Hong Kong Innovation and Technology Development Blueprint

Innovation, Technology and Industry Bureau
The Government of the
Hong Kong Special Administrative Region
of the People's Republic of China

Content

Foreword

Since the 1980s, the reform and opening up of the Mainland have provided a vast production hinterland for Hong Kong and created huge business opportunities for Hong Kong manufacturers and business services/activities respectively. The structure of Hong Kong economy has thereafter undergone significant changes. With the significant decrease of the manufacturing sector's contribution to our Gross Domestic Product (GDP), Hong Kong has gradually steered towards the development of a service-oriented economy. To date, Hong Kong is among economies with the services sector accounting for the highest GDP percentage share. As a small yet open economy, the industry structure of Hong Kong is more concentrated in four traditional major industries, namely financial services, tourism, trading and logistics, as well as professional and producer services. Innovation is the genes of growth of Hong Kong. To promote long-term and healthy economic development, we must proactively develop new industries which have an edge to serve as new engines for economic growth, and in parallel enhance the competitiveness of traditional industries with better use of technology, so as to create more diversified development and employment opportunities.

Science and technology are now instrumental for societal progress, serving as the major drive to spur economic development. Innovation and technology (I&T) can spawn new industries in Hong Kong, facilitate the upgrading and transformation of traditional industries, promote economic diversification, foster local economic growth and create quality employment opportunities. This will help enhance our overall competitiveness and inject new impetus into our economy.

Promulgated in March 2021, the "Outline of the 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Long-Range Objectives Through the Year 2035" (the 14th Five-Year Plan)[1] sets out the vision to develop our country into an innovative nation with strong science and technology. The 14th Five-Year Plan puts forward the development pattern of "dual circulation", which takes the domestic market as the mainstay while enabling domestic and foreign markets to interact positively with each other, and expresses clear support for the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) to develop into an international I&T centre. This is in line with the important instructions[2] given by President Xi Jinping in 2017, in which he expressly supported Hong Kong's development as an international I&T centre, affirmed the new positioning of Hong Kong's development and clearly specified the new direction of I&T, creating new opportunities for the I&T development in Hong Kong.

In July 2022, President Xi, in his keynote address at the meeting celebrating the 25th anniversary of Hong Kong's return to the Motherland and the inaugural ceremony of the sixth-term Government of the Hong Kong Special Administrative Region (HKSAR) (the keynote address on 1 July)[3], put forward "four musts" and "four expectations" to encourage Hong Kong to leverage the Motherland's strong support and maintain close connection with the world. Hong Kong should continue to create strong impetus for growth and earnestly address people's concerns and difficulties in daily life. The Central Government fully supports Hong Kong in seizing the historic opportunities brought about by national development and proactively dovetailing itself with national strategies like the 14th Five-Year Plan, the development of the GBA, the high-quality Belt and Road co-operation, etc. During his visit to Hong Kong, President Xi also inspected the Hong Kong Science Park and took the opportunity to encourage Hong Kong's researchers, I&T industry and youth. He also reiterated the Central Government's staunch support to Hong Kong to develop into an international I&T centre and expressed his eager expectation that Hong Kong will contribute to the country's science and technology development. This has fully reflected the importance our country attaches to and its recognition for Hong Kong's I&T development, providing us with the strongest backing to forge ahead.

In October 2022, President Xi (also the General Secretary) highlighted in the Work Report delivered at the 20th National Congress of the Communist Party of China (the 20th National Congress)[4] that our country should adhere to the strategies of advancing through science and technology and workforce development, expedite the achievement of high-level technological self-reliance, improve the institutional set-up for scientific and technological innovation, boost the efficacy of national efforts in innovation and develop world-leading hubs of talent and innovation. This has fully demonstrated the upmost importance attached to I&T and talent and the crucial support to Hong Kong to develop into an international I&T centre.

Hong Kong is experiencing its finest yet most difficult time in history. This year marks the 25th anniversary of Hong Kong's return to the Motherland. Back on the right track of good administration and governance, our society now embarks on the new journey from stability to prosperity, marking a new beginning in our history to break new grounds and scale new heights. With the enormous opportunities arising from the 14th Five-Year Plan, the development of the GBA, etc., we are at the dawn of an unprecedented golden era for Hong Kong's I&T development. Against this significant historical background and having examined the macro developments on the

international and national fronts, as well as the present situation and trends of Hong Kong's I&T development, it is of vital importance that we undertake to formulate a forward-looking I&T development blueprint for Hong Kong (Development Blueprint). By setting development targets for the next five to ten years, and mapping out the overall direction and key strategies through top-level design under the overarching framework of the Development Blueprint, we are better prepared to co-ordinate and implement relevant policies to help Hong Kong's I&T development chart the way forward.

The HKSAR Government will strive to unite all sectors of the community and adhere to the philosophy of being "result-oriented" to develop Hong Kong into an international I&T centre. Moreover, we will set out to contribute to the realisation of the country's long-range objective of becoming one of the top innovative nations in the world and the great rejuvenation of the Chinese nation, as an acknowledgement of the national support and a move to live up to the great expectation of our country on the I&T development in Hong Kong.

Chapter One

Vision and Mission

Vision

To develop Hong Kong into an international innovation and technology centre

Mission

- **To develop a diversified economy**
- **To create quality jobs**
- **To improve quality of life**
- **To serve national needs**

Chapter Two

Where we are today

2.1
International I&T Development

- The world is undergoing unprecedented changes, with I&T development being proactively promoted around the world. A new round of technological revolution and industrial transformation is underway and emerging. In recent years, in order to make a head start in planning for frontier science and technology and capitalising the development opportunities, many countries have been enhancing their support to and investment in scientific research and development (R&D) and optimising their strategies for science and technology competition. Meanwhile, I&T has become the key in re-shaping the global political and economic landscapes, and even more, constituted an important arena for international strategic competition. The globally rampant Coronavirus Disease 2019 (COVID-19) pandemic has also brought about new features and trends in the international I&T development.

  ◎ **International competition accelerating technological advancements:**

  Global economic growth has slowed down due to the COVID-19 pandemic. Recently, the high inflation environment worldwide has caused many countries to start tightening their monetary policies, leading to a rise in market financing costs and exerting further downward pressure on the real economy. To identify new areas of economic growth, many countries have increasingly relied on technology breakthroughs and devised more proactive technology development policies, such as increasing R&D investments. It is expected that the global race in technology development will intensify, which will likely accelerate the pace of technological reform around the world as well as the overall technology advancement in human society.

  ◎ **More active support to technology industries in major countries:**

  Recent changes in the international political and economic environment have affected the stability of supply chain in some industries. This is coupled with the intensified global competition in technology and industry. A number of Western countries have progressively rolled out proactive policies on technology industries in recent years, striving to seize a leading position in the emerging strategic technology industries as early as possible, as well as to ensure a secure supply of key technological products. For instance, to support the domestic semiconductor manufacturing industry and enhance R&D capabilities in frontier technological fields such as artificial intelligence (AI) and quantum computing, etc., various Acts have been passed in the United States in 2022, pledging support

to government R&D institutions and private enterprises amounting to hundreds of billions in US dollars. Separately, the European Commission promulgated the European Chips Act in February 2022, through which an expected investment of more than 43 billion euros will be made to support chip production and relevant pilot projects and start-ups. A total of 11 billion euros will also be provided to strengthen existing semiconductor technologies, R&D and innovation to support its industry development in Europe.

◎ **Multi-polarisation of global technological development:**
With the increasingly keen competition among major countries in recent years, their competition in technology will persist in the long term. Taking into account factors like national strategy and security, major economies may formulate their own technology and standard systems for key technological fields. Global development of technology and standard systems for individual key technological fields is envisaged to multi-polarise in the future.

◎ **Global I&T gravity gradually shifting eastward:**
With the global economic gravity shifting gradually from West to East, the international innovation set-up is being re-shaped, with corresponding changes taking place in the global innovation landscape. In recent years, the emerging economies in Asia (including China) have been increasing their investment in science and technology. We have witnessed more and more innovation activities in the region with significant improvements in their innovation capabilities. Asian countries are now catching up and start to challenge the leading positions of the advanced Western economies. According to the World Intellectual Property Indicators 2021[5] published by the World Intellectual Property Organization, Asian countries, especially China, Japan and the Republic of Korea, have played a pivotal role in boosting the growth in innovations. This was reflected by the number of intellectual property (IP) applications (covering patents, trademarks and industrial designs) filed by these countries in 2020, which amounted to more than two-thirds of the applications filed worldwide. Currently, Asia is already an important destination for the migration of global high-end production elements and innovation. It has the potential to sustain the development of a number of globally influential I&T hubs in the future.

◎ **Emphasis on life and health technology:**

The COVID-19 pandemic has prompted the injection of more resources into global public health around the world and broadened the participation in the global public health governance system. Life and health technology has now become one of the core areas in the global I&T landscape. Countries around the world are more inclined to actively enhance their support to basic life and health technology research. This has contributed to the continuous improvement in the research capabilities of the core technology in the key fields of life and health science, as well as the increase of strategic and technological capabilities on disease control and prevention as well as public health. This brings enormous opportunities to the development of life and health technology.

◎ **Accelerating development of the global digital economy:**

In recent years, the development and wide application of the next generation information technology (IT) such as Internet of Things, cloud computing, big data, AI and blockchain, etc., has altered the present modes of living, working and learning of humans, and brought about significant changes in the global socio-economy. The COVID-19 pandemic has accelerated the development of the next generation IT and given rise to various new economy industries and novel business models. Their application and integration into traditional industries and fields have also speeded up. Meanwhile, countries around the world have been enhancing investment in and planning for relevant large-scale digital infrastructures to expedite global digitalisation.

2.2
National I&T Development

- To use science to guide innovation and innovation to drive development have become the development direction in the new era. All along, our country has placed "innovation and technology" at the core of its overall development, attaching high importance to I&T. To this end, our country has laid down clear guidelines and requirements on the fundamental directions, overall objectives and guiding principles, etc., for the national I&T development, with innovation at the core of its modernisation. Our country will continue to enhance the overall efficacy of the national innovation systems and improve the national I&T on all fronts to meet global standards and exert influence on the international arena. In doing so, a solid technological foundation will be built for expediting its growth into a strong nation with advanced science and technology, achieving a high level of technological self-reliance and realising the great rejuvenation of the Chinese nation.

- It is also clearly pointed out in the Work Report of the 20th National Congress that science and technology should continue to constitute the primary productive force of our country, with talent as the primary resource and innovation as the primary driving force. Our country should implement strategies to promote national prosperity through science and technology education, nurture a rich talent pool and drive development through innovation, as well as strengthen our national strategic scientific and technological capabilities and enhance the overall efficacy of the national innovation systems. The Work Report also highlighted that the focal point of China's economic development should be on the real economy. As such, the country should actively promote "new industrialisation"[Note 1] and build new development models for the real economy, starting a new chapter to develop China into a strong manufacturing nation and promoting to the utmost high-quality economic development.

- In recent years, the I&T development of our country has made historic achievements, with highly significant innovations continuously emerging. Developments in leaps and bounds are witnessed in various fields, including manned space missions, space exploration, manned deep diving programmes, satellite navigation, high-speed railways, large passenger aircrafts and super-computing, etc., and the level of development is among the top in the world. At the same time, some frontier fields of science in our country are developing rapidly. According to the Research Fronts 2021[6], a report jointly published by the Institutes of Science and Development, Chinese Academy of Sciences and Clarivate, China ranked first in the world in its scores for the Research Leadership Index in seven out of 11 broad research areas[Note 2], surpassing the United States for the first time. In terms of nations, while the United States continued to rank first in the world regarding the overall performance in the 11 broad research areas, China, which ranked second, had been making rapid progress. The gap between the two countries in the Index was gradually narrowing.

Note 1: "New industrialisation" refers specifically to the type of industrialisation which is driven by informatisation and capable of achieving developments in leaps and bounds and strengthening sustainable development.

Note 2: Among the 11 highly integrated broad research areas, China ranked first in seven fields, namely "Agricultural, Plant and Animal Sciences", "Ecology and Environmental Science", "Clinical Medicine", "Chemistry and Materials Science", "Mathematics", "Information Science and Economics" and "Psychology and other Social Sciences".

- Our country attaches great importance to strengthening self-reliant innovation capabilities. Total R&D spending of the country has increased from Renminbi (RMB) 1.03 trillion in 2012 to RMB2.79 trillion in 2021. The ratio of total R&D expenditure to Gross Domestic Product (GDP) has risen from 1.91% in 2012 to 2.44% in 2021. Full-time equivalent R&D personnel have increased from 3.71 million man-years in 2014 to 4.8 million man-years in 2020, and the size of the innovation talent pool of our country is the largest in the world. According to the latest Science and Technology Indicators 2022[7] released by the National Institute of Science and Technology Policy of Japan, the volume of highly cited dissertations of our country tops the world and has surpassed that of the United States. Our country also ranks first in the world in terms of the number of domestic patent applications and patent applications filed under the Patent Co-operation Treaty, highlighting its important contribution to global I&T development.

- The science and technology industry of our country is now placing more emphasis on quality over quantity. Its integrated innovation capabilities have substantially increased in recent years. According to the Global Innovation Index published by the World Intellectual Property Organisation, China's ranking has leapt from 34th place in 2012 to 11th place in 2022. With the continuous strengthening of our country's strategic scientific and technological capabilities, the 14th Five-Year Plan has clearly pointed out that speeding up the nurturing of pioneering and pillar industries is essential. It also expressly supports the development of Beijing, Shanghai and the GBA into international I&T hubs, forming one of the top ten science and technology clusters in the world. Moreover, four comprehensive national science centres have been identified as important frontier bases for resolving major scientific pain points and technology bottlenecks.

- Nowadays, our country has assumed a much more significant position in the global innovation landscape as a major stakeholder or even a leader in the international frontier fields of innovation. The giant leap of the country's overall technology standards provides a solid foundation and effective safeguards for the early achievement of high-standard technological self-reliance. Our country is moving towards a new stage of high-quality development, with high-quality technological innovation serving as its strong backbone. Such innovation will also be a source of staunch support to the country in achieving the great goals of developing into a leading innovative nation in 2035 and a world power with advanced science and technology in 2050.

2.3
An Overview of I&T Development in Hong Kong

- Since Hong Kong's return to the Motherland, successive terms of the HKSAR Government have devoted tremendous efforts in promoting I&T development. The implementation of a series of measures on I&T infrastructure, nurturing talent, R&D promotion, start-up and R&D outcome transformation supports, etc., together with the collaboration among the Government, industry, academia and research institutes, has laid a solid foundation for sustainable I&T development. Despite the various challenges encountered by Hong Kong society in recent years, with the unique advantages of "One Country, Two Systems" and the strong support of our country, the overall I&T ecosystem in Hong Kong has become increasingly vibrant, with enhancement in both quality and quantity, as well as breakthroughs in various aspects.

Gross Domestic Expenditures on R&D (GERD) at **HK$26.5 billion** in 2020[8]

Number of start-ups at about **4 000** in 2021[9] alongside the setting up of more than ten unicorns

Amount of investment in venture capital funds at **HK$41.7 billion** in 2021

Scale of fundraising for biotechnology now the largest in Asia and second largest in the world, with 53 pre-revenue/pre-profit healthcare and biotechnology companies listed in Hong Kong to raise funds amounting to about **HK$116 billion** as at end-October 2022.

- Hong Kong also has brilliant performance in various international I&T rankings.

Hong Kong's performance in "Technology" ranked **first** and **second** worldwide in 2021 and 2022 respectively according to the World Digital Competitiveness Ranking[11] released by the International Institute for Management Development

Five universities in Hong Kong among the global **top 100**[10]

Performance in "Readiness" ranked **first** worldwide in the World Talent Ranking 2021[12]

Hong Kong ranked **third** worldwide in the Digital Intelligence Index report[13] jointly published by Mastercard and the Fletcher School of the Tufts University in the United States in 2020

2.4 Strengths, Opportunities and Challenges of Hong Kong's I&T Development

- Hong Kong's strengths and opportunities on various fronts in I&T development:

  ◎ **Highly international city:**
  Under the institutional safeguard of "One Country, Two Systems", Hong Kong has the prominent advantages of enjoying strong support of the Motherland and being closely connected to the world. Over the years, Hong Kong has been an international hub in areas such as finance, trade and transportation, etc., as well as one of the most international cities in our country. The internationalisation of Hong Kong's I&T talent is world-leading, with three of our local universities ranking top ten among the most international universities in the world[14]. This, together with the international experiences accumulated and reputation and networks built over the years, will help Hong Kong pool local and overseas talent and develop into an international I&T collaboration and exchange centre.

  ◎ **Robust capability in basic R&D:**
  With robust capability in R&D and great originality, Hong Kong possesses strong abilities necessary for making innovation that breaks through out of the blue. According to the results of the Research Assessment Exercise 2020[15] conducted by the University Grants Committee (UGC), over 70% of the research projects of local universities were "internationally excellent" or above, among which 25% being "world-leading", demonstrating our remarkable achievements in scientific research. With five world top-100 universities[10], Hong Kong has the highest concentration of quality universities in the world, surpassing international metropolises including London, New York and Tokyo, etc. Hong Kong's scientific research standard has also been well recognised both nationally and internationally. Hong Kong has two world top-40 medical schools, 16 State Key Laboratories, six Hong Kong Branches of Chinese National Engineering Research Centres and 22 Joint Laboratories with the Chinese Academy of Sciences. Besides, we have a high number of world-renowned scholars and experts with proven track records, marked with revolutionary and forward-looking R&D outcomes in their respective fields.

◎ **World-renowned free economy:**

The international think-tank, Fraser Institute has been crowning Hong Kong as the world's freest economy since the publication of its Economic Freedom of the World Annual Report[16] in 1996. We have an efficient, free, open and fair business environment, free flow of capital, a free trade and investment regime, legal and accounting systems which align with international standards, a sophisticated and mature financial market, transportation and data networks connected to the world, a well-established IT infrastructure, a simple and transparent tax system, etc. All these provide very favourable conditions for building conducive platform for I&T development.

◎ **Central city in the GBA:**

The GBA is one of the most open and economically vibrant regions in China. It has a total population of over 86 million and a regional GDP nearing US$2 trillion. According to the Global Innovation Index 2022[17] published by the World Intellectual Property Organization, the "Shenzhen-Hong Kong-Guangzhou" region ranks second among top science and technology clusters around the world, and is regarded as an important base of research, product development and advanced manufacturing. Each GBA city has its own edge. The strong complementarity among these cities provides an enabling platform for Hong Kong to integrate into the overall I&T development of the country. As the core engine powering GBA's regional development, Hong Kong will fully leverage its edges and collaborate with other GBA cities to strive for excellence and achievements.

- At the same time, Hong Kong must look squarely into different factors which may restrict I&T development and proactively address these challenges.

◎ **Inadequate efforts in attracting and retaining talent:**

Hong Kong is a small and externally-oriented economy with strong international connectivity and high talent mobility. Over the past years, due to the lack of a diversified economic and industry structure, local graduates preferred to join major traditional industries with better prospects. Hong Kong also lacks mature technology industry clusters. Hence young talent is not eager to pursue a career in scientific research and in the I&T sector after graduation. Moreover, the Government in the past lacked proactive and incentivising policies to attract and retain I&T talent. Many local graduates studying science and technology had thus pursued careers in other sectors and even outside Hong Kong. In addition, Hong Kong has a high cost of living, especially high housing rentals. According to a survey conducted by an international human resources consultancy firm on global management personnel at administrative level[18], Hong Kong is one of the most expensive

places in the world for expatriate rental accommodation. This also undermines Hong Kong's competitiveness in attracting Mainland and overseas technology talent to Hong Kong to live and pursue a career here.

◎ **Insufficient momentum to realise transformation of R&D outcomes:**

Owing to high land costs in Hong Kong, the business sector traditionally tends to invest in projects which can yield the biggest returns in the shortest time possible such as commercial/residential property developments. The business sector has limited incentives to embark on technology-related ventures, in particular projects which necessitated substantial investments to establish R&D production bases but with a long payback periods. Given the relatively small scale of the local market, commercialisation of innovations is progressing at a slower pace. Besides, for universities with an array of upstream R&D inventions of core technologies, their existing management regimes are not flexible enough in dealing with IP matters and engaging staff for other external industry-based I&T activities. This may discourage their R&D teams from realising transformation of their R&D outcomes, thereby making it difficult to unleash full potentials.

◎ **Tight land supply and lengthy process of land development:**

Land supply in Hong Kong has been tight for years. As we have to strike a balance among different social needs especially housing needs, land designated for I&T purposes was limited in the past. In addition, land development involves various statutory and administrative procedures and the process normally takes relatively longer time. As a result, the supply of land in Hong Kong for I&T uses may not be able to fully meet the rising demand arising from I&T development.

◎ **International competition become intensified and complicated:**

While the global competition in technology is intensifying, the complex and volatile international political and economic environment will inevitably affect I&T collaborations and exchanges among countries. The sustainable and healthy development of global co-operation in scientific research will likely be hindered.

The Blueprint outlines the four broad development directions and eight major strategies:

Direction 1

To enhance the I&T ecosystem and promote "new industrialisation" in Hong Kong

Direction 2

To enlarge the I&T talent pool to create strong impetus for growth

Direction 3

To promote digital economy development and develop Hong Kong into a smart city

Direction 4

To proactively integrate into the overall development of the country and consolidate our role as a bridge connecting the Mainland and the world

Strategy 1

To enhance the I&T ecosystem and promote interactive development of the upstream, midstream and downstream sectors

Strategy 2

To promote technology industry development and achieve "new industrialisation" in Hong Kong

Strategy 3

To diversify venture financing channels and support the development of start-ups and industries

Strategy 4

To promote I&T culture for all and enhance the overall I&T atmosphere in the community

Strategy 5

To enrich I&T talent resources and develop an international talent hub

Strategy 6

To accelerate the development of digital economy and smart city to enhance citizens' quality of life

Strategy 7

To deepen I&T co-operation with the Mainland for better integration into the overall national development

Strategy 8

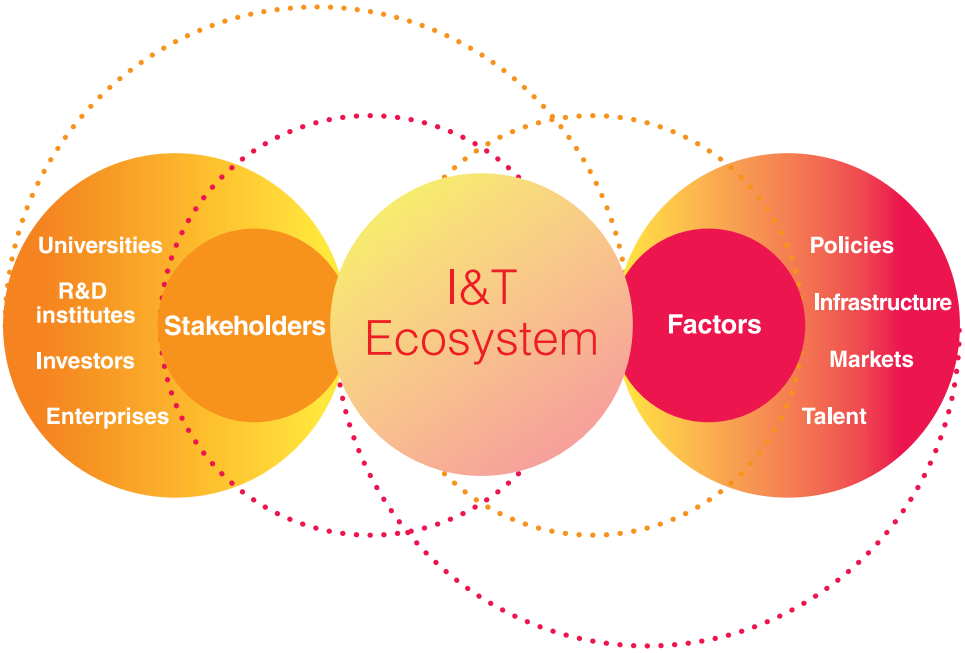
To leverage Hong Kong's advantages as an international city to foster global I&T collaboration

Chapter Three

Four Broad Development Directions

3.1
Direction (1): To enhance the I&T ecosystem and promote "new industrialisation" in Hong Kong

- To develop Hong Kong into an international I&T centre, continuous enhancement of our local I&T ecosystem is essential. The ecosystem comprises different stakeholders, including universities, R&D institutes, enterprises and investors, etc., and involves numerous elements such as policies, infrastructure, markets and talent, etc. All these stakeholders and factors are intertwined and indispensable.



- To create a vibrant I&T ecosystem and optimise the benefits brought by I&T to the society, Hong Kong needs to develop a comprehensive I&T ecological chain encompassing the upstream, midstream and downstream sectors. Along the chain, transformation and commercialisation of upstream R&D outcomes should take place in the midstream. This will stimulate industry development in the downstream, and in turn generate demands and resources for R&D in the upstream. Thus, a healthy cycle will be created with various complementary sectors.

- With our robust R&D capability and the ability to make breakthroughs out of the blue, Hong Kong enjoys clear advantages in the upstream sector. Regarding the midstream transformation of R&D outcomes, apart from leveraging market forces, it is necessary for the Government, universities and R&D institutes to organically integrate with the market to achieve efficient collaboration among the Government, industries, academia and research sectors. Government facilitation measures will serve as a key impetus to drive and accelerate the active "1 to N" transformation of universities' R&D outcomes.

- Regarding the downstream sector, Hong Kong should formulate an industry policy that suits its development needs. It should support the development of technology industries with strategic significance and in which we enjoy clear advantages, so as to drive the robust development of our technology industry as a whole. On the other hand, the Government should assist the traditional manufacturing sector in Hong Kong to upgrade and transform with the use of I&T to achieve smart production. With advanced technology as the foundation, the Government should also promote the development of "new industrialisation" to contribute to Hong Kong's economy.

- To enhance the I&T ecosystem of Hong Kong, we must step up our efforts in bringing in talent, technologies and enterprises, in particular Mainland and overseas leading technology enterprises and R&D institutions, and promote collaboration with the Mainland GBA cities, thereby enhancing the constructive interactions among different stakeholders and elements.

3.2
Direction (2): To enlarge the I&T talent pool to create strong impetus for growth

- Talent is the primary resource for development and an essential element in driving I&T development. The Government has adopted a multi-pronged approach to enlarge the I&T talent pool by nurturing, retaining and attracting talent. For example, we have created a better I&T learning or studying environment for students in different learning stages through various programmes, nurturing more new talent to join the I&T workforce. We have also implemented various measures to attract Mainland and overseas talent to pursue their aspirations in Hong Kong.

- As global competition for I&T talent is increasingly keen in recent years, human resources are considered more invaluable than ever. After years of endeavours, Hong Kong has succeeded in making obvious improvement on the overall quality of our local I&T human resources, while the size of our talent pool has also enlarged. That said, with the completion of numerous major I&T projects and infrastructure in the upcoming years, coupled with the development of the Northern Metropolis into a “new international I&T city”, our demand for I&T talent will remain high in the future.

- Against this backdrop, Hong Kong must strengthen its efforts in nurturing and retaining different types of talent to pursue their aspirations here. We should also leverage our edges as an international city to actively bring in research talent, research teams, leading figures in science and technology and various kinds of professional and technical personnel from the Mainland and overseas, etc. This allows us to jointly build a global collaborative innovation platform of industries, academia and research. Hong Kong will develop into an international talent hub, creating stronger impetus for I&T growth on one hand, and contributing to the country on another by supporting GBA development.

3.3
Direction (3): To promote digital economy development and develop Hong Kong into a smart city

The Office of the Government Chief Information Officer launches the Smart City Roving Exhibition.

- Digital economy is becoming the mainstream economy for socioeconomic development. Technology advancement has significantly lowered the cost of data storage and collection which brings about the unprecedented growth of data generation. Digitalisation can drive economic development and social innovation. It can facilitate enterprises, especially those in traditional industries, to upgrade and transform. It can also boost efficiency, stimulate innovation and raise competitiveness of these enterprises. Digital economy can enable people to enjoy various services conveniently, swiftly and cost-effectively, thereby enhancing the quality of living.

- Smart city is the backbone of the digital economy and is also pivotal to the promotion of I&T development. To drive high-quality socioeconomic development, digitalisation is an inevitable trend. Over the years, the Government has rolled out various measures covering different areas to promote digital economy and smart city development in Hong Kong.

- To take forward various smart measures in a systematic manner, the Government launched the Smart City Blueprint for Hong Kong (the Blueprint)[19] and the Smart City Blueprint for Hong Kong 2.0 (the Blueprint 2.0)[20] in 2017 and 2020 respectively to co-ordinate efforts across government departments and among public and private sectors:

- ◎ 76 initiatives under six areas, namely smart mobility, smart living, smart environment, smart people, smart government and smart economy, were introduced in the Blueprint promulgated in December 2017; and

- ◎ More than 130 initiatives under these six smart areas were set out in the Blueprint 2.0 promulgated in December 2020, with the inclusion of "Use of I&T in Combating COVID-19" and "Smart Village Pilots" as two new chapters.

- In his important speech delivered on 1 July, President Xi Jinping expected the HKSAR Government to address people's livelihood concerns by being caring and committed to the people. In response to the reasonable expectations of the general public to lead an enjoyable life, the Government will, based on its existing work, speed up Hong Kong's development into a smart city by leveraging technology to enhance management efficiency and optimise city management. This allows our people to enjoy convenience in daily life brought about by technological development at the earliest juncture. In doing so, we can address people's concerns, improve their livelihood and enhance their quality of life. This in turn strengthens their sense of fulfilment and happiness, and their sense of belonging to our community. We will also join hands with various sectors to encourage and drive the adoption of digital strategies and measures across industries, with a view to facilitating the continuous economic upgrading and transformation and building a smart Hong Kong characterised by a robust economy and high quality of living.

3.4
Direction (4): To proactively integrate into the overall development of the country and consolidate our role as a bridge connecting the Mainland and the world

- Hong Kong has to consolidate our role as a bridge connecting the Mainland and the world. To better integrate into the national development, Hong Kong has to conduct high-level policy planning, taking the initiative to dovetail with national development strategies. Meanwhile, Hong Kong has to strengthen our linkage and co-operation with different provinces and municipalities, in particular the GBA. Hong Kong will also endeavor to maintain our connection with the world to support the country to "attract foreign investment" and "go global".

- Over the years, Hong Kong has been an important window for the country to open up to the world, as well as an ideal gateway for overseas enterprises to tap the Mainland market and for Mainland enterprises to go international. It also serves as a solid bridge connecting the Mainland and the global market. With the institutional advantages of "One Country, Two Systems", Hong Kong is able to consolidate our position as an international finance, trade, transportation and communication centre important to our country. Such advantages also provide us with the safeguards to maintain Hong Kong as the most international city in the country.

- As mentioned by President Xi Jinping in his important speech delivered on 1 July, we must maintain Hong Kong's unique status and edges as an international city. Hong Kong's close connection to the world and strong support from the Motherland are its unique and prominent advantages. We must fully leverage such advantages to pool global innovation resources. We must also collaborate with the Mainland cities in the GBA to achieve "joint development, shared prosperity" by leveraging the complementary advantages among different Mainland cities in the GBA to strengthen the collaboration between industries, academia and researchers. This fosters the creation of an enhanced and sustainable I&T ecological chain.

- Located at the heart of Asia, Hong Kong is the focus of global economic development. Our international edge allows us to pool together overseas technological enterprises and talent interested in exploring Asian and Mainland markets. They will make good use of Hong Kong's bridgehead role to actively expand the Mainland market. As the only common law

jurisdiction within the country, Hong Kong belongs to the same legal system as the world's major economies and aligns with international business practices. Furthermore, Hong Kong has well-established global connections and solid experiences in economic and trading activities. All these will help Hong Kong develop into an important platform for the country and technological enterprises in the GBA to tap the overseas markets and attract talent.

- It is a historic opportunity and mission for Hong Kong to maintain its international features and perform its role as a bridge connecting the Mainland and the world in the new era. The 14th Five-Year Plan has indicated clear support to Hong Kong's development into an international I&T centre. Hong Kong must fully and faithfully implement the principle of "One Country, Two Systems" and do its utmost to capitalise on its role as a bridge facilitating internal and external connections, leading the way in the process. We must also leverage our own advantages to strengthen connections with the world, pool Mainland and overseas innovation resources, actively participate in the new national development pattern of dual circulation, strengthen promotion and publicity efforts worldwide, and proactively expand global I&T collaborations and connections in order to enrich Hong Kong's development as an international I&T centre.

President Xi Jinping highlighted in his important speech delivered on 1 July the need to maintain Hong Kong's distinctive status and advantages.

Chapter Four

Eight Major Strategies

4.1
Strategy (1): To enhance the I&T ecosystem and promote interactive development of the upstream, midstream and downstream sectors

- A vibrant I&T ecosystem hinges on the comprehensive development of and positive interaction among the upstream, midstream and downstream sectors. The Government will continue to enhance the I&T ecosystem by consolidating our strengths in upstream basic research, accelerating the transformation and realisation of midstream R&D outcomes and supporting the development of downstream industries. This will facilitate the coordinated development of the industry, academic and research sectors.

Target 01

To consolidate Hong Kong's R&D strengths and strengthen universities' capacity on breakthrough researches

- As the foundation of I&T, basic research is fundamental to nurturing various technology industries. In the past, the Government has launched different measures to support basic research, including:

  ◎ injecting capital into the Research Endowment Fund to increase research grants for post-secondary institutions;

  ◎ facilitating the research development of local universities through recurrent grants and various research funding schemes under the University Grants Committee;

  ◎ subsidising various R&D projects through different funding schemes of the Innovation and Technology Fund (ITF);

  ◎ setting up the InnoHK Research Clusters to promote global research collaboration, providing funding support for the development of life and health scientific research, and making use of the Green Tech Fund to support R&D projects which aim to help Hong Kong decarbonise and enhance environmental protection; and

  ◎ supporting local medical and health research through the Health and Medical Research Fund, etc.

Recommendation:
To strengthen support to universities' basic research activities and facilities

Professor Nancy Ip, a renowned molecular neuroscientist, was appointed the Fifth President of the Hong Kong University of Science and Technology in 2022.

- The Government needs to step up support to Hong Kong's original scientific research to better complement frontier scientific research fields that are our country's development priorities. Specific recommendations include:

  i. strengthening theme-based research to tackle key strategic technological problems;

  ii. enhancing support for universities and research institutes to conduct different types of collaborative, co-operative, interdisciplinary and cross-territory researches, so as to catalyse more original R&D outcomes; and

  iii. bolstering support for universities' research institutes to expand their research capacities by assisting them in upgrading or securing research equipment and laboratory fixtures, thereby injecting new impetus into the sustainable development of basic research.

Target 02

To build a global collaborative innovation platform of industries, academia and research, accelerate transformation of universities' R&D outcomes, and promote the "from 1 to N" transformation of R&D outcomes and industry development

- The Government has previously introduced different initiatives to create a favourable environment conducive to the development of applied scientific research and technology start-ups. Examples include making use of the ITF to support R&D institutes and companies to transform R&D outcomes into applied technologies, and doubling the subsidy amount provided for each university under the Technology Start-up Support Scheme for Universities to facilitate the realisation and transformation of their R&D outcomes. Besides, the Innovation and Technology Commission (ITC) launched the Innovation Hub@HK Website in August 2022 to provide a one-stop platform connecting universities, research institutes and the industry to facilitate technology transfer and commercialisation of R&D outcomes, as well as assist the industry to enhance efficiency for further upgrading and transformation.

Professor Sun Dong, Secretary for Innovation, Technology and Industry attends the launch ceremony of the Innovation Hub@HK website organised by the Innovation and Technology Commission with representatives from R&D institutions and higher education institutions.

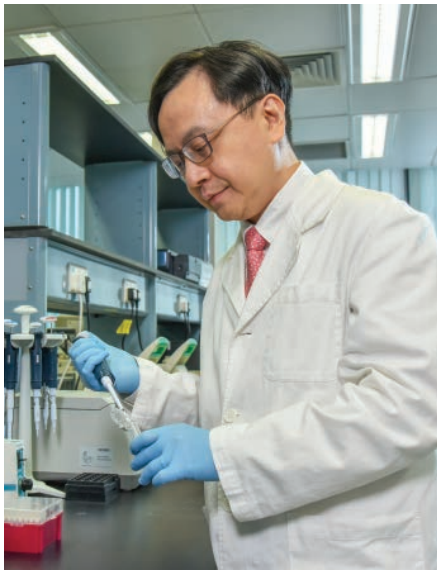
Recommendation: To step up efforts to incentivise the transformation and realisation of R&D outcomes

- As stated in Direction (1), the Government needs to incentivise collaboration among the industry, academic and research sectors, and accelerate promotion of the "from 1 to N" transformation of R&D outcomes and the industry development. Specific proposals include:

  i. launching the $10 billion "Research, Academic and Industry Sectors One-plus Scheme" in 2023 by the ITC to fund, on a matching basis, at least 100 university research teams with potential to become start-ups to promote commercialisation of outstanding R&D outcomes;

  ii. stepping up efforts to encourage universities to deepen their collaboration with local, Mainland and overseas enterprises, conduct more impactful and translational research projects and attach importance to the technology transfer culture, thereby incentivising more R&D personnel in universities to engage in innovation and entrepreneurship; and

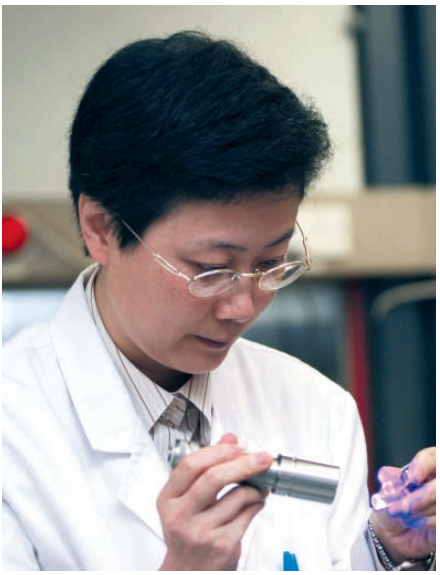
  iii. encouraging universities to improve their existing mechanisms for transformation of R&D outcomes and facilitate proactive transformation and realisation of outstanding R&D outcomes by removal of bureaucratic and institutional barriers.



Professor Dennis Lo of the Chinese University of Hong Kong's Faculty of Medicine received the Lasker~DeBakey Clinical Medical Research Award, America's biomedical science prize, in 2022

Target 03

To formulate facilitation policies for technology industries, leverage Hong Kong's advantages as an international city and attract Mainland and overseas technology enterprises to set up operations in Hong Kong



Professor Vivian Yam of the University of Hong Kong's Department of Chemistry was elected to Member of the Chinese Academy of Sciences and receives the L'Oréal-UNESCO Women in Science Awards 2011.

- A comprehensive I&T ecosystem requires the support from industries. The Government should adopt a more proactive mindset to facilitate the development of downstream industries and promote commercialisation of R&D outcomes through market forces, thereby bringing real benefits to the community. The Government should also fully leverage Hong Kong's advantages as an international city to attract Mainland and overseas technology enterprises, especially the leading ones, to set up business in Hong Kong in order to accelerate the overall development of local technology industries.

Recommendation:
To implement specific facilitation policies on technology industries and support technology industries with an edge to develop in Hong Kong

- The Government should focus on promoting the development of technology industries with an edge and are of strategic importance from a strategic and forward-looking perspective. These industries should be able to:

  i. yield high value-added returns by application of advanced technologies, leverage the advantages of Hong Kong and have the market potential to enable Hong Kong to assume a leading position in Asia and even in the world;

  ii. help drive the growth of GDP;

  iii. facilitate the creation of quality employment opportunities to pool Mainland and overseas technology talent; and

  iv. dovetail with the 14th Five-Year Plan to integrate into the overall development of the country and serve national needs.

  In this connection, we propose to focus on the development of industries such as **life and health technology, AI and data science, and advanced manufacturing and new energy technology industries**, etc.

Life and health technology

- The 14th Five-Year Plan attaches importance to frontier fields such as life and health disciplines. Hong Kong has a solid foundation in the basic life and health technology research with a good number of world-renowned research teams, resulting in its remarkable capabilities of breakthrough research.
- Hong Kong's clinical trial centres are recognised by the National Medical Products Administration. Their data also meet the relevant clinical trial standards widely recognised by relevant bodies in the United States and the European Union. In addition, Hong Kong has two world top-40 medical schools.
- Hong Kong has 16 State Key Laboratories and eight of them are related to life and health. 16 life and health technology research laboratories are also set up under the InnoHK Research Clusters. They specialise in R&D areas such as biomedicine, chemistry, physics, engineering, AI, etc., which can be applied in various areas, such as prevention, diagnosis, pathology tracking, medicine, surgical micro-robots, advanced treatment and rehabilitation, etc.

AI and data science

- Hong Kong has a keen demand for data centre facilities. According to the 2022 Global Data Centre Market Comparison[21], Hong Kong's data centre market ranks sixth globally and second in the Asia-Pacific region. Under "One Country, Two Systems", Hong Kong has unique advantages and is well-placed to facilitate interchange of data within and outside of the country.
- Hong Kong has a sound foundation in AI research. Universities in Hong Kong as a whole rank third globally in terms of producing the most cited and impactful research on AI.

Advanced manufacturing and new energy technology industries

- Most major world economies are actively developing high value-added advanced manufacturing industries to boost economic growth and create jobs. Hong Kong must catch up by utilising our strong R&D capabilities, our advantages as an international and market-oriented economy and our robust IP protection regime to develop advanced manufacturing industries.

- New energy technology is not only one of the major innovation areas in the new age, it is also a strategic emerging industry put forth in the 14th Five-Year Plan. Advanced new energy technology industries help combat climate change and take forward strategies to achieve the targets of carbon neutrality, so as to promote the development of green industries. The Government is actively exploring the application of new energy in transport and electricity generation to introduce them for testing in Hong Kong and gradually increase their applications when the technologies become relatively mature.

The Chief Executive, Mr John Lee, speaks at the "Innovation Starts Here – Success Beyond Borders", a celebration event of the 20th anniversary of the Hong Kong Science Park.

- To promote the development of the above strategic technology industries of which we have an edge, the Government needs to step up its efforts in attracting Mainland and overseas high-potential or representative key technology enterprises to set up their businesses in Hong Kong. In this connection, the Innovation, Technology and Industry Bureau (ITIB) will collaborate with the Office for Attracting Strategic Enterprises (OASES) and make use of the $30 billion Co-Investment Fund, the $5 billion Strategic Tech Fund, the land provided in the Hong Kong-Shenzhen Innovation and Technology Park (HSITP) in the Lok Ma Chau Loop and in the vicinity of San Tin starting from 2024, as well as other land space to focus on attracting enterprises of the strategic technology industries to set up business in Hong Kong.

4.2
Strategy (2): To promote technology industry development and achieve "new industrialisation" in Hong Kong

- A complete I&T industry chain has to be backed by industries. Hong Kong should strive to nurture more technology industries and attract quality enterprises of new industries conducive to the real economy to set up operations in Hong Kong, so as to promote the local development of "new industrialisation".

To promote the development of local technology industries, create Hong Kong I&T brands, and assist traditional industries to upgrade and transform with the use of I&T to achieve smart production

- Although quite a number of manufacturing and production procedures used to be carried out in Hong Kong have been relocated to the Mainland and Southeast Asian countries in earlier years, many local manufacturers still base their head offices in Hong Kong. Various "Made in Hong Kong" products still take up a major share in the international market. The extensive international networks and the reputable "Made in Hong Kong" brand owned by local manufacturers serve as the solid foundation for promoting the development of "new industrialisation" in Hong Kong.

- It is evident that the manufacturing sector plays an important role in sustaining economic development. Hong Kong needs to diversify its economy and create more job opportunities by rejuvenating the manufacturing sector to strengthen resilience in the face of economic downturn. In order to distinguish itself in the current highly competitive market, the manufacturing sector in Hong Kong must enhance its competitiveness through I&T.

- At the same time, Hong Kong needs to promote and nurture local I&T industries as well as create and strengthen local I&T brands. With the creation of the post of Commissioner for Industry to co-ordinate and steer the relevant policy support, the Government will actively foster I&T application to assist the manufacturing sector in achieving smart manufacturing for higher production efficiency, and support local enterprises to shift to high value-added, technology-intensive and sustainable production modes.

- Even though we have managed to stabilise the declining trend of the manufacturing sector's contribution to the GDP in recent years, it is incumbent upon the Government to continuously create the following favourable conditions, in order to boost the manufacturing sector's contribution to the local economy.

Recommendation (1): To increase I&T land supply and upgrade supporting infrastructure

- The Government needs to actively sustain its efforts to develop new land to provide development space for the I&T industries. In the short run, the Cyberport 5 project has commenced and is expected to be completed in 2025. Stage 2 of the Science Park Expansion Programme is also in progress as planned and the first batch of works is expected to be completed by 2025. The Government is also taking forward the construction works of the HSITP in the Lok Ma Chau Loop (the Loop) in full swing, striving to gradually complete the eight buildings in Batch 1 in phases from end-2024.

- The Government will also consider exploring innovative development models by accelerating the development of San Tin Technopole in the Northern Metropolis. It aims to put forward I&T development sites as soon as possible to provide capacity for developing science and technology parks and advanced pilot production bases. This can support the development of Hong Kong's technology industries. In particular, the first batch of San Tin I&T sites outside the Loop will commence construction in 2024. Meanwhile, the Government will continue to take forward the Ma Liu Shui reclamation project and the relocation of the Sha Tin Sewage Treatment Works to caverns, which will enrich the I&T land reserve.

- In addition, the Hong Kong Science and Technology Parks Corporation (HKSTPC) has repositioned the three industrial estates as "InnoParks" under its vision of "Innofacturing Tomorrow". The Government is exploring the development of the second Advanced Manufacturing Centre at the Tai Po InnoPark by 2027. To ensure that the re-positioned InnoParks are able to attract more quality and potential to operate enterprises with potential in the long term, the Government will discuss with the HKSTPC to explore early extension of the relevant leases of the InnoParks.

The Advanced Manufacturing Centre at the Tseung Kwan O InnoPark was officially open in April 2022, providing a gross floor area of about 108 600 square metres. It equips companies of different scales with scalable, efficient, and dedicated logistics serviced manufacturing space.

Recommendation (2): To bring in top-notch enterprises

- The Government should actively introduce top-notch Mainland and overseas enterprises to establish their presence in Hong Kong, especially in the Northern Metropolis. In this regard, incentives should be provided to encourage enterprises to invest in the setting up of relevant industrial R&D and design centres and pilot transformation bases. This can expedite the development of a collaborative innovation system of the industry, academic and research sectors. Furthermore, the presence of top-notch enterprises will also create more quality employment opportunities, which can help attract and retain talent and drive the sustainable development of industries.

Recommendation (3): To strengthen support for strategic industries

- To support the sustainable development of Hong Kong's economy and better serve our country's needs in realising her development vision, Hong Kong needs to strengthen its support for developing advanced manufacturing industries of strategic importance, such as the new energy vehicles industry and semiconductor chips industry. Hong Kong needs to support relevant quality and representative enterprises to set up or expand their advanced manufacturing production lines in Hong Kong through targeted and appealing tailor-made supporting measures:

New energy vehicles

◎ It is stated in the 14th Five-Year Plan that our country will be committed to the new development philosophy of innovation and green development, and focus on such emerging industries of strategic importance such as green environmental protection and new energy vehicles. Hong Kong has a solid R&D foundation in new energy technology, with considerable R&D capacities of local universities and research institutes. An example is the Automotive Platforms and Application Systems R&D Centre which has considerable capabilities in fields such as new energy vehicles and related products, laying a solid foundation for the development of new energy vehicles industry in Hong Kong. In addition, the Mainland GBA cities provides a comprehensive automobile industry chain which could ensure a stable supply of relevant auto parts. In the future, the Government will proactively promote the development of such industries by supporting relevant quality and representative enterprises to set up R&D and advanced manufacturing production bases in Hong Kong to foster economic diversification. The Government will also support the policy objective of achieving carbon neutrality at the same time.

Semiconductor chips

◎ Widely used in various electronic equipment and smart products, semiconductor chips are essential to societal operation and people's daily lives. The semiconductor chip industry is currently one of our country's priority directions of industry development. Hong Kong possesses a number of world-class microelectronics personnel specialising in smart chips design, automation of electronic design, microelectronics areas such as advanced packaging and silicon photonics, etc. There are clear advantages in smart chip designing. To tie in with the development of microelectronics technology and related industries in Hong Kong, the HKSTPC is constructing the Microelectronics Centre in the Yuen Long InnoPark to provide advanced production facilities for relevant industries. In the future,

the Government will support relevant quality and representative enterprises to proactively set up R&D and production bases in Hong Kong, with a view to driving the development of the local semiconductor chip industry.

Recommendation (4): To achieve internationalisation

- Hong Kong should leverage its advantages as an international city and strive to enhance the ancillary measures for the development of the local manufacturing industry. This includes participating in the formulation of international and Mainland standards, as well as pilot trials and product testing, etc. We should also encourage the development of multi-purpose technology supporting platforms, shared professional services platforms, shared factories, etc., for application in a wide spectrum of industries or fields. This will further improve production services in terms of service content and mode of delivery. In doing so, Hong Kong will assume a leading role in achieving internationalisation of the advanced manufacturing industry in the GBA on various fronts, such as developing systems on management, services and standards, etc.

Recommendation (5): To promote R&D in technology

- Currently, the Government promotes R&D through the ITF, five public R&D Centres and the InnoHK Research Clusters which help translate outcomes into applications. In the future, it is necessary for the Government to further encourage the above-mentioned R&D Centres and the InnoHK Research Clusters to improve the adoption rate of R&D projects, promote recognition in the industry and accelerate technology transfer and commercialisation of R&D outcomes, with a view to expediting the development of "new industrialisation" in Hong Kong.

Smart Wearables, Watch and Clock Technology Centre of the Hong Kong Productivity Council

4.3
Strategy (3): To diversify venture financing channels and support the development of start-ups and industries

- Supporting start-ups is an essential element in enhancing the I&T industry chain. The Government is committed to offering comprehensive support to start-ups at their different stages of development by making good use of different investment funds.

Target 01

To strengthen support to start-ups in meeting their capital needs at different stages of growth, facilitate private capital investment in local start-ups, and increase the deal flow of the venture market

- In 2017, the Government set up the $2 billion Innovation and Technology Venture Fund (ITVF) to encourage venture capital funds investing in local I&T start-ups at a matching ratio of approximately 1 (Government): 2 (co-investment partners).

- The Government has all along been encouraging more investment by investment funds and the private sector in local I&T start-ups with a view to building a more vibrant I&T ecosystem in Hong Kong. For instance, Cyberport and the HKSTPC have respectively established the Cyberport Macro Fund and the Corporate Venture Fund to invest in their respective start-ups on a matching basis. So far, the two Funds have attracted over $7.4 billion of private investment, facilitating the growth of around 50 I&T start-ups.

Hong Kong Cyberport

- The Government is also committed to leveraging Hong Kong's advantage as a popular venue for fundraising through initial public offerings (IPOs). As a breakthrough, the Hong Kong Exchanges and Clearing Limited (HKEX) revamped the listing regime in April 2018 to allow emerging and innovative enterprises with weighted voting rights structures, as well as pre-revenue/pre-profit biotechnology companies to list in Hong Kong, and established a new concessionary listing route for relevant qualifying issuers to seek secondary listing. IPOs by biotechnology companies have become another key impetus for boosting I&T investment in Hong Kong, driving its development into a world-leading fundraising hub for biotechnology.

Recommendation (1): To enhance the operation of the Innovation and Technology Venture Fund

- The ITC is reviewing ITVF's operation to explore room for further enhancement, streamline procedures and allow greater flexibility to empower local start-ups with more financing support. This can help nurture strategic emerging industries, promote diversification of Hong Kong's industry structure and enhance our competitiveness.

Recommendation (2): To optimise the existing listing regime

- Some large-scale advanced technology enterprises require substantial capital for their R&D works but are not qualified for listing as they fail to meet the profit and trading record requirements. The HKEX would accordingly revise the Main Board Listing Rules to allow the listing of five types of specialist technology companies[Note] for financing purposes in 2023, taking into account feedback collected via market consultation and the risks involved. This is to attract more quality technology enterprises to list in Hong Kong, and hence facilitate the development of Hong Kong as a premium financing platform for new economy enterprises in the region. The HKEX is also planning to revitalise GEM (formally known as the Growth Enterprise Market) to provide small and medium enterprises (SMEs) and start-ups with a more effective fundraising platform, which will further facilitate the enhancement of the local I&T ecosystem.

Recommendation (3): To strengthen support to the development of start-ups in Hong Kong

- In order to cultivate "entrepreneurship" among local start-ups, supporting their continuous innovation and assisting them to explore more business opportunities are of utmost importance. The Government will step up liaison with government departments and the I&T industry, especially local start-ups and SMEs, via the existing platforms, including the Smart Government Innovation Lab and the E&M InnoPortal of the Electrical and Mechanical Services Department, etc. We will continue to organise the I&T Solution Day to encourage and help government departments to introduce and utilise I&T products and solutions of local start-ups and SMEs, facilitating more business matching to achieve a win-win situation. Meanwhile, the Government will continue to assist local technology enterprises, especially starts-ups, via the Public Sector Trial Scheme by offering different settings for them to try out in the public sector their I&T products and solutions. This will also support commercialisation of more R&D outcomes.

Note: The five types of specialist technology companies are companies engaging in next-generation information technology, advanced hardware, advanced materials, new energy and environmental protection, and new food and agriculture technologies.

- The Government will encourage Cyberport and the HKSTPC to continue their various I&T-related activities, such as the Cyberport Venture Capital Forum and the Elevator Pitch Competition organised by Cyberport and the HKSTPC respectively, to offer the industry and start-ups opportunities to exchange and co-operate with local, Mainland and overseas experts and investors.

Smart Government Innovation LAB

Target 02

To fully explore investment opportunities in technology companies with strategic value and good development potential

- The Government has set up various investment funds in recent years with a view to reinforcing Hong Kong's status as an international financial, commercial and I&T centre, including:

  i. the Hong Kong Growth Portfolio of about $22 billion was set up in 2021 to make strategic investments in projects with a Hong Kong nexus, including those related to the technology industry;

  ii. the Strategic Tech Fund of $5 billion was set up in 2022 to invest in technology enterprises of strategic value to Hong Kong, or of considerable scale, as well as having good development potential; and

  iii. the GBA Investment Fund of $5 billion was set up in 2022 to focus on projects in the GBA, including those related to technology industry that can benefit the industries and ecosystem development of Hong Kong.

Recommendation (1): To make good use of the Co-Investment Fund

- The Government will proactively utilise the Co-Investment Fund to attract enterprises to set up operations in Hong Kong and invest in their business. The Fund will consider co-investing in individual projects of specific enterprises, taking into account their potential to drive industry development in Hong Kong, with a view to promoting the development of the local technology industry.

Recommendation (2): To actively support the development of strategic technology industries through the Hong Kong Investment Corporation Limited

- The Government will, through the Hong Kong Investment Corporation Limited (HKIC), further optimise the use of fiscal reserves for promoting industry and economic development. The HKIC will consolidate the aforementioned new investment funds and the Co-Investment Fund, and make good use of the relevant financial resources under Government's steer to invest in strategic industries, especially industries that have an edge as mentioned in Strategy (1). This will help attract and support more enterprises to develop their business in Hong Kong.

To actively perform the unique role of Hong Kong, being an international financial centre, as a gateway for two-way capital flow to broaden the financing channels for start-ups and technology enterprises

Recommendation (1): To attract more foreign capital to invest in local I&T industries

- In recent years, the Government has strengthened the development of Hong Kong's private equity funds and venture capital financing chain through measures including the introduction of the open-ended fund company regime and the limited partnership fund regime, tax concessions for carried interest distributed by eligible private equity funds operating in Hong Kong, and establishment of a fund re-domiciliation mechanism to attract foreign funds to Hong Kong. The Government will continue to attract investment funds from all over the world through Hong Kong's investment fund regimes, which will provide more financing channels for start-ups and technology enterprises.

Recommendation (2): To strengthen investment linkage and co-operation between Hong Kong and Shenzhen

- The 18 measures for supporting the linked development of Shenzhen and Hong Kong venture capital investments in Qianhai[22] announced in September 2022 will achieve co-operation between Hong Kong and Qianhai on Qualified Foreign Limited Partnerships (QFLP), help promote the linked development of Shenzhen and Hong Kong private equity markets and further attract private equity and venture capital market funds desirous of investing in the Mainland to establish their bases in Hong Kong. The new measures also encourage Qianhai Qualified Domestic Investment Enterprises (QDIEs) to invest in Hong Kong I&T projects[Note] and offer rewards to eligible QDIEs, with a view to attracting Mainland capital to invest in Hong Kong's I&T industry. The Government will continue to strengthen investment linkage and co-operation between Hong Kong and Shenzhen to foster the free flow of capital between the two places, thereby channelling capital investment into the technology industries in Hong Kong and the GBA, and expediting the I&T and industry development in Hong Kong and the entire GBA.

Note: The new measures encourage Qianhai QDIEs to invest in Hong Kong's I&T industry. For those investing in enterprises located in the Hong Kong Science Park or Cyberport in Hong Kong, projects which have been admitted to the incubation programmes of the Hong Kong Science Park or Cyberport in Hong Kong, or projects funded by the ITF, a reward based on 2% of the actual amount of investment and up to RMB 500,000 per investment will be provided. Each enterprise may receive accumulated reward of up to RMB 2 million per year.

4.4
Strategy (4): To promote I&T culture for all and enhance the overall I&T atmosphere in the community

- The popularisation of science and technology (popular science) in our society aims at fostering knowledge in science and technology for all, promoting the spirit of science, advocating scientific thinking, as well as propagating scientific approaches. All these activities are to lay the important groundwork for the development of I&T. Hong Kong should actively foster and promote I&T culture to enhance civic literacy in science.

- The promotion of popular science should adopt a multi-pronged approach and the Government will work on various fronts to connect different stakeholders in society, with a view to comprehensively enhancing popular science at various levels of the community, making I&T part of the life of our people.

To promote "science and technology for all" to enhance local industry level, foster an I&T culture and reinforce the I&T atmosphere in the community

Recommendation (1): To provide support through various subsidy schemes to organise activities which help foster the I&T atmosphere

- Currently, the Innovation and Technology Fund for Better Living (FBL) and the General Support Programme (GSP) are established under the ITF. To facilitate the development of I&T culture, the FBL subsidises projects which will make people's daily living more convenient and comfortable or address the needs of specific community groups, in order to enable members of public experience, understand and make use of I&T. The GSP aims to support non-R&D projects such as talks, exhibitions, seminars and workshops, etc., that contribute to the upgrading of our industries, the fostering of I&T culture in society, as well as the enhancement of public awareness and interest in the efforts and achievements in I&T of Hong Kong and our country.

- The relevant funding schemes have been well-received since launch. The Government will continue to support various sectors to organise more projects conducive to enhancing the I&T atmosphere through the schemes.

Recommendation (2): To promote popularisation of I&T at different levels of the society by organising and strengthening the publicity and promotion of activities

- The Government has previously organised on its own or jointly with other parties a number of major I&T-related activities like the InnoCarnival, the City I&T Grand Challenge, the Hong Kong ICT Awards, the Maker in China SME Innovation and Entrepreneurship Global Contest—Hong Kong Chapter, etc., with overwhelming response. In December 2022, the Government organised the first Global I&T Summit, and the Hong Kong Laureate Forum will be held for the first time in November 2023. The Government will continue to organise activities or programmes conducive to fostering an I&T culture in society and strengthen their publicity and promotion to popularise I&T at different levels of the society.

Recommendation (3): To enhance co-operation with various sectors and district organisations in the community

- To sustain our efforts in making I&T more popular and widely adopted in our daily life, the Government needs to enhance co-operation with different bodies of various sectors in the community and support district organisations in organising and conducting more diversified I&T-related activities, such as the science forums jointly organised by the Hong Kong Academy of Sciences, the Hong Kong Academy of Engineering Sciences and the Greater Bay Area Association of Academicians, the InnoTech Expo hosted by Our Hong Kong Foundation and the Fun Science Competition organised by the Society of Hong Kong Scholars, etc. Meanwhile, the Government will continue to strengthen its liaison with district organisations (including Area Committees, District Fire Safety Committees, District Fight Crime Committees and other resident organisations, etc.) and make good use of community resources to promote popular science among residents of the districts concerned, with a view to strengthening the engagement of district organisations in the promotion of popular science.

Target 02

To arouse public interest in and enhance their knowledge of I&T and garner community support to I&T development

Recommendation (1): To promote community-wide engagement in major I&T events

- Major I&T events often could create enthusiasm on I&T in society. In view of this, the Government will stay tuned to every major event in Hong Kong and conduct active publicity and promotion work for engaging the whole community in such events in order to achieve I&T for all. For example, noting that the Central Government had announced for the first time the recruitment of payload specialists in Hong Kong, the HKSAR Government then collaborated with various organisations to launch a series of aerospace popular science activities to deepen the public's understanding of our country's development and achievements in aerospace technology, increase our knowledge about the participation and contributions of Hong Kong experts in the national aerospace programme, as well as foster the younger generation's interest in aerospace technology. The Government will host the InnoEX and Digital Economy Summit in April 2023 to explore in depth how digital economy and smart city development will chart the sustainable development of Hong Kong's economy and society in future. The events will enable various trades and industries in Hong Kong as well as the general public to better understand in what way they can grasp the new opportunities brought by digitalisation.

Recommendation (2): To promote science education for all by making use of science-related exhibition venues

- The two local science museums, namely the Hong Kong Science Museum and the Hong Kong Space Museum, have been striving to promote popular science education. Over the years, the two museums have collaborated with different research institutes, popular science organisations, the education sector, academic groups and scientists, etc., in organising a wide range of activities to broaden the horizon of our youth and encourage their innovation spirit and creativity. The Science Promotion Unit established under the Leisure and Cultural Services Department in 2020 has also organised a series of new cross-disciplinary activities to popularise science, with a view to enhancing the overall cultural literacy in and attitude towards science in Hong Kong.

- The Government will continue to make good use of the two science museums and their educational facilities and organise more and different kinds of popular science activities such as thematic exhibitions. Students and the public can know about the remarkable achievements of the country and Hong Kong in science and I&T, enhancing their sense of national identity.

The Financial Secretary, Mr Paul Chan, attends the opening ceremony of the InnoCarnival 2022 and takes photos with young astronauts after the sharing session.

4.5
Strategy (5): To enrich I&T talent resources and develop an international talent hub

- Talent is a primary resource for development as well as the cornerstone of successful I&T development. To expand the pool of I&T talent of Hong Kong, the Government needs to adopt a multi-pronged approach to continuously nurture, attract and retain talent.

Target 01

To step up nurturing of local I&T talent at different learning stages

- In recent years, the Government has strived to promote science, technology, engineering and mathematics education within and beyond the classroom. ITIB has introduced and enhanced a host of measures outside the classroom. Among such initiatives, the "IT Innovation Lab in Secondary Schools" Programme and the "Knowing More About IT" Programme provide funding for secondary and primary schools respectively to organise IT-related extra-curricular activities, with a view to fostering young students' interest in I&T and spirit of scientific exploration at different learning stages and from an early age, enabling them to build a solid foundation for I&T knowledge.

- ITC launched the STEM Internship Scheme in June 2020 for university students taking subjects related to science, technology, engineering and mathematics to gain I&T-related work experience and to foster their interest in pursuing a career in I&T after graduation. The Scheme also provides local I&T internship opportunities for students studying programmes related to science, technology, engineering and mathematics in the Mainland and overseas or in the GBA branch campuses established by designated local universities. In addition, UGC has implemented the Targeted Taught Postgraduate Programmes Fellowships Scheme on a pilot basis from the 2020/21 academic year to offer fellowships to local students studying targeted postgraduate programmes, with a view to encouraging them to pursue further studies in priority areas conducive to Hong Kong's development. Cyberport and the HKSTPC have also launched incubation programmes to assist I&T talent in starting their business and provide them with internship and training opportunities.

Recommendation (1): To encourage universities to offer more I&T-related programmes

- In the coming five years, the Government's target is that 35% of the UGC-funded students will be studying subjects related to science, technology, engineering, arts and mathematics and 60% will be studying subjects relevant to Hong Kong's development into the "eight centres/ hubs" as stated in the 14th Five-Year Plan. The Government will also continue to encourage universities to offer more programmes related to science, technology, engineering, arts and mathematics.

Recommendation (2): To further promote I&T-related education in schools

- The Education Bureau will step up the promotion of education on science, technology, engineering, arts and mathematics "for all", "for fun" and "for diversity" in primary and secondary schools through measures like curriculum enrichment, enhanced teacher training and diversified learning activities, etc., so as to enhance students' interest and capabilities in learning science and I&T, create an atmosphere conducive to I&T learning and further develop their creativity and innovation potential.

To proactively attract Mainland and overseas I&T talent to Hong Kong and further retain I&T talent to support I&T industry development

- The Government has endeavoured to attract and retain talent. For example, we have launched the Global STEM Professorship Scheme to provide solid support for universities to attract world-renowned I&T scholars and their teams to teach and research in Hong Kong. The Technology Talent Admission Scheme (TechTAS) has also speeded up the processing of applications involving the admission of non-local talent to undertake R&D work in Hong Kong. Moreover, the Government provides funding support for local companies or institutions through the Research Talent Hub under the ITF to recruit relevant science, technology, engineering and mathematics graduates to participate in R&D work in Hong Kong. As mentioned in Direction (2), Hong Kong needs to step up efforts in attracting Mainland and overseas I&T talent to stay in Hong Kong for career development, which will help develop Hong Kong into an international talent hub.

Recommendation (1): To proactively attract top-notch Mainland and overseas I&T talent

- The Government should proactively attract top-notch and leading Mainland and overseas I&T talent to bring with them their business, investments or R&D outcomes to Hong Kong, which, besides contributing to our GDP growth, can facilitate the development of Hong Kong into a technology industry leader in Asia and even in the world. The 2022 Policy Address puts forward an array of initiatives to attract talent to Hong Kong, which include:

  i. launching the Top Talent Pass Scheme;

  ii. relaxing the application arrangements of the General Employment Policy and the Admission Scheme for Mainland Talents and Professionals;

  iii. extending the limit of stay under the Immigration Arrangements for Non-local Graduates, and expanding, on a pilot basis, the scope of the arrangements to cover those who graduated from the GBA campuses of Hong Kong universities;

  iv. enhancing the TechTAS by lifting the local employment requirement, extending the quota validity period and expanding the coverage to include more emerging and potential technology areas;

  v. establishing the Talents Service Unit for providing one-stop support service for incoming talent; and

  vi. collaborating with the OASES to provide special facilitation measures in a targeted manner to attract top-notch and leading I&T talent to bring with them their business, investments or R&D outcomes to Hong Kong.

  The above initiatives will help expand the talent pool of Hong Kong and attract more top-notch I&T talent to work in Hong Kong. The TechTAS in (iv) above is specially designed for assisting I&T companies in recruiting incoming talent. Furthermore, ITIB will proactively liaise with the industry to include I&T talent with local supply shortage in the Talent List to streamline the procedures for local enterprises in recruiting incoming talent.

Recommendation (2): To step up efforts to attract Hong Kong people studying overseas to return to Hong Kong

- The Government will step up efforts to encourage Hong Kong students studying abroad to return to Hong Kong for career pursuits after graduation, especially non-local graduates from world-renowned universities.

The Government will proactively reach out to Hong Kong students studying abroad through our overseas Hong Kong Economic and Trade Offices (ETOs), including visits to leading universities in respective countries to introduce Hong Kong's I&T development and provide them with, on a priority basis, I&T internship opportunities in Hong Kong through public R&D institutions, allowing them to gain first-hand experience and understanding of the local I&T ecosystem and development environment. These measures will boost their confidence in pursuing a career in Hong Kong.

Recommendation (3): To step up efforts to recruit Mainland and overseas young research talent

- The Government will step up efforts to recruit non-local research postgraduates and postdoctoral researchers, as well as to retain outstanding non-local graduates with a doctoral degree and postdoctoral researchers to continue to stay in Hong Kong for career development. Apart from providing additional living allowance for research talent with a doctoral degree through the Research Talent Hub under the ITF to alleviate the pressure imposed by high living costs, the Government will progressively increase the number of UGC-funded research postgraduate (RPg) places from the existing some 5 595 to 7 200 in the 2024/25 academic year. Furthermore, the Government will gradually uplift the over-enrolment ceiling of RPg places to considerably increase the capacity of the UGC-funded universities in the enrolment of RPg students, with a view to nurturing more young scientific research talent for Hong Kong.

Recommendation (4): To strengthen support to young scientific research scholars

- The Government will strengthen the financial assistance for young scientific research scholars to support their innovative research in Hong Kong. The Excellent Young Scientists Fund and the National Science Fund for Distinguished Young Scholars of China launched by the National Natural Science Foundation of China aim to provide financial support for young scientific research scholars with excellent or outstanding achievements in basic research. The Excellent Young Scientists Fund has already been open to excellent young scholars in Hong Kong and Macao with a specified subsidy quota since 2019. The Government will seek the Central Government's support to further increase the number of subsidy quotas of the Excellent Young Scientists Fund and open the National Science Fund for Distinguished Young Scholars of China to Hong Kong scholars.

Recommendation (5): To enhance accommodation support to I&T talent

- The living cost in Hong Kong is high. To reduce the cost of living of I&T talent in Hong Kong, the Government should continue to provide more accommodation facilities for I&T talent. Currently, the InnoCell in the Science Park provides around 500 residential units for R&D personnel working therein and spaces for collaboration, interaction and exchanges. The Government has already invited the HKSTPC to build additional accommodation facilities near the Science Park for I&T talent and provide accommodation facilities in the HSITP in the Lok Ma Chau Loop. The Government will continue to actively source land and allow greater planning flexibility to support the development of a new international I&T city in the Northern Metropolis and diversify accommodation to attract I&T talent.

Recommendation (6): To foster a sense of belonging among I&T talent

- The Government needs to enhance the sense of belonging among I&T talent and encourage them to settle in Hong Kong. The Government will review existing relevant measures, formulate policies to attract I&T talent and introduce more appropriate supporting initiatives. To encourage I&T talent to stay in Hong Kong for long-term career development, the Government has, among others, announced that an eligible incoming talent who has purchased a residential property in Hong Kong since 19 October 2022, and subsequently become a permanent resident upon residing in Hong Kong for seven years, can apply for a refund of the Buyer's Stamp Duty and the New Residential Stamp Duty paid for the first residential property purchased which he or she still owns, while the Ad Valorem Stamp Duty at Scale 2 rates is still payable such that the overall stamp duty charged will be on par with that charged on first-time home buyers who are ordinary permanent residents of Hong Kong.

The InnoCell at the Hong Kong Science Park provides around 500 residential units to its R&D personnel as a living and co-creation space.

4.6
Strategy (6): To accelerate the development of digital economy and smart city to enhance citizens' quality of life

- Digitalisation is an inevitable trend in promoting high-quality economic development, as well as a basic element for building a smart city. Digitalisation can facilitate upgrading, transformation, innovation stimulation and improvement in competitiveness. The Government has established the Digital Economy Development Committee which endeavours to lead the development direction and outline a blueprint for developing the digital economy for Hong Kong through tapping the wise counsel of experts and stakeholders in the industry. It will also formulate digitalisation strategies and measures for different industries to adopt.

- The Smart City Blueprint for Hong Kong was first promulgated in 2017. Since then, with the concerted co-operation of the Government and different sectors of the community, various initiatives have been implemented progressively as scheduled, including the construction of various digital infrastructure projects, the opening up of public data and having the Government taking the lead to adopt advanced technologies. Here are some examples:

Launched the Next Generation Government Cloud Infrastructure Services, the Big Data Analytics Platform and a Shared Blockchain Platform to facilitate the application of advanced technologies in various government departments on all fronts.

Launched the one-stop personalised digital services platform "iAM Smart", enabling users to conduct authentication and digital signing for using online services such as vehicle licence renewal in a smart and more convenient way. So far, "iAM Smart" has 1.6 million registered users, providing more than 220 online services.

Launched the Faster Payment System (FPS) to facilitate electronic payment (e-payment), with the number of FPS registrations exceeding 10 million in March 2022 and the average daily turnover reaching about 1 million real-time transactions.

Unless there are legal or operational constraints, electronic submission options have been provided for more than 90% of some 400 licence applications and some 900 government services.

Developed the Common Spatial Data Infrastructure and setting up a Geospatial Lab. The "Interactive Map Dashboard on the Latest Situation of Coronavirus Disease in Hong Kong" was launched by the Government in collaboration with the industry.

Adopted the Building Information Modelling-Asset Management/Facility Management (BIM-AM/FM) Platform in building facility management, facilitating remote monitoring and fault diagnosis by facility management and maintenance personnel and enhancing efficiency in facility management and maintenance.

Implemented an array of initiatives to promote smart, green and safe mobility. Measures completed include the replacement of on-street parking meters across the territory to provide real-time vacancy information and allow remote payment of parking fees, the legislative procedures for introducing the Free Flow Tolling System, and the drafting of legislative framework to facilitate the development of autonomous vehicles in Hong Kong, etc.

Opened up government data to promote innovative applications so as to bring convenience to the public and create more business opportunities.

Introduced concessionary measures to actively promote the development of data centres. Currently, there are about 60 data centres in Hong Kong, with a total gross floor area reaching 800 000 square metres.

Launched commercial 5G services in April 2020. At present, 5G coverage in Hong Kong has exceeded 90% of the population.

To encourage government departments and public and private organisations to expedite the implementation of digital economy and smart city initiatives in different areas, enabling the general public to enjoy the day-to-day convenience brought about by technological development and injecting new impetus to economic development

- The Government should continuously enhance Hong Kong's digital competence on all fronts, and motivate enterprises and the public to work with the Government to build a smarter, more livable, competitive and sustainable city.

Recommendation (1): To expedite the building of a smart government to enhance the efficiency of government services

- **Digital government services**: The Government will encourage various departments to further expedite the provision of digital government services. Online submission of application, payment and collection of documents for all licences, services involving application and approval and forms will be launched by mid-2024. The Government will also promote the wider use of e-payment in paying government fees and charges and in public services. If in-person submission or collection of documents is required by law or international practice, applicants will only need to visit the service counter concerned once.

- **Wider application of "iAM Smart":** The Government will fully adopt "iAM Smart" for provision of one-stop digital government services for the public by end-2025 to realise "single portal for online government services" for better user experience. Besides, the Government is developing a business version of the "iAM Smart" platform to improve and streamline the authentication of business identities, especially those of SMEs. The Government will also strengthen collaboration with other public and private organisations to launch more innovative applications of "iAM Smart" including working with the GBA cities to use "iAM Smart" to provide services under the "cross-boundary public services" initiative.

- **Facilitation of data interchange:** The Government will develop the Consented Data Exchange Gateway, which will be linked up to the Commercial Data Interchange of the Hong Kong Monetary Authority, to enable members of the public to opt for the pilot data interchange arrangement by end-2024, as a means to facilitate verification of the identity of customers by financial institutions.

- **Application of advanced technologies:** The Government will leverage advanced IT, such as big data analytics, AI, blockchain and geospatial analytics technologies, etc., to implement and revamp over 100 digital government initiatives by end-2025 to provide more electronic government services for the convenience of the general public and the business sector, as well as formulating data-driven policies and building a digital and smart government to enhance public services.

- Here are some examples of using new technologies to enhance government services:

Using big data analytics to help speed up the processing of applications for government services (e.g. licence applications, visa applications, etc.) and reduce manpower resources required for the vetting and approval of applications.

Using blockchain technology to enhance tracking of essential social supplies (e.g. medicine, food, etc.) to ensure public safety.

Using chatbots to answer public enquiries in an interactive way, with a view to providing better 7x24 services for the public and utilising more effectively the manpower of government help desks and hotlines.

Adopting geospatial analytics technologies in town planning, e.g. in identifying suitable sites for development based on population distribution and demand for housing and public facilities.

Recommendation (2): To facilitate spatial data applications

- Spatial data has tremendous development potential. The Common Spatial Data Infrastructure developed by the Government provides a visualised urban spatial data infrastructure to facilitate the accelerated development of digital twin city. The spatial datasets provided by government departments, covering data on planning, lands, three-dimensional pedestrian networks, census and valuation statistics, distribution and usage of smart metered parking spaces, etc., will be launched by end-2022 for free use by the public.

- Using the Geospatial Lab as a platform, the Government will promote the concept and benefits of common spatial data to the public and private sectors, and encourage them to share their spatial data for greater synergy, with a view to further expanding the application of visualisation and intelligence in areas like urban management, public services, decision-making of the Government, public-private partnership and smart living, etc.

Recommendation (3): To accelerate the development of new digital infrastructure

- **Data centres:** Hong Kong needs to strengthen its edge as the data hub in the Asia-Pacific region. It is expected that the usable floor area of data centres will increase by over 700 000 square metres from 2022 to 2026, and together with the existing 800 000 square metres, the total area will amount to 1.5 million square metres. The compound average annual growth rate will be 13%, sufficient to meet the short-term demand. In the medium to long term, the Government will consider increasing new land supply and the land sources may include the San Tin Technopole, the Ma Liu Shui reclamation project and Strategic Cavern Areas of the Cavern Master Plan[23], etc.

- **Multi-functional smart lampposts:** After completion of the Multi-functional Smart Lampposts Pilot Scheme to install some 400 lampposts with smart devices in 2023, the Government has planned to introduce in full smart lampposts in all new development areas (such as the Northern Metropolis) for providing convenient information services and collecting various real-time city data for analysis, thus enhancing city management and promoting more innovative applications.

- **5G networks:** The Government will continue to open up suitable government premises and smart lampposts for mobile network operators to install 5G base stations to expedite the development of comprehensive 5G networks. Furthermore, the Government will accelerate the development of trial environments in key areas including international airports, city safety, healthcare services, smart driving, and arts and culture, etc., which can support virtual space for the testing of high-speed, low-latency and multi-link 5G applications. We will also press ahead with the development of designated applications to enable Hong Kong to become a first-tier demonstration city for world-class 5G innovative applications.

- The Government will continue to proactively look into and explore the development of more smart infrastructure facilities which are conductive to enhance Hong Kong's digital capabilities, thereby providing staunch support in driving Hong Kong's digital economy and smart city developments.

Recommendation (4): To expand the application of I&T to promote smart living

- **Smart mobility:** The Government will leverage technologies to enable more effective management of traffic for the convenience of the commuting public. The Government will continue to promote smart mobility, including the enhancement of the Traffic Data Analytics System, and harness smart transport technologies and big data analytics to optimise the use of limited road space in Hong Kong. We will also explore the feasibility of developing smart motorways in Hong Kong, which will ride on the "vehicle-to-everything" technology to facilitate autonomous driving and the interaction and information transfer between vehicles and road facilities, thereby paving the way for the implementation of more flexible and intelligent traffic management in the future.

- **Smart Environment:** The Government will drive forward green R&D and make good use of the brand-new green technology rolled out in the market, with a view to continuously implementing various green and smart construction, energy efficiency and green transport measures, etc. The Government aims to reduce Hong Kong's carbon emissions by 50 per cent before 2035 as compared to the 2005 level and to achieve carbon neutrality before 2050 in accordance with the Hong Kong's Climate Action Plan 2050, thereby creating a low-carbon and more sustainable environment.

- **Gerontechnology:** To facilitate wider application of smart technology in the elderly services, the Government will launch a pilot scheme to procure gerontechnology facilities and products for selected residential care homes for the elderly, while other residential care homes may procure technology products with subsidies from the Innovation and Technology Fund for Application in Elderly and Rehabilitation Care. The Government will also continue to enhance collaboration with relevant industries to introduce more gerontechnology products to meet the social needs of an ageing population.

- **Digital inclusion:** The Government has been striving to promote digital inclusion over the years. Through measures like the provision of digital outreach services and advanced training courses, the launch of a web-based learning portal, etc., the elderly are encouraged and supported to adopt digital technology in their daily lives and integrate themselves into smart living. We expect that the percentage of the elderly aged 65 or above using the Internet and electronic services will rise from 65.9% in 2020 to over 75% by 2023, and will reach the target of over 90% in 2030.

Recommendation (5): To accelerate the development of financial technology

- In support of the development of smart economy and to provide more convenient financial services for the general public and the business sector, the Government has been actively promoting financial technology (Fintech) by encouraging more Fintech services and products to undergo proof-of-concept trials, building innovative Fintech infrastructure, implementing regulatory regimes to promote cross-boundary Fintech projects according to development needs, and attracting and nurturing Fintech talent, etc. The Government will also promote the issue and use of Central Bank Digital Currency (CBDC) by taking forward the preparatory work for issuing retail CBDC in Hong Kong (i.e. e-HKD) and collaborating with the Mainland for the testing of "e-CNY" as a cross-boundary payment facility, so as to provide the general public and business enterprises with a faster, more secure and innovative payment facility for their convenience.

- The Government issued a policy statement on the development of Virtual Assets (VA) in Hong Kong in October 2022, setting out its policy stance and approach towards developing a VA sector and its ecosystem in Hong Kong. In this connection, the Government, in conjunction with the financial regulators, will strive to provide a facilitating environment, timely put in place the necessary guardrails to mitigate risk and safeguard investors, and launch various pilot projects such as green bond tokenisation and e-HKD, etc., in order that the VA sector can thrive in Hong Kong in a sustainable manner.

Recommendation (6): To build a secure cyber environment

- A secure and stable cyber environment is essential to smart city development. The Government has been making strenuous efforts in implementing various measures and projects on all fronts, covering community support, talent development and co-operation with the Mainland and international communities, etc., and proactively working in collaboration with different stakeholders to jointly enhance the awareness of various sectors on cyber security and their defensive capabilities in this regard. They serve to address effectively the risks arising from cyber security threat, with a view to protecting our society, economy and people's livelihood, as well as maintaining public safety. Adopting a multi-pronged approach, the Government will continue to work closely with different sectors to jointly maintain a secure and reliable cyberspace.

4.7
Strategy (7): To deepen I&T co-operation with the Mainland for better integration into the overall national development

- The 14th Five-Year Plan indicates support for Hong Kong to better integrate into the overall development of the country for a co-ordinated development of both Hong Kong and the Mainland based on their complementary advantages. Our country has all along provided us with the strongest backing on I&T development. With the staunch support of relevant ministries of the Central Government and Mainland provinces and municipalities, the overall I&T ecosystem in Hong Kong has become increasingly vibrant with recent breakthroughs in different aspects.

Target 01

To promote effective cross-boundary flow of innovation elements and strengthen Hong Kong's I&T competitiveness to better serve national needs

- The exchange of innovation elements between the Mainland and Hong Kong plays a pivotal role in our I&T development. Not only will it accelerates our integration into the national institutional innovation set-up, but it will also enhance our overall I&T competitiveness, so that we are well-placed to better leverage our advantages to serve national needs.

Recommendation: To explore with relevant Mainland authorities on more facilitation measures to promote the convenient cross-boundary flow of innovation elements

- In recent years, a number of important science and technology measures benefitting Hong Kong have been launched to facilitate the effective cross-boundary flow of innovation elements. To further promote the I&T development in Hong Kong, the HKSAR Government will maintain close liaison and communication with different ministries of the Central Government to rally support for more measures to promote the cross-boundary flow of various innovation elements, such that Hong Kong talent, enterprises and R&D institutions can better serve national needs. The specific measures cover the following areas:

◎ **Capital:** Since 2019, the Ministry of Science and Technology (MOST), the National Natural Science Foundation of China and different Mainland provinces and municipalities have approved over RMB620 million (around HK$760 million) of R&D funding in form of cross-boundary remittance for Hong Kong's universities and R&D institutions to conduct over 300 R&D projects, and provided support for the establishment of 19 Guangdong-Hong Kong-Macao Joint Laboratories and the Hong Kong Branch of two state laboratories. Apart from maintaining co-operation with different ministries of the Central Government in R&D funding, the HKSAR Government will also explore further facilitation measures to encourage Hong Kong technology institutions or enterprises to set up business in the Mainland.

◎ **Personnel:** R&D personnel in Hong Kong are encouraged to participate in organisations such as the national member societies of the China Association for Science and Technology (CAST), the National Science and Technology Expert Database and the Award Assessment Expert Database, etc. We will explore with the Mainland the introduction of more facilitation policies on areas such as validity period of visa and taxation arrangements for expatriates living in Hong Kong to travel to the Mainland GBA cities for R&D activities and related work.

◎ **Data:** We will actively explore with the Mainland special facilitation arrangements for data flow to Hong Kong and launch a pilot project on cross-boundary data flow in the GBA in 2023, with a view to testing relevant technical standards, measures and data regulatory mechanisms for wider implementation in future. We will also conduct in-depth study on the Hong Kong/Guangdong information infrastructure with respect to interfacing, interconnectivity, mutual recognition and access, as well as standardisation of interfaces, etc.

◎ **Materials:** The Central Government announced in November 2019 the policy measure of allowing Mainland campuses and branches established by universities and research institutions of Hong Kong to lodge applications for exporting human genetic resources to Hong Kong independently for scientific research purposes. So far, applications from five Mainland branches of Hong Kong universities have been approved. The HKSAR Government will continue to rally support from the Central Government to allow more Mainland campuses and branches established by universities and research institutions of Hong Kong to lodge applications directly for exporting human genetic resources to Hong Kong.

◎ **Projects:** A number of national-level science and technology programmes have been open to Hong Kong, such as certain special projects under the National Key Research and Development Programme and the Sci-Tech Innovation 2030 — Major Project, and the programmes of the Excellent Young Scientists Fund and the National Science Fund for Distinguished Young Scholars of China under the National Natural Science Foundation of China. To better nurture and retain I&T talent, the HKSAR Government will continue to rally support of the Central Government to further open up its fiscal science and technology projects to Hong Kong.

To promote the development of major Guangdong-Hong Kong-Macao platforms of co-operation for pursuing mutually beneficial collaboration

- The 14th Five-Year Plan indicates support to high-quality development of the GBA and promotes the development of major Guangdong-Hong Kong-Macao co-operation platforms to further deepen technology co-operation between Hong Kong and the Mainland, with a view to achieving win-win I&T development. The development opportunities brought by the GBA, coupled with Hong Kong's unique advantages, offer ample room for co-operation between Hong Kong and the Mainland cities of the GBA in I&T development.

Recommendation (1): To forge ahead with the development of the HSITP in the Lok Ma Chau Loop

- The 14th Five-Year Plan has, for the first time, included the Shenzhen-Hong Kong Loop as a major platform of co-operation in the GBA. As a highly international city and one of the world's freest economies, Hong Kong can work with Shenzhen, renowned for vibrant new and high-tech industries as well as strong innovation and entrepreneurial spirit, to build a whole-process ecological chain of I&T focusing on "basic research, technology R&D, commercialisation of R&D outcomes, technology finance and talent support". The Shenzhen-Hong Kong I&T Co-operation Zone (Co-operation Zone) formed by the HSITP in the Lok Ma Chau Loop and the Shenzhen Innovation and Technology (I&T) Zone will combine the strengths of both Hong Kong and Shenzhen to pool local, Mainland and overseas talent. Apart from serving as the bridgehead for intensive I&T co-operation between Hong Kong and Shenzhen, the Co-operation Zone will become an essential propeller for the development of an international I&T hub in the GBA.

- The governments of Hong Kong and Shenzhen are jointly promoting the development of the Co-operation Zone with a view to establishing "one zone, two parks" at "one river, two banks" under the auspices of "One Country, Two Systems". In September 2021, the HKSAR Government and Shenzhen signed the "Co-operation Arrangement on the Establishment of 'One Zone, Two Parks' in the Shenzhen-Hong Kong Innovation and Technology Co-operation Zone at the Lok Ma Chau Loop" [24], setting a clear direction for the development of the Co-operation Zone. Moreover, the HKSTPC has kick-started the establishment of the Shenzhen branch of the Hong Kong Science Park in the Shenzhen I&T Zone, and launched the GBA InnoAcademy and the GBA InnoExpress, which nurture start-ups and support technology enterprises to

attract foreign investment and go global. In addition, Cyberport has expanded the Cyberport Hong Kong-Guangdong Young Entrepreneurship Programme to become the Cyberport Greater Bay Area Young Entrepreneurship Programme for the purpose of fostering exchanges and co-operation among young talent in Hong Kong and the GBA.

- Regarding the HSITP project, the Government is forging ahead the construction work and will optimise the functions of the HSITP by, among others, expediting its development through partnership with private enterprises. On the basis of "one zone, two parks" and through in-depth co-operation with Shenzhen, we will study the trial implementation of a cross-boundary policy on I&T co-operation in an innovative, exclusive and designated manner, focusing on the alignment of institutional set-ups and systems of Hong Kong and Shenzhen. Meanwhile, Hong Kong will leverage its advantages as an international city to attract Mainland and overseas technology enterprises to establish their presence in the HSITP, making the Co-operation Zone a bridgehead for absorbing advanced technologies and promoting industry development.

- The Government will also expedite the development of the San Tin Technopole in the Northern Metropolis to provide land for technology industry development, while supporting and complementing developments in the Shenzhen-Hong Kong Boundary Control Points Economic Belt, with a view to driving further growth of the two cities.

Recommendation (2): To enhance the I&T ecological chain by making optimal use of the two major platforms of co-operation with Nansha of Guangzhou and Qianhai of Shenzhen

Nansha of Guangzhou

- On I&T development, Hong Kong will strengthen its collaboration with the co-operation platform in Nansha of Guangzhou and fully implement the suggested positioning outlined in the "Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area"[25]. Hong Kong will continue to leverage its advantages in line with the development directions of Nansha to reap the benefits of complementarity and strengthen joint innovation in technology between Guangdong and Hong Kong.

- The Overall Plan for Deepening Globally Oriented Comprehensive Co-operation amongst Guangdong, Hong Kong and Macao in Nansha of Guangzhou (the Nansha Plan)[26] promulgated in June 2022 puts forth a number of key points and sets out five key development directions for Nansha, namely industry co-operation in I&T, co-operation in youth innovation and entrepreneurship, high-standard opening up, regulatory interface and connectivity, and high-quality urban development. These directions correspond to the policy areas where Hong Kong has a comparative advantage and we are determined to pursue further development in these areas. As such, the Nansha Plan will facilitate Hong Kong's proactive participation in the further development of Nansha. Currently, Hong Kong is stepping up collaboration with Nansha on scientific research. One of the examples is the opening of the Hong Kong University of Science and Technology (Guangzhou) in Nansha in September 2022. Positioning as an international elite research university, the University is leading the way for education co-operation between Guangzhou and Hong Kong. The HKSAR Government will actively and fully support relevant planning works to enhance the development of the industry chain of I&T in the GBA.

Qianhai of Shenzhen

- Qianhai is another important co-operation platform in the GBA. Based on the positioning of "relying on Hong Kong, serving the Mainland and opening up to the world", Qianhai has been developing into the Shenzhen-Hong Kong Modern Service Industry Co-operation Zone to promote development of modern service industries including technological services and emerging industries.

- The Plan for Comprehensive Deepening Reform and Opening Up of the Qianhai Shenzhen-Hong Kong Modern Service Industry Co-operation Zone[27] promulgated in 2021 focuses on institutional innovation and expedites the process of interfacing and connecting with Hong Kong and Macao with respect to regulatory and institutional set-ups through promoting the innovative development of modern service industries. Hong Kong will fully utilise its established strengths in high-end professional services to help promote the innovative development of modern service industries in Qianhai, so as to contribute to the high-level reform and opening up of the country, while creating more opportunities for development for professionals and enterprises in our various sectors. The HKSAR Government will support Qianhai in continuously performing its function on early and pilot implementation and making more specific policy breakthroughs.

Target 03

To actively dovetail with the Mainland institutional set-up for innovation for Hong Kong to better integrate into the overall national development

- The scientific and technological strength of Hong Kong is an integral part of the country's institutional set-up for innovation and its strategic scientific and technological forces. The technology sector of Hong Kong has never been absent in the historic journey of the national development of science and technology, and has made significant contributions in the process.

The Chief Executive, Mr John Lee, attends the 2022 Global Innovation and Technology Summit.


Hong Kong-Shenzhen Innovation and Technology Park
(Analog picture)

Recommendation (1): To strengthen interaction with the national institutional set-up for innovation

- The Central Government has all along been supporting Hong Kong in interfacing with the national institutional set-up for innovation by introducing and implementing a series of science and technology policies benefitting Hong Kong. These include approving the establishment of 16 State Key Laboratories and six Hong Kong Branches of Chinese National Engineering Research Centres in Hong Kong, and supporting Hong Kong technology personnel and experts in participating in organisations such as the national member societies of the CAST, the National Science and Technology Expert Database and the Award Assessment Expert Database, etc. Besides, research teams in local universities have been repeatedly invited to participate in national space missions, including providing support for the country's first Mars exploration mission, Tianwen-1, and the lunar exploration missions of Chang'e 4 and Chang'e 5, thereby actively contributing to the aerospace industry of the country. In October 2022, our country has announced for the first time the recruitment of payload specialists in Hong Kong to participate in the National Manned Space Programme, fully reflecting the great importance our country attaches to Hong Kong's technology sector.

- The HKSAR Government will further dovetail with the national institutional set-up for innovation in the following areas:

  i. On high-level policy planning, the HKSAR Government will set up a dedicated task force on the development of Hong Kong as an international I&T centre with the MOST to foster high-level co-operation and interaction of the two sides for better co-ordination of communication among relevant departments in the Mainland and Hong Kong on such matters as I&T policies and resources, etc., and to rationalise relevant arrangements and formulate specific actions, with a view to expediting the development of Hong Kong into an international I&T centre;

  ii. On personnel exchange, the HKSAR Government will actively encourage the participation of Hong Kong scientific researchers in national-level science and technology programmes, projects and organisations, as well as in state technology policy studies and major project assessments, with a view to serving national needs;

  iii. On patents, the Intellectual Property Department will roll out a pilot project with the China National Intellectual Property Administration in 2023 to enable Hong Kong applicants to enjoy prioritised examination of qualified patent applications in the Mainland; and

  iv. On national scientific and research development, the HKSAR Government will strive to rally support from the Central Government to consider providing the local scientific research sector and tertiary institutions with more opportunities with respect to the institutional development of state laboratories, especially in the research of life and health sciences, so that they can fully leverage their strengths and make contribution to the country.

Recommendation (2): To enhance I&T co-operation with different provinces and municipalities

- The HKSAR Government will be committed to enhancing I&T co-operation with various Mainland provinces and municipalities in a wide spectrum of fields and on different fronts covering governments, universities, research institutions, enterprises, and research personnel, etc. For example, the HKSAR Government and the MOST jointly launched the Mainland-Hong Kong Joint

Funding Scheme in April 2019 to encourage Hong Kong to engage in scientific research collaboration projects with various Mainland provinces. Also, local universities and research institutions have conducted some 500 scientific research projects and exchange activities in collaboration with Mainland provinces and municipalities between 2020 and 2021, including setting up joint laboratories through in-depth collaboration with the Shanghai Municipality and the Fujian Province respectively in the areas of life and health technology and marine technology.

- The HKSAR Government will also establish mechanism of co-operation with different Mainland provinces and municipalities. For example, the HKSAR Government signed respective memorandum of co-operation with the governments of the Sichuan Province, the Hubei Province and the Shanghai Municipality in 2021 to deepen co-operation between Hong Kong and relevant provinces and municipalities in various fields including I&T, such as promoting the commercialisation of R&D outcomes and exploring the establishment of mechanism for jointly nurturing I&T talent, etc. The HKSAR Government will continue to expand the scope of mutually beneficial co-operation with different provinces and municipalities to strengthen I&T linkage.

Professor Yung Kai-leung of the Hong Kong Polytechnic University introduces the sophisticated space instruments developed and produced locally by the University at the InnoCarnival 2022.

4.8
Strategy (8): To leverage Hong Kong's advantages as an international city to foster global I&T collaboration

- With its unique advantages under "One Country, Two Systems", Hong Kong has consolidated its two-way platform role as an important bridge connecting the Mainland and the rest of the world, as well as an optimal springboard for foreign businesses and personnel to enter the Mainland market, thus helping our country "attract foreign investment" and "go global".

- The Basic Law of Hong Kong stipulates that as a separate customs territory, Hong Kong may, using the name "Hong Kong, China", actively participate in international affairs. Currently, Hong Kong serves as a member of the World Trade Organization, the World Customs Organization, the Asia-Pacific Economic Co-operation and the Asian Development Bank, and as an associate member of the Economic and Social Commission for Asia and the Pacific of the United Nations in the capacity of "Hong Kong, China". Meanwhile, the HKSAR Government has set up 14 overseas ETOs[Note] outside China to promote Hong Kong's unique advantages to the world, advance Hong Kong's economic and trade interests, and support overseas enterprises in expanding business in the city, with a view to strengthening Hong Kong's connection and co-operation with the world.

- In recent years, the Government has launched a number of important I&T initiatives to promote global I&T collaboration, including :

  i. establishing the InnoHK Research Clusters to bring together over 30 top-notch universities and research institutions from 11 economies to collaborate with local universities in setting up 28 R&D laboratories which focus on healthcare technologies, AI and robotics technologies, fostering world-class global research collaboration;

  ii. launching the Global STEM Professorship Scheme to recruit more internationally renowned I&T scholars and their teams to conduct research and teaching activities in Hong Kong; and

  iii. providing support for world-class academic exchange events in Hong Kong to further promote the younger generation's understanding of and interest in science and enhancing Hong Kong's status in the international academia.

Note: The Hong Kong ETOs are located respectively in 14 cities outside China, including (Asia Pacific) Bangkok, Jakarta, Singapore, Sydney, Tokyo; (Europe) Brussels, London, Geneva, Berlin; (North America) Washington DC, New York, San Francisco, Toronto; and (Middle East) Dubai.

To actively promote international I&T exchanges and co-operation, fully leverage Hong Kong's important bridging and two-way platform role as a bridge connecting the Mainland and the world to help the country "attract foreign investment" and "go global"

- To accelerate I&T development in Hong Kong, we must give full play to our important role as a bridge connecting the Mainland and the world. Hong Kong should proactively assist enterprises to explore the international market, and strive to attract more technology enterprises and talent around the globe to Hong Kong for establishing a global collaborative innovation platform of the industry, academic and research sectors. Furthermore, Hong Kong should promote I&T exchanges and co-operation with other parts of the world, in order to provide essential support to its development into an international I&T centre.

Recommendation (1): To strengthen the role as a bridge connecting the Mainland and the world

- The HKSAR Government will further consolidate its role as a bridge connecting the Mainland and the world by:

  i. continuing to explore more measures with relevant ministries of the Central Government to enhance cross-boundary flow of innovation elements, thus enabling more overseas I&T personnel and enterprises to go to the Mainland GBA cities via Hong Kong for business, research, exchanges and visits, etc. to expand their business in the Mainland;

  ii. participating actively in the development of major co-operation platforms in the GBA to pool Mainland and overseas talent and attract international technology enterprises to promote innovation and development; and

iii. promoting further joint technology innovation projects with the Mainland and develop a stronger I&T platform. The HKSTPC will work with local universities with GBA campuses to establish incubator networks, so as to support local start-ups to develop in the GBA.

Recommendation (2): To actively expand the global network

- Hong Kong will continue to expand its global networks, including actively seeking support for accession to the Regional Comprehensive Economic Partnership, diversifying levels and partners of co-operation, strengthening interaction and co-operation with stakeholders around the world, and assuming a more proactive role on various fronts to take forward further practical co-operation as follows:

  ◎ **Centre for international I&T trade fairs:**
  Over the years, the HKSAR Government has been actively organising international trade fairs, such as the International ICT Expo and the SmartBiz Expo, etc., to attract Mainland and overseas buyers for promoting and showcasing Hong Kong's latest I&T products and solutions. The dedicated website "Hong Kong: Technology in Action" launched by the Hong Kong Trade Development Council provides information on Hong Kong technology enterprises, helping the local industry to foster co-operation with Mainland and overseas enterprises. The Government will continue to organise more large-scale activities to strengthen liaison of the local I&T sector with Mainland and overseas enterprises and investors for business expansion and development, while introducing forward-looking technologies to the world so as to explore more new business opportunities.

◎ **Belt and Road (B&R) I&T hub:**

In the past two years, the HKSAR Government has taken the lead in co-organising a webinar series with various B&R countries in the Association of Southeast Asian Nations (ASEAN) region, including Thailand, Indonesia, Malaysia, the Philippines, Vietnam and Cambodia, and established the I&T Experience Sharing and Business Promotion Platform to promote Hong Kong's I&T capabilities in combating the COVID-19 pandemic. A series of online interactive business promotion and matching activities have also been conducted, demonstrating the potential for I&T collaboration. Building on this foundation, the HKSAR Government will continue to enhance I&T collaboration with the B&R countries and explore the expansion of market opportunities for local technology enterprises in technology areas other than those related to anti-epidemic efforts, thereby promoting further exchanges, development and utilisation of talent and technologies within the region. Meanwhile, Hong Kong should consolidate its position as a premier platform for international professional services under the B&R Initiative by attracting more Mainland enterprises, including technology enterprises, to use Hong Kong professional services to tap the enormous markets of the B&R countries.

◎ **Centre for international I&T exchanges:**

Hong Kong is Asia's world hub for conventions and exhibitions and has hosted numerous I&T-related world-class academic conferences, international forums and major promotional activities such as the Internet Economy Summit, the RISE Conference, the StartmeupHK Festival and the Hong Kong FinTech Week, etc. Besides, Hong Kong is the founding place of the international science award, the Shaw Prize. Through the vigorous co-ordination efforts of the HKSAR Government, the Hong Kong Laureate Forum is launched with the Shaw Prize as the foundation to foster global academic exchanges among leaders in the scientific arena and the younger generation. We will support the staging of more international I&T events, major academic conferences and forums here in Hong Kong, as a means to demonstrate, via the international platform, our research capabilities and potential to develop into a centre for international I&T exchanges.

◎ **Platform for international scientific research collaboration:**

Hong Kong's robust scientific research capabilities have received worldwide recognition. We have maintained close liaison and co-operative relations with the international scientific arena. Hong Kong must further promote scientific research collaboration with the Mainland and the rest of the world in order to develop Hong Kong into a premier platform for global scientific research

collaboration. Externally, Hong Kong should not only consolidate the co-operative relations with its conventional partners, it should put in more efforts in fostering scientific research collaboration with potential emerging economies, in particular the ASEAN countries. For instance, we should encourage local universities or I&T institutions to sign memorandum of understanding on co-operation with their counterparts in such countries, thereby providing a foundation for initiating further practical bilateral co-operation in future. At the same time, Hong Kong should proactively co-operate with the Mainland cities of the GBA to consider, among others, co-establishing collaborative scientific research platforms such as joint scientific research centres and laboratories, etc., with the aim of fostering scientific research collaboration and exchanges between the two sides.

Recommendation (3): To strengthen support for initiating I&T co-operation overseas

- The HKSAR Government has to strengthen its support for initiating I&T and technology industry co-operation overseas. Currently, the overseas ETOs are mainly responsible for promoting the overall economic and trade co-operation between Hong Kong and the countries where they are stationed as well as related economies, while the overseas offices of Invest Hong Kong are responsible for promoting foreign direct investment. The HKSAR Government will expand the functions of its Mainland Offices and overseas ETOs by setting up Dedicated Teams for Attracting Businesses and Talents in the 17 offices to proactively reach out to target enterprises and talent, liaise with the world's top 100 universities, and promote various programmes. The Dedicated Teams will help the HKSAR Government enhance its efforts in promoting the new opportunities of our industry development to Mainland and overseas renowned and representative technology enterprises and I&T talent, with a view to attracting them to Hong Kong.

The Chief Executive, Mr John Lee, attends the Asia-Pacific Economic Cooperation (APEC) Leaders' Dialogue with the APEC Business Advisory Council in Bangkok, Thailand.

Chapter Five

Development Targets

By 2027, the fifth year since the promulgation of this Development Blueprint, the overall I&T atmosphere in Hong Kong and the vibrance of our I&T ecosystem will reach new heights. There will be a significant increase in the number of and the amount of investment in start-ups, as well as the number of new economy companies. Hong Kong will also witness the birth of more unicorn enterprises. By then, our strong upstream R&D capabilities will be further reinforced, transformation of R&D outcomes in the midstream will speed up prominently, and the development momentum of the technology industries in the downstream will also gradually gather momentum. The development of the I&T ecological chain encompassing the upstream, midstream and downstream sectors will be basically completed. We will also reverse the declining trend of the manufacturing sector's contribution to the GDP over the past 40 years, with the percentage share picking up steadily following a consistently low level in recent years while gaining momentum thereafter. Local I&T and advanced manufacturing employment will continue to rise as we have become more and more appealing to and competitive in attracting talent. Our efforts in developing Hong Kong into an international I&T centre will begin to deliver results of a reasonable scale.

By 2032, the tenth year after the release of the Development Blueprint, the overall I&T atmosphere in Hong Kong will become more fervid, with an even more vibrant and thriving I&T ecosystem. The number of start-ups will once again reach a record high, enabling Hong Kong to become a leading incubator in the region or even in the world. With an increasing scale of local, Mainland and overseas venture capital investment in technology start-ups, Hong Kong will become one of the premier destinations for financing of global technology start-ups. Besides, Hong Kong will become a major market for global new economy industries to raise funds through initial public offerings, with a continuous increase in the number of such companies. The I&T ecological chain in Hong Kong will continuously improve as the upstream, midstream and downstream sectors interact and complement one another. The upstream sector will feature fruitful achievements in original scientific and technological research breakthroughs; the midstream sector will be equipped with proven capabilities to realise transformation of R&D outcomes; and the downstream sector will foster more vibrant growth of technology industries. All these developments will enable Hong Kong to become one of the key advanced R&D centres and pilot transformation bases for technology industries in the country. Also, the GDP percentage share of our manufacturing sector will continue to steadily increase, gradually becoming a new driving force for economic growth. In addition, Hong Kong will become an essential hub of international talent in the country, pooling a large number of local, Mainland and overseas quality R&D personnel and top-notch leading figures in I&T to jointly build a global collaborative innovation platform for the industry, academic and research sectors in Hong Kong. The development of Hong Kong into an international I&T centre will reach a new stage, with a globally influential I&T centre more or less in shape, which will in turn provide strong backing for the country to develop into an innovative nation.

Relevant reference development indicators that facilitate the review of the implementation of the Development Blueprint in realising our vision are listed in the table below.

	Development Vision	2016 (Figures of 2014)	2022 (Figures of 2020)	2027 (Figures of 2025)	2032 (Figures of 2030)
1. R&D					
1.1	Gross Domestic Expenditure on R&D (GERD) as a ratio to GDP	0.74% (HK$16.727 billion)	0.99% (HK$26.554 billion)	1.3%	2%
1.2	GERD per capita	HK$2,306	HK$3,575	HK$5,000	HK$9,000
1.3	Public: Private Ratio of R&D Expenditure	56:44	58:42	50:50	40:60
2. Start-ups					
2.1	Number of start-ups operating in co-working spaces, incubators and accelerators	1 065	3 755 (2021)	About 5 000	About 7 000
2.2	Number of unicorn enterprises (accumulative)	0	12	18	30
3. Talent					
3.1	Number of I&T practitioners	35 450	45 310	60 000	No less than 100 000
3.2	Number of I&T practitioners per 1 000 labour force	9.15	11.56	16.54	28.05
4. Industry development					
4.1	Contribution percentage of manufacturing sector to GDP (at basic prices)	1.2%	1.0%	1.5%	5%

Closing Remarks

To take forward the I&T development of Hong Kong, this Development Blueprint serves to set out the four broad development directions, formulate the eight major strategies, and devise specific development targets at different stages. Measurable reference indicators are also put forth to help review the development progress. We hope to continuously listen to the opinions from different sectors of the society, enabling us to formulate suitable policies and support measures. Together, we will lead Hong Kong to realise its vision as an international I&T centre.

The next five to ten years will be a crucial period for the I&T development in Hong Kong. Bearing in mind that there is no time to lose, the HKSAR Government will assume the main responsibility for providing policy steer. It will collaborate with stakeholders in the industry, academic and research sectors to leverage Hong Kong's advantages as an international city under "One Country, Two Systems", capitalise on the unprecedented I&T opportunities brought about by the national development, implement the major strategies and recommendations as set out in the Development Blueprint, and develop Hong Kong into an international I&T centre with worldwide acclaim. Together, we walk towards the new chapter for more remarkable I&T development of Hong Kong.

Appendix

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