to help more elderly people acquire technology knowledge. In October 2019, the OGCIO launched a web-based learning portal to help the elderly acquire digital skills, so that they can benefit from the advancement in digital technology in daily lives.

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