

Foreword

This is the second edition of *Smart City Blueprint for Hong Kong (Blueprint 2.0)*.

The Government published the Smart City Blueprint for Hong Kong in December 2017, setting out 76 initiatives under six smart areas, namely "Smart Mobility", "Smart Living", "Smart Environment", "Smart People", "Smart Government" and "Smart Economy". Among them, the digital infrastructure projects and other major initiatives have been implemented as planned in the past three years, for example, the Faster Payment System, installing free public Wi-Fi hotspots, and the "iAM Smart" one-stop personalised digital services platform.

Blueprint 2.0 puts forth over 130 initiatives which continue to enhance and expand existing city management measures and services. The new initiatives aim to bring benefits and convenience to the public so that residents can better perceive the benefits from smart city and innovation and technology (I&T) in their daily lives. Examples are application of "Building Information Modelling", enhancement of smart tourism platforms, establishment of the LawTech Fund, development of the Traffic Data Analytics System, and Smart Village pilots, etc. In addition, our work in combating the epidemic in 2020 has given us some insights on promoting I&T development. In particular, the adoption of an innovative mindset to transform established service modes and the wider adoption of technology to combat the "new normal". Blueprint 2.0 has also included a new chapter on "Use of I&T in Combating COVID-19", which covers measures already undertaken and being planned, such as the "StayHomeSafe" system to support home quarantine, deploying the "LeaveHomeSafe" exposure notification mobile app, development of health codes to facilitate cross-boundary travel, etc.

The Smart City portal (www.smartcity.gov.hk) serves as a bridge of communications between the Government and members of the public. We will update regularly the progress of these smart city initiatives and provide real-time city data dashboards. Members of the public can also submit their views and suggestions on different initiatives and subjects.



Vision

Embrace innovation and technology to build a world-famed Smart Hong Kong characterised by a strong economy and high quality of living

Mission

- To make people happier, healthier, smarter and more prosperous, and the city greener, cleaner, more livable, sustainable, resilient and competitive
- To enable the business to capitalise on Hong Kong's renowned business-friendly environment to foster innovation, transform the city into a living lab and test bed for development
- To provide better care for the elderly and youth and foster a stronger sense of community. To make the business, people and Government more digitally enabled and technology savvy
- To consume fewer resources and make Hong Kong more environmental friendly, while maintaining its vibrancy, efficiency and livability



USE OF I&T IN COMBATING COVID-19





Develop health codes to facilitate orderly resumption of travel between Hong Kong and other places



Encourage wider application of anti-microbial technology in public transport



Deploy the exposure notification system and mobile app "LeaveHomeSafe" for different trades and premises (a)



Adopt technologies in public markets to enhance environmental hygiene



Continue to promote use of contactless payments in public markets



Use of robots for airport terminal patrol, baggage handling, cleansing, disinfection and environmental monitoring



Introduce new or streamlined e-forms to further digitise health declaration processes



Continue to expand the functions of Hospital Authority's "HA Go" mobile app to provide remote consultation using video conferencing technology and to prescribe clinical information for specific groups of patients, in addition to online booking of clinic appointments and payment



Established the LawTech Fund of \$40 million to encourage and support the legal sector to adopt technologies (a)

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Enhance "iAM Smart" applications to promote wider use of digital payments and remote onboarding in the financial and other industries

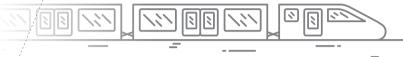


Established the COVID-19 Online Dispute Resolution Scheme to provide businesses and the public with speedy and costeffective online dispute resolution services



SMART MOBILIT

Current Status



passenger journeys on public transport every day with railway being the backbone (2019 figure)

of Hong Kong people using Octopus cards to travel, shop and dine without the hassle of cash

Smart Airport

- o smart check-in kiosk
- o self-bag drop
- o e-Security Gates
- o indoor wayfinding
- 6 MyTAG

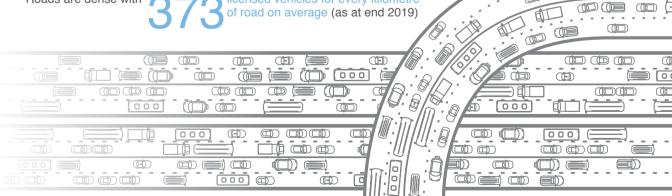




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Roads are dense with

licensed vehicles for every kilometre



Intelligent **Transport** System and Traffic Management The search functions for walking paths in the all-in-one mobile app "HKeMobility" are fully released, and continue to encourage citizens to "walk more, ride less"

Implement a Free-flow Tolling System at government tolled tunnels and Tsing Sha Control Area by early 2024



Complete the installation of about 1 200 traffic detectors along major roads and all strategic roads by end 2020 to provide additional realtime traffic information



Take forward the Electronic Road Pricing Pilot Scheme in Central



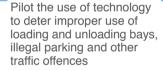
Continue to introduce pilot real-time adaptive traffic signal systems with sensors for pedestrians and vehicles at five road junctions to help optimise the green times allocated to vehicles and pedestrians



Continue to facilitate trial and use of autonomous vehicles at suitable locations

Encourage public transport operators to introduce new electronic payment systems, having regard to the systems' reliability, user friendliness and efficiency

Establish real-time arrival information system for green minibuses by 2022 and continue to encourage public transport operators to open up their data





Develop the crowd management system at Kai Tak Sports Park to facilitate the monitoring of people and vehicle flows during major events





Continue the trial of geofencing technology on vehicles, and will continue to study the feasibility of implementing the relevant technology on franchised buses to enhance bus safety Set up \$1 billion-Smart Traffic Fund to promote research and application of vehicle-related innovation and technology

Develop a Traffic Data Analytics System to enhance traffic management and efficiency 🚥

Public Transport Interchanges (PTIs)/Bus Stops and Parking

Release real-time information of franchised buses through information display panels at 1 300 covered bus stops or aovernment public transport interchanges by





Install new on-street parking meters to support multiple payment systems (including Faster Payment System and remote payment with a new mobile app "HKeMeter") gradually and provide real-time parking vacancy information

Continue to encourage operators of public car parks to provide realtime parking vacancy information to facilitate motorists' search for parking spaces; and include relevant conditions in land leases and short-term tenancy agreements requiring relevant public car parks to provide real-time parking vacancy information

Commission automated parking system pilot projects in batches starting from 2021, to pave the way for wider application in short-term tenancy public car parks and public car parks in government premises and to encourage adoption in public car parks in private developments

Conduct trials of installing sensors at certain nonmetered on-street parking spaces to provide real-time parking vacancy information by 2022 ໜ



Environmental Friendliness in **Transport**

Establish "bicycle-friendly" new towns and new development areas





Continue to take forward "Walk in HK", and launch a series of initiatives to encourage people to walk more with an aim to finalise the overall strategy on walkability



Take forward the "Universal Accessibility Programme" to retrofit barrier free access to existing public walkways and those existing walkways which fulfil certain criteria



Pilot use of green technologies in local ferry operation



Take forward new railway projects to reduce roadside air pollutants and greenhouse gases



Implement a pilot scheme for electric public light buses 📼





Continue to enhance seamless travel experience by using biometrics technology in check-in, boarding pass checkpoint and boarding



Provide hassle-free travel experience for passengers by expanding mobile check-in services to off-airport locations, such as theme parks, hotels, convention centres, transport hubs, etc., and providing baggage pick up services

Facilitate the use of autonomous vehicles in certain places, such as restricted areas



Establish a "Digital Twin" of Hong Kong International Airport to provide a 3D airport model in virtual reality to enable more effective facilities and construction planning as well as better operation management 📼



Apply 5G technologies to provide an independent and reliable wireless network



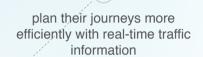
Commission an automated parking system at the Hong Kong Port of the Hong Kong-Zhuhai-Macao Bridge for private cars from Guangdong and Macao 🐵

Application of automation, video analytics and Internet of Things technologies to airport operation



Goals and Next Steps

Upon implementation of the above, people will be able to -



enjoy better traffic planning and management through enhanced use of data analytics

enjoy more environmental friendly transport modes, including use of cleaner fuel to improve air quality and address other environmental concerns

enjoy easy and efficient travel with smart airport



enjoy a pedestrian-friendly environment

Looking Ahead

We will continue to explore and formulate initiatives to -

achieve the "SIGMA" vision to bring overarching benefits to the sustainable development of our transport system -

- Safe: Reduces the risk of traffic fatality or injury;
- Informative: Provides useful information to road users:
- Green: Promotes the use of environmentally-friendly modes of transport:
- Mobile: Moves people and goods expeditiously and efficiently, meeting the needs of both users and operators; and
- Accessible: Delivers easily-reachable and reliable transport services

facilitate the achievement of technology advancement and industry development in vehicle-to-everything (V2X) and autonomous vehicles (AVs) and ultimately introduction of connected AVs

enhance walkability and pedestrian wayfinding system

SMART LIVING

Current Status



Over 37 000 free Wi-Fi hotspots (as at end Jun 2020)

Mobile subscriber penetration rate: (as at Jan 2020)

Household broadband penetration rate: (as at Feb 2020)

Smart Phone Penetration Rate of persons aged 10 and over: (2018)

283.75%

93.7%

89.8%

Faster Payment System (FPS) (as at end May 2020)

Registrations:

5 million

Average daily value of HK\$ 3 billon



2018-19 Healthcare figures



2.16^{million}

attendances

Specialist Outpatient:

7 O million

attendances

Primary Care:

6.37^{million}

attendances

Electronic Health Record Sharing System was launched in Mar 2016

Population aged 65+

2019 (provisional):

1.33

million (18.5% of total population, excluding foreign domestic helpers)

2039:

247 million

(32.3% of total population, excluding foreign domestic helpers)

Wi-Fi Connected City

Continue to implement the "Wi-Fi Connected City Programme" to provide free public Wi-Fi service



Implement a pilot project for providing Wi-Fi services at welfare service units



Digital Payment

Continue to promote the use of Faster Payment System



Implemented a common QR code standard to continue to promote the wider use of mobile retail payments and bring greater convenience to customers and merchants

eID/"iAM Smart" **Applications**

Introduce an "iAM Smart" one-stop personalised service platform, to facilitate residents to use digital government services and conduct commercial transactions

Use the "iAM Smart" to streamline Transport Department's licensing services 🐵

Support for the Elderly and Person with Disabilities

Continue to implement the \$1 billion Innovation and Technology Fund for Application in Elderly and Rehabilitation Care to support trial use, rental or procurement of technology products by elderly and rehabilitation service units



Support for Healthcare

Launched the Big Data Analytics Platform under the Hospital Authority's Data Collaboration Lab for facilitating healthcarerelated research, and continue to adopt smart hospital initiatives by phases in Hospital Authority hospitals



Commission the Stage Two of the Electronic Health Record Sharing System. Stage Two will expand the sharable scope by including Chinese Medicine information and radiological images, develop sharing restriction features and a Patient Portal as Hong Kong's public health portal, and enhance the system's core functionalities and security/privacy protection

Develop genomic medicine in Hong Kong 🐵



Explore the use of telehealth, videoconferencing and remote consultation in Hong Kong



Explore the use of blockchain technology to enhance traceability of pharmaceutical products, identify sectorial patterns and seasonal patterns on the supply of medicines, and facilitate efficient and effective recalls of medicines 🚥

Recreation, Sports and Leisure, and Culture

Develop New Intelligent Sports and Recreation Services Booking and Information System 🐵



Develop Smart Library System w



Launch a trial scheme on the application of technology in enhancing location tracking of hikers at remote areas of weak or no mobile network coverage





New initiative after release of *Blueprint* in 2017

SMART LIVING

Goals and Next Steps

Upon implementation of the above, people will be able to -

access e-services and conduct e-transactions more conveniently and extensively with a single digital identity for e-government services and commercial services

enjoy convenient mobile payments anytime and anywhere

more conveniently access free public Wi-Fi service provided by both public and private sector organisations adopt more technology applications to support the elderly

enjoy healthcare services supported by new technology applications



Looking Ahead
We will continue to explore and

formulate initiatives to promote -

wider use of digital identity across the public and private sectors and in the community

wider use of mobile payments and bring greater convenience to customers and merchants

healthy living and ageing in different settings, including hospitals, care homes and ultimately in the community

SMART ENVIRONMENT

Current Status

of carbon emissions are from electricity generation

2017: carbon intensity had been reduced by





municipal solid waste recovered



Reduced electricity consumption on government buildings by

from 2015-16 to 2016-17

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Climate Action Plan 2030+

Implement various decarbonisation measures to reduce carbon intensity by between 65% and 70% by 2030 compared with the 2005 level, strive to achieve carbon neutrality before 2050

atrailty before

Phase down coalfired electricity generation gradually and replace with natural gas and non-fossil fuel sources. Coal as a proportion of the fuel mix will be reduced

Apply renewable energy on a wider and larger scale based on mature and commercially available technologies with the public sector taking the lead



Further promote energy efficiency and conservation in the community with particular focus on buildings



Implement other measures to achieve carbon emission reduction by phases

Green and Intelligent Buildings, and Energy Efficiency

Install LED lamps in public lighting systems progressively under the LED Public Lighting Replacement Programme starting from 2017-18 and encourage retrofitting LED lighting for existing government buildings commissioning and building-based smart/IT technologies

Promote retro-

Continue to include requirements, such as green building design, provision of smart water meter system, electric vehicle charging facility and real-time parking vacancy information for new land sale sites in Kowloon East, with a view to developing a green and smart community

Implement a pilot subsidy scheme to promote installation of electric vehicle charging-enabling facilities in car parks of existing private residential buildings

Adopt advanced sludge pretreatment technology for turning waste to energy



Implement a pilot programme on smart recycling system for enhancement of community recycling

Pollution Monitoring Use remote sensing devices to monitor air pollution



Alleviate noise impact affecting new residential units by incorporating noise mitigation designs through preventive planning

Use unmanned vessels to monitor water quality in reservoirs



Undertake pilot project of real-time phytoplankton taxa monitoring system



Environmental Hygiene Explore the use of new facilities, such as smart lampposts, or application of technologies for enhancing environmental hygiene



Launch a rodent control trial scheme using Internet of Things sensors and explore application of technologies to improve pest control Launch the "smart toilet" pilot programme and explore application of technologies in public toilets







Upon implementation of the above, people will be able to -

live in greener buildings with various smart and energy saving features

use technology applications in efficient power consumption and energy conservation

enjoy better indoor and outdoor air quality

reduce daily waste at home and workplace



Looking Ahead

We will continue to explore and formulate initiatives to –

adopt new green technologies when they become commercially available

create a low carbon, more sustainable environment for the people

optimise use of city resources, including waste reduction, reuse and recycling

SMART PEOPLE

Current Status

12 years' free primary and secondary education

About 90%

of the half-day programmes of kindergartens joining the kindergarten education scheme are free

60%

of senior secondary students studied one or more STEMrelated elective subjects in 2019/20 and all have to study Mathematics as a core (i.e. compulsory) subject

public universities funded by Government through the University Grants Committee (UGC)



86 867

students studying UGC-funded undergraduate programmes,

(35%) of them studied STEM-related programmes in 2019/20

11 251

students studying UGC-funded taught and research postgraduate programmes,

5 412

(48%) of them studied STEM-related postgraduate programmes in 2019/20

R&D funding

Gross domestic expenditure on R&D (GERD) in 2018:

^{HK\$}24,497 million

[+ 10% when compared with 2017 (HK\$22,213 million)]

About 62 000

civil servants attended various I&T-related training in 2018-19



Nurturing Young Talent

Organised trainings on science, technology, engineering and mathematics (STEM) education for curriculum coordinators; and continue to encourage them to implement more STEM-related classes and activities

Provide enhanced information technology (IT) training to secondary school students outside normal curriculum through provision of funding for all publicly-funded secondary schools to implement the IT Innovation Lab in Secondary Schools programme 🔤

Enhance research and development capability through collaboration with renowned institutions in other jurisdictions



Encourage industry to hire science, technology, engineering and mathematics (STEM) graduates for research and development through the "Research Talent Hub"

Attract and retain more I&T professionals, especially in technological areas such as biotechnology, data science, artificial intelligence, robotics and cyber security

Support the pilot of a common on-line platform by the Joint Universities Computer Centre using blockchain technology to facilitate verification of tertiary education qualifications

Provide Youth Internship Programme in I&T Industries in the Guangdong-Hong Kong-Macao Greater Bay Area 🗪



Provide financial and nonfinancial support to young entrepreneurs and startups to build a stronger I&T culture



Expand incubation programmes at Hong Kong Science Park and Cyberport Smart-Space



Attract venture capital fund to support the development of I&T start-ups in Hong Kong



Continue to implement the STEM Internship Scheme @





Goals and Next Steps

Upon implementation of the above, Hong Kong will be able to -

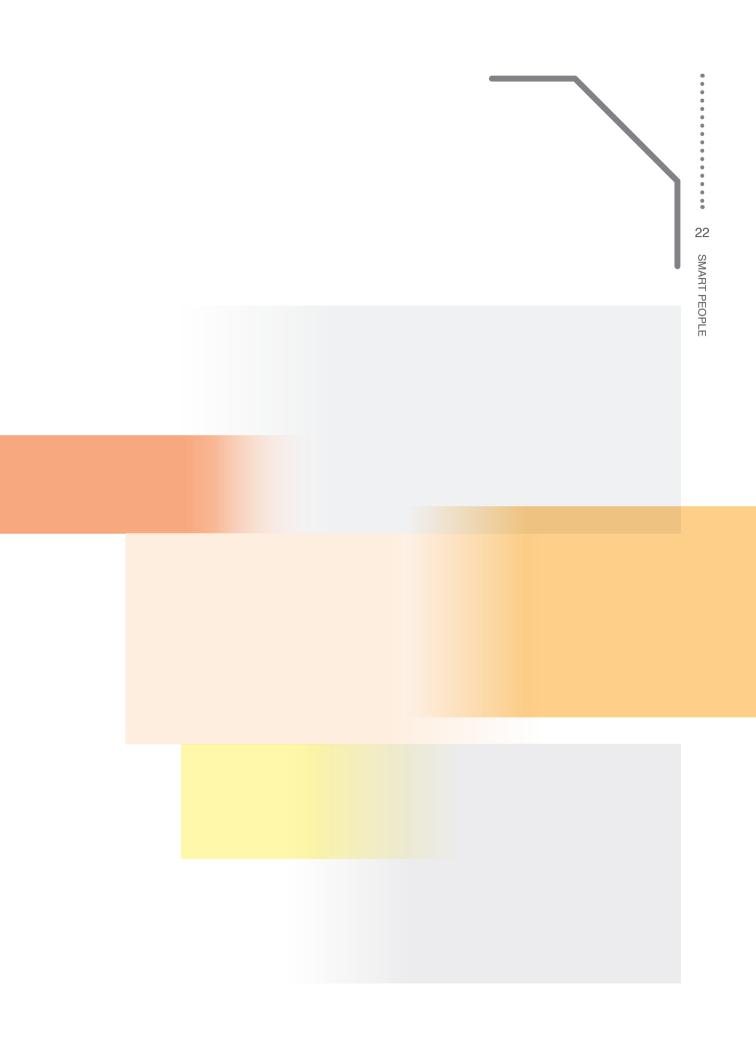


Looking Ahead

We will continue to explore and formulate initiatives to -

nurture a highly adaptive population to embrace changes in technology, especially among the younger generation

> build a knowledge-based society to support future development of I&T



SMART GOVERNMENT

Current Status

data.gov.hk/en

Public Sector Information Portal:

over 1 1 2 0 unique datasets,

1 390 application programming interfaces (APIs)

2018-19 government information and communications technology (ICT) expenditure estimate

www.gov.hk/en

GovHK

the one-stop portal of the Government making information and services of the public sector easier to find and use:

around **SOO** e-Serv

e-Services



Open Data

Continue to promote the opening up of data from public and private sector under the open data policy announced in 2018



Smart City Infrastructure

Gear up Hong Kong for commercial launch of the fifth generation (5G) services and applications in



Adopt "iAM Smart" Platform common login and enhance e-services with the help of artificial intelligence. chatbot and big data analytics



Implement the Multifunctional Smart Lampposts pilot scheme to facilitate collection of realtime city data to enhance city management and other public services

Use a new big data analytics platform for real-time data transmission and sharing among government departments

Adopt public cloud services for government departments to deliver efficient and agile e-services



Revamp the government cloud infrastructure platform to enable digital government services delivery through collaboration and partnership among government departments, IT service providers and other third party entities

Develop the Electronic Submission Hub for



processing building plans

Enhance the Government's cyber security capability to address new security risks, facilitate collaboration among stakeholders to promote awareness and incident response capability in the community











Adoption of Technology

Continue to promote the Smart Government Innovation Lab to invite technology solutions and product suggestions from IT sector for enhancing public services and addressing city challenges

Launch City I&T Grand Challenge



Continue to promote E&M InnoPortal to facilitate matching of pain-points and needs of the Government with I&T solutions from start-ups and research and development institutes

Continue to promote adoption of technology by government departments to improve public services through dedicated funding



Implement e-licensing for all licensing applications under the "Be the Smart Regulator" Programme, to digitise most licensing applications before mid-2022, and reform government services involving applications and approvals under the "Streamlining of Government Services" Programme

Promote digitisation of works supervision system to strengthen supervision and management of capital works projects

Mandated the adoption of Building Information Modelling (BIM) in major government capital works projects starting from 2018, develop BIM standards and continue to provide assistance to the construction industry on BIM adoption

Employ Building
Information Modelling Asset Management/Facility
Management (BIM-AM/FM)
Platform for improvement
of building facility
management

Apply smart water supply initiatives, including Water Intelligent Network to monitor water loss in the fresh water distribution network and Automatic Meter Reading system to enhance customer services, etc.

Introduce smart elements in prisons, using innovation and technology to modernise correctional facilities



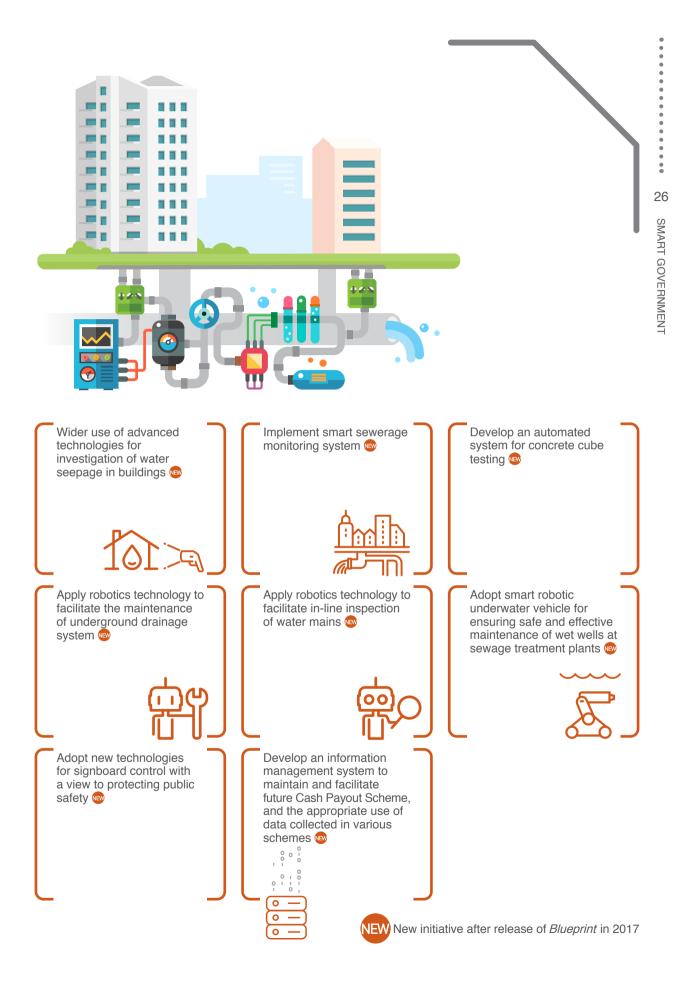
Employ innovation and technology to enhance customs clearance efficiency, law enforcement effectiveness, trade facilitation and foster economic development through "Smart Customs Blueprint"



Enhance emergency ambulance service through streamlining the handling, replenishment and procurement process of dangerous drugs with the use of Radio-Frequency Identification tracking system and Internet of

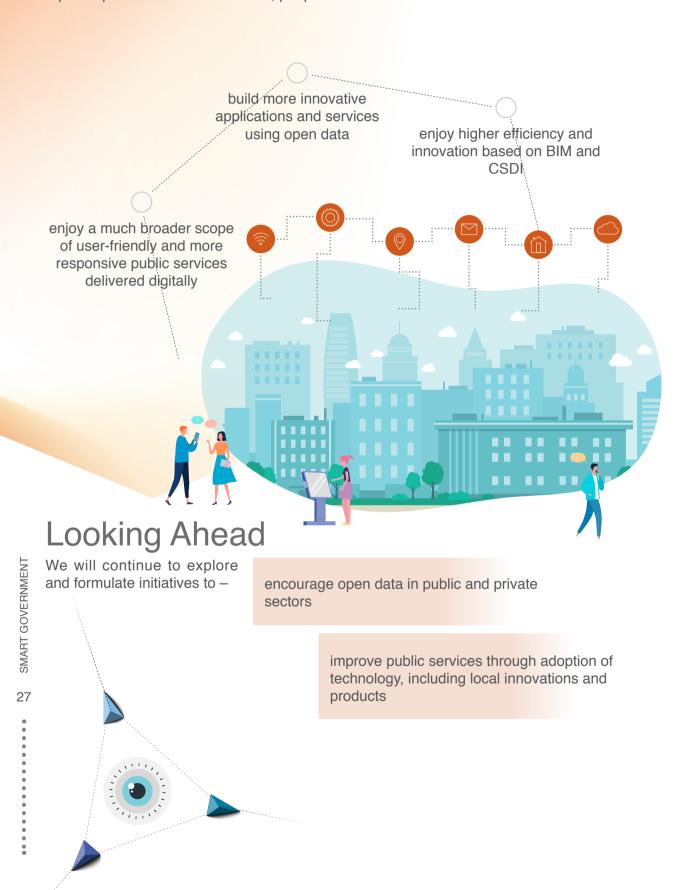
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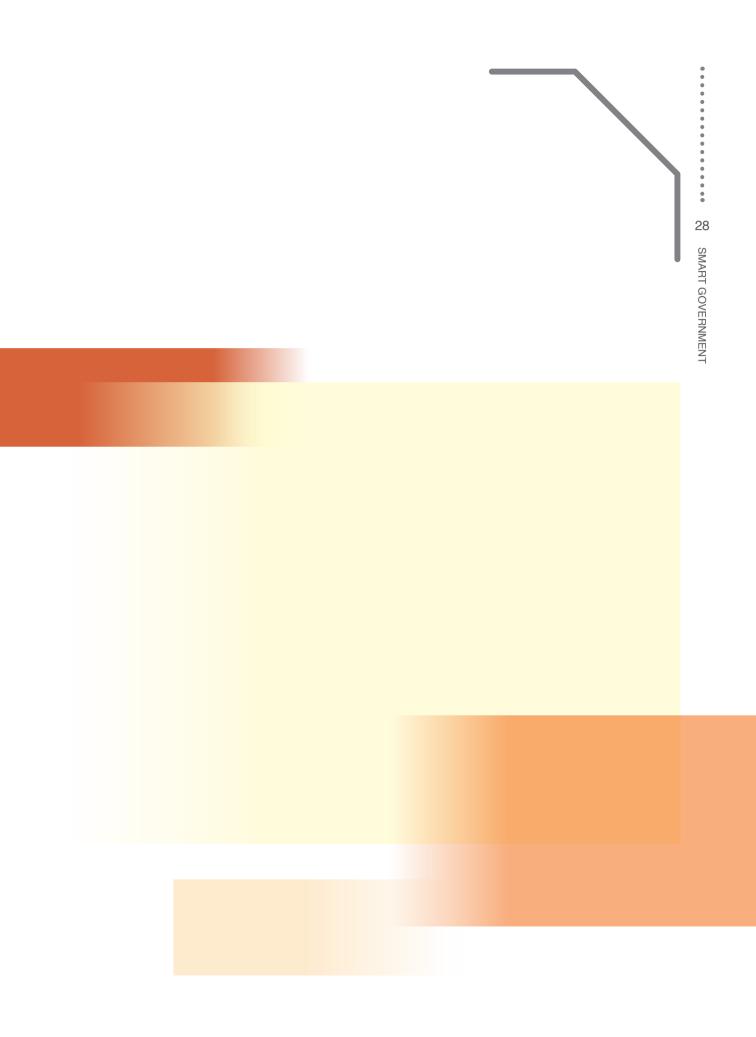




Goals and Next Steps

Upon implementation of the above, people will be able to –





SMART ECONON

Current Status

^{GDP in 2018: HK\$} 2,843 billion GDP per capita in 2018: HK\$ 381,544

Value added of the Four Key Industries in 2018

Trading and logistics

(21.2%) Financial services

^{HK\$} 532.8 billion

Professional services and other producer services

(12.0%) * Tourism

121.0 billion

Credit cards

In 2019, each Hong Kong 2 6

daily transactions in 2019

Regulators have introduced regulatory sandboxes to qualified corporations to try out Fintech innovations

Internet Banking

14 million accounts as of 31 Dec 2018

over HK\$

9 trillion monthly transactions in 2018

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Strengthen the current pillars by leveraging I&T: **Fintech**

Continue to promote Fintech, including the applications of Distributed Ledger Technology in different areas, such as trade finance, cross-border connectivity and insurance policy authentication



Continue to keep in view the operations of virtual banks after they commence business, the response of customers and the impact of virtual banks on the stability of the local banking system

Continue to monitor the development and adoption of Application Programming Interface (API) by the banking sector and technology companies

Review the operation of Fast Track, which provides a dedicated queue for new authorization applications from applicants using solely digital distribution channels, in light of implementation experience and industry development



Continue to implement Initiative



the Banking Made Easy



Strengthen the current pillars by leveraging I&T: Smart Tourism

Extend the tourist facilitation landing pages to other boundary control points progressively



Enrich tourists' experiences in Hong Kong using Information and Communications Technology and virtual images



Enhance tourists' experiences through smart airport, Wi-Fi Connected City programme and smart lampposts



Encourage the tourism trade to leverage innovation and technology technology for enhancing its competitiveness

Enhance Hong Kong Tourism Board's smart tourism platforms

Strengthen the current pillars by leveraging I&T: LawTech

Develop an online platform to provide efficient and cost-effective online dispute resolution and deal-making services 📾



Develop new economic pillars: Promote R&D and reindustrialisation

Plan for the setting up of key technology collaborative platforms and bring in internationally-renowned universities, research and development institutes and **I&T** companies

Provided enhanced tax deduction for qualifying expenditure incurred by enterprises on research and development (R&D) since 2018-19 to incentivise companies to increase investment in technological

Monitor implementation of the pro-innovation government procurement policy

Completed Data Technology Hub in Tsueng Kwan O Industrial Estate; and complete the Advanced Manufacturing Centre by 2022



Collaborate with Shenzhen to develop the Hong Kong-Shenzhen Innovation and Technology Park at Lok Ma Chau Loop for I&T enterprises, universities and research and development centres from Hong Kong, overseas and the Mainland. Strive to complete the first research and development building by end 2024

Facilitate the Development of Innovation and **New Economy**

Review existing legislation and regulations so as to remove or update provisions that impede innovation and new economic development



Encourage local enterprises/organisations to adopt technological services or solutions to enhance operational efficiency through the Technology Voucher Programme

Explore the use of new technologies and emerging standards to facilitate identification and verification of companies become a preferred location for consideration of technology investment be perceived as an innovative and technologically advanced tourist destination

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SMAH

position itself as a viable and attractive location to fully develop innovative business ideas

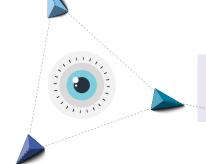


We will continue to explore and formulate initiatives to –

enhance the overall digital transformation in the business community, particularly in areas of the technology-driven economy like Fintech and re-industrialisation

> further develop our I&T ecosystem to attract more start-ups and investors from other jurisdictions

attract more leading talents and investments to enhance our city's economic vibrancy



SMART VILLAGE PILOTS

We will explore the following smart village pilot initiatives in the rural areas:

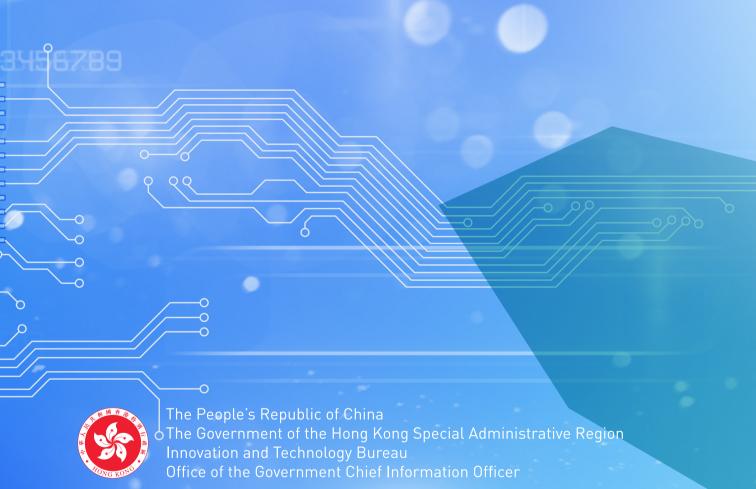
install relevant facilities at village offices and use of e-payment for provision of telehealth services for the elderlies living in remote areas

provide public Wi-Fi services, enhance telecommunication coverage and capacities for detecting illegal dumping, wild animals and flooding, and strengthening security in rural villages

use smart traffic system for certain roads to improve road situation

Juse robotics and artificial intelligence to assist in early detection of hill fire in country parks

The Innovation and Technology Bureau set up a Smart City Office for coordinating smart city projects across different government departments and public and private organisations, and monitoring project progress and effectiveness.



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