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

Conceptual Outline of the Development Plan for the Innovation and Technology Industry in the San Tin Technopole

Content

Foreword

Background

Innovation and technology (I&T) are vital engines driving the high-quality development of Hong Kong's economy. The National 14th Five-Year Plan (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) expressed clear support for Hong Kong to develop into an international I&T centre. In recent years, the HKSAR Government has promulgated a number of important policy documents, such as the Hong Kong I&T Development Blueprint (I&T Blueprint), the Northern Metropolis Action Agenda, and the Development Outline for the Hong Kong Park of the Hetao Shenzhen-Hong Kong Science and Technology Innovation Co-operation Zone to actively promote the I&T development of Hong Kong. In October 2025, the Fourth Plenary Session of the 20th Central Committee of the Communist Party of China (CPC Central Committee) adopted the Recommendations of the CPC Central Committee for Formulating the 15th Five-Year Plan for Economic and Social Development, providing a top-level design and strategic blueprint for the country's development from 2026 to 2030. In addition to indicating clear support for Hong Kong's development into an international I&T centre, it also proposed building a modern industrial system, consolidating and strengthening the foundation of the real economy, accelerating high-level technological self-reliance, and leading the development of new productive forces. The HKSAR government will proactively align with the 15th Five-Year Plan, seize the significant opportunities brought by national development, integrate into and serve the national development strategy, and leverage its distinctive advantage of having strong support from the motherland and close connection with the world. Under Hong Kong's new industrial layout of "South-North dual engine (finance-I&T)" in the future, the San Tin Technopole (STT), as an indispensable key component in Hong Kong's I&T development, will become a major area for the development of emerging technology industries in Hong Kong and serve as an important base for developing new quality productive forces.

The STT boasts distinctive development strengths. First, it possesses superior geographical advantages with its location adjacent to the Shenzhen I&T zone, making it a natural extension of the Hong Kong Park in the Loop, thus closely aligning with the I&T ecosystems of Futian and Huanggang. This proximity facilitates effective pooling of multiple efforts of the industry, academic and research sectors in both Hong Kong and Shenzhen. Second, it offers an advantage in size, with the provision of approximately 210 hectares of new land around San Tin designated for I&T use, accommodating diverse spatial requirements of different segments of the industry chain, enterprises of varying scales, and multiple technology fields. Third, the STT will develop excellent transportation networks connecting with Shenzhen, the Loop, and other areas within the STT, and coupled with its favourable ecological environment and strengths as a liveable place, it will form a new liveable community of high quality.

Scope of the Outline and Methodology of the Study

To capitalise on the unique development advantages of the STT and formulate a concrete development strategy, the Innovation, Technology and Industry Bureau (ITIB) has commissioned a consultancy firm to assist in conducting a study on the overall strategy for the development of the I&T industry in the STT, which will serve as the basis for the ITIB to formulate the Conceptual Outline of the Development Plan for the I&T Industry in the STT (hereinafter referred to as "the Development Outline for the STT").

The Development Outline for the STT mainly comprises three parts, which focus on exploring its strategic positioning, spatial layout planning, as well as development model, with specific recommendations provided:

Part 1: To analyse global and national I&T development trends, assess Hong Kong's major strengths and opportunities and challenges encountered in I&T development, and explore the strategic vision, objectives, and positioning of the STT development.

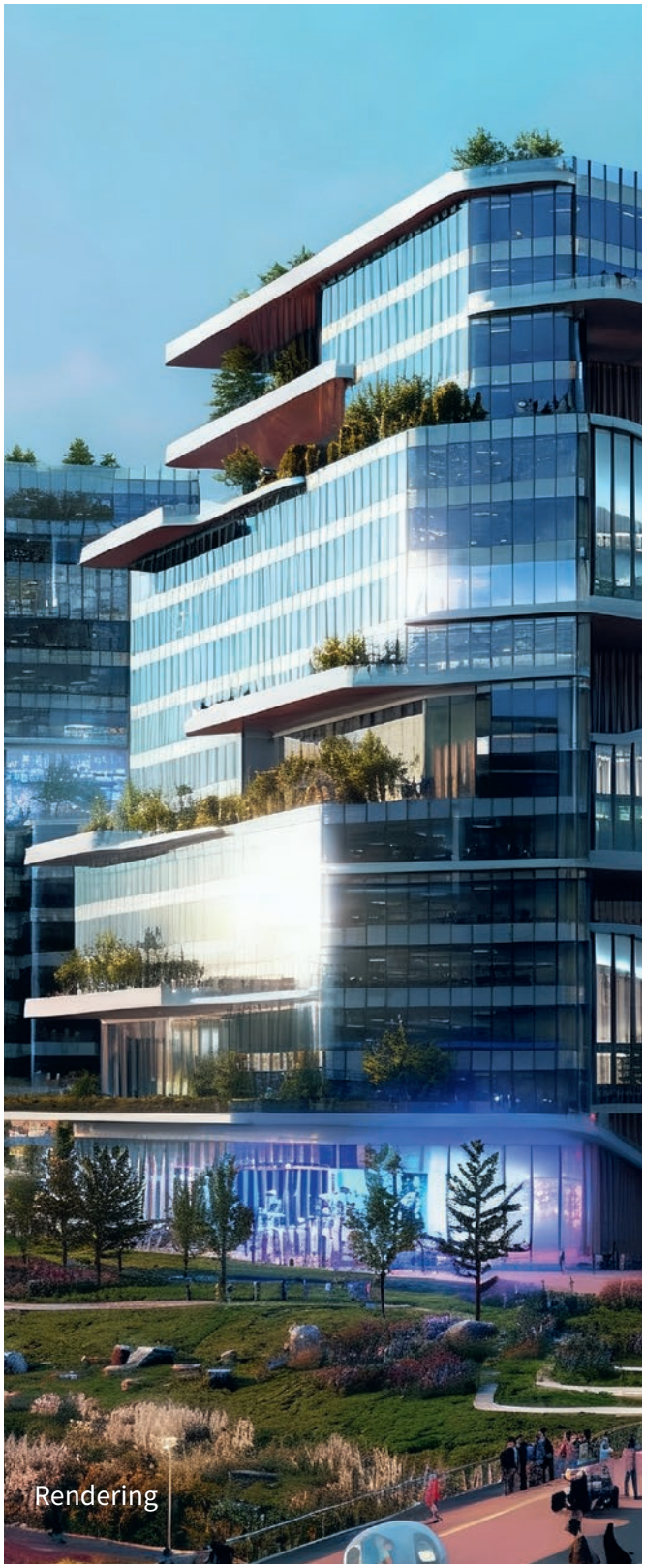
Part 2: To put forward a phased development plan, land use planning, and spatial forms tailored to the industry development needs of the STT, and propose supporting infrastructure and facilities for building an ecosystem for industries.

Part 3: To propose a development model and relevant options for the STT, based on its development positioning and spatial layout.

In the course of the study for the purpose of formulating the Development Outline for the STT, the consultancy firm conducted over 40 market sounding sessions and one-on-one in-depth interviews, and views were collected from a total of more than 100 I&T industry-related personnel/stakeholders from different sectors, including members of the Legislative Council, statutory bodies in Hong Kong, offices of the President/Vice-Chancellor of universities and their technology transfer offices, academic institutions, chambers of commerce, I&T associations, financial and investment institutions, urban planning and development enterprises, smart city experts, sustainability and environmental protection specialists, Mainland and overseas experts in I&T park management and operations, Mainland expert scholars in development studies, as well as representatives of major local, Mainland and overseas enterprises engaging in such advanced industries as life and health technology, artificial intelligence (AI) and robotics, microelectronics and smart devices, new materials, and new energy and green technology, with a view to better understanding the views and opinions of the industry and relevant stakeholders on, among others, the current situation of global I&T industry development, opportunities for Hong Kong's I&T industry development, the strategic positioning of the STT development, key success factors, infrastructure and environmental elements for I&T park development, and policy support for the I&T industry.

Against this background, this study, by employing different means including policy review, desktop research, case benchmarking, market sounding, focus group workshops, and offline visits, conducts a more comprehensive and systematic analysis on the development advantages of, and the competitive landscape and challenges faced by, the I&T industry in Hong Kong, in a bid to affirm Hong Kong's role in I&T industry development and the means of leveraging Hong Kong's strengths to create strong impetus for growth of the I&T industry. The study also identifies key success factors of leading global I&T parks, and with respect to the STT, proposes its strategic positioning, analyses the I&T sectors suitable for development therein, specifies its spatial design requirements for I&T industry development, as well as designs and proposes layouts for different land parcels within the STT and a model for its development as a whole.

The Development Outline for the STT covers a total area of approximately 210 hectares of I&T land of the STT, excluding the 87-hectare Hong Kong Park in the Loop.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Chapter 1 Exploration of Development Positioning

1.1 Current Situation, Direction and Trends of I&T Development

Global Trends in I&T Development

As illustrated in Figure 1, although the terms used to describe I&T varies across countries and regions, there is essentially a high degree of overlap in the core elements of I&T, which develop surrounding breakthroughs in key technologies, integration of industry chains, and upgrading of economic structures. Globally, science and technology innovations are widely recognised as the main impetus for social advancement and economic growth, with countries and regions establishing their respective innovation pathways tailored to their specific development context.

Promulgated by the HKSAR Government in 2022, the I&T Blueprint delineates I&T in three dimensions, namely industry chain, ecosystem and specific industries. It outlines the whole chain from research and development (R&D) to industrialisation, with a strategic focus on key areas such as life and health technology, AI and robotics, advanced manufacturing, and new energy.

In the Mainland, I&T are more commonly incorporated into the conceptual framework of "science and technology innovation". In 2022, the Report on the Work of the Government highlighted the role of enterprises as key players in driving original science and technology innovations to align with national strategic priorities. The recommendations for the national 15th Five-Year Plan further confirm the strategic approach for the integrated development of technological innovation and industrial innovation.

In the European Union, "Deep Tech Innovation" has emerged as a strategic focus in the new wave of technological competition, encompassing frontier fields such as new and hi-tech materials, AI and biotechnology.

In the United States, I&T are defined as "Critical and Emerging Technologies", which comprise 20 key technologies such as advanced manufacturing, AI and biotechnology.

As defined from the conceptual point of view, I&T generally refer to the process of applying new knowledge, technologies and craftsmanship with improvements in production methods, management systems and business models in developing new products, enhancing quality and delivering new services. The ultimate goal is to drive economic growth and create high-quality employment opportunities.

Amidst the accelerating pace of the prevailing global technological revolution, major world economies have been continuously promoting their I&T industry development. While AI, life and health technology and advanced manufacturing have become the mainstream areas of development, there is a considerable overlap in the targeted industries. Countries and regions are actively identifying their respective strengths and precise positioning in specialised I&T fields to maximise the competitive advantages of their I&T industries and secure a leading position early in the global competition among high value-added industries.

Figure 1 Global I&T Development Layouts

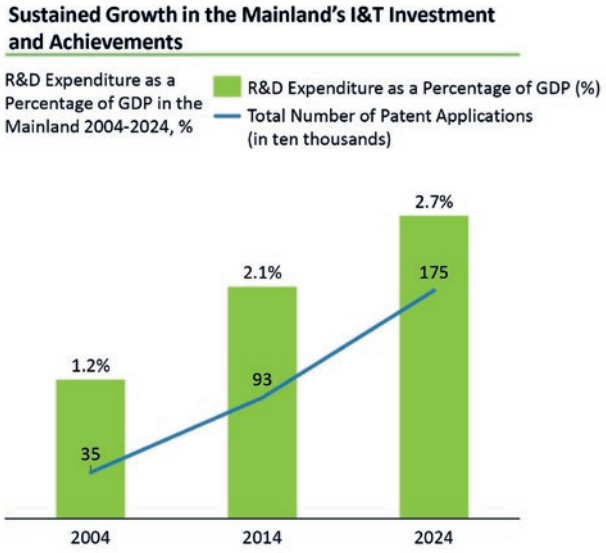
Country/ Region	I&T Policy	Industry Pattern							Development Goals
		Life & Health	AI & Data Science	New Energy Technology	New Materials	Microelectronics	Robotics	Others[1]	
China	14th Five-Year Plan	✓	✓	✓	✓	✓	✓	✓	Promote the integrated ecological development of clusters of strategic emerging industries, with the contribution of such industries to GDP exceeding 17%
Hong Kong, China	Hong Kong I&T Development Blueprint	✓	✓	✓	✓	✓	✓		By 2032, the share of contribution of manufacturing and new industrialisation-related industries to Hong Kong's GDP will continue to rise steadily, gradually becoming a new driving force for economic growth
United States	U.S. Innovation and Competition Act of 2021	✓	✓	✓	✓	✓	✓	✓	Foster regional economic development and enhance the manufacturing industry and supply chains by investing in R&D to establish and maintain the leading position of the United States in science and technology
Europe	New European Innovation Agenda	✓	✓	✓	✓	✓	✓	✓	Strengthen the central role of Europe in green transformation and digital transformation, offer innovative solutions to resolve pressing social issues such as climate change and cyber threats, reduce energy dependency and improve public health

Note: (1) Includes marine technology, space technology, etc.
Sources: Policy documents from respective governments

Current Situation and Trends of National I&T Development

As illustrated in Figure 2, in terms of I&T investment, the Mainland's R&D investment has sustained a rapid growth both in scale and strength. In 2024, the Mainland's total R&D investment exceeded RMB 3.6 trillion, the scale of which was the second largest globally. Meanwhile, R&D expenditure as a percentage of Gross Domestics Product (GDP) in the Mainland reached approximately 2.7% in 2024, a 0.1 percentage point up from the year before.

Figure 2 I&T Mainland's Investment and Achievements



Note: For 2024, the R&D expenditure as a percentage of GDP was an actual figure, while the total number of patent applications was an estimated figure
Sources: World Bank Database, website of the Central People's Government of the People's Republic of China, World Intellectual Property Organization (WIPO); Deloitte's Analysis

With remarkable achievements in I&T, our country is transitioning from a "technology importing country" relying on foreign technologies into a "technology innovator" with home-grown R&D capabilities. According to the Global Innovation Index (GII) 2025 released by the WIPO, the Shenzhen-Hong Kong-Guangzhou cluster came first globally, demonstrating the high international recognition of the I&T capacity of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA). In fact, the Shenzhen-Hong Kong-Guangzhou cluster has previously ranked second globally in the GII for five years in a row, reflecting the ever-increasing competitiveness of the GBA in I&T.

Our country identifies ten key industries and focuses on promoting the development of science and technology industries, such as AI, biotechnology and new energy. Over the past decade, the Mainland has been rolling out an array of policy initiatives, action agendas and guiding opinions to refine the policies in support of the industry development.

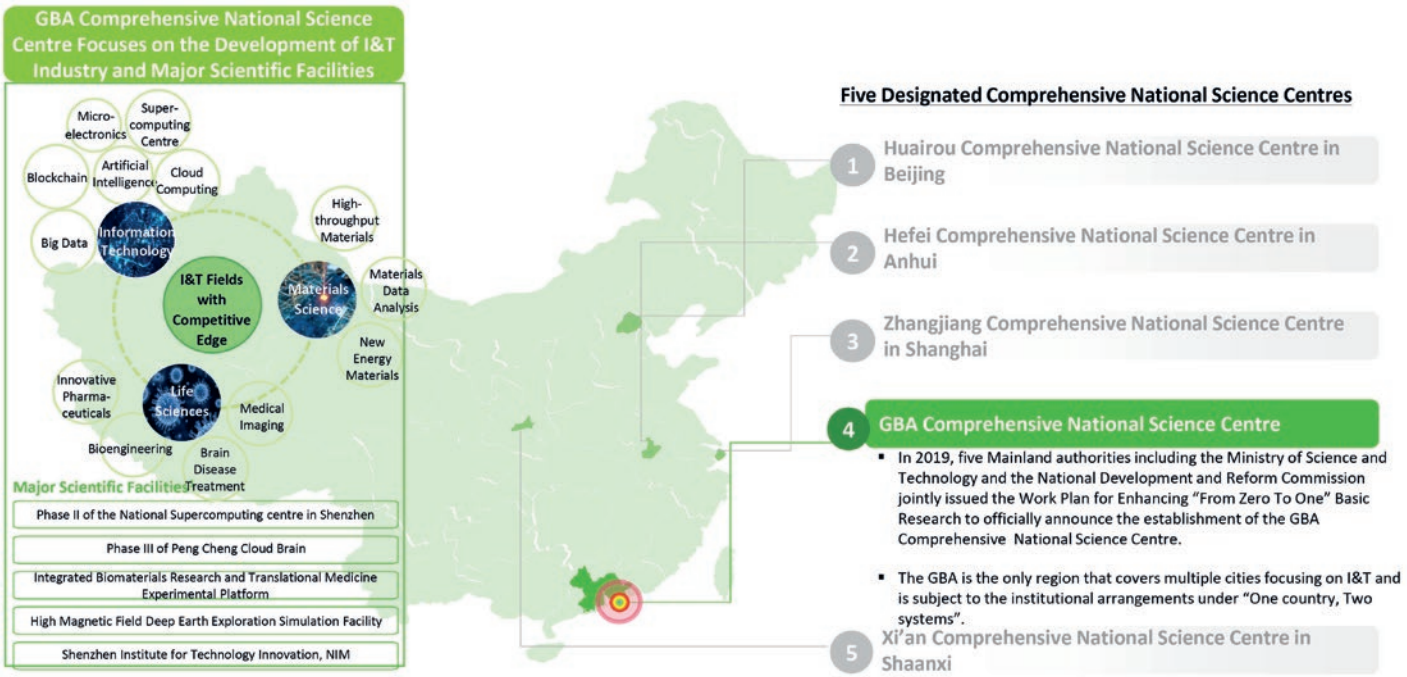
The policies on the I&T industry are characterised by top-level planning and parallel implementation of industry-specific policies and ancillary support measures. Top-level planning sets the direction for the high-level strategic development of the I&T sector, while industry-specific policies are promulgated to provide more detailed policy guidance for individual I&T fields.

In 2016, the National Outline of the Innovation-driven Development Strategy set the goal of building China into a world-leading nation in science and technology innovation by 2050, highlighting the development of emerging industry clusters supported by "mass breakthroughs in technology" and proposed facilitating the rational division of labour among industries, with a view to enhancing the overall regional innovation capacity and competitiveness. In 2021, the National 14th Five-Year Plan proposed cultivating advanced manufacturing industry clusters and strengthening the development and expansion of nine strategic emerging industries, including new-generation information technology (IT), biotechnology, new energy, new materials, high-end equipment, new energy vehicles, green and environmental protection technology, as well as aviation, aerospace and marine equipment. In 2022, the 20th National Congress of the Communist Party of China further called for the integrated development of strategic emerging industry clusters, with the aim of creating a new batch of growth engines including new-generation IT, AI, biotechnology, new energy, new materials, high-end equipment, green and environmental protection technology, etc. In 2025, our country highlighted in the Report on the Work of the Government the importance of making greater breakthroughs in core technologies and strengthening R&D in frontier and disruptive technologies, expressly put forward the promotion of the integrated development of technological and industrial innovation to strongly support the growth of I&T enterprises at various stages of development, thereby accelerating the development of emerging and future industries with holistic layout planning. In October of the same year, the recommendations for the 15th Five-Year Plan adopted at the Fourth Plenary Session of the 20th CPC Central Committee also emphasised the need to seize the historical opportunities of a new round of technological revolution and industrial transformation. It called for coordinated efforts in building a strong nation in terms of both technology and talent, enhancing the overall efficiency of the national innovation system, comprehensively strengthening independent innovation capabilities, seizing the commanding heights of technological development, and continuously fostering new productive forces.

Regional Innovation Layout of Our Country

The National 14th Five-Year Plan puts forward the development of Beijing, Shanghai and the GBA into international I&T centres to bring about the clustering effect of industries and develop innovation hubs of strategic importance for the country. As shown in Figure 3, since 2019, the State Council has designated five comprehensive national science centres in Huairou of Beijing, Zhangjiang of Shanghai, the GBA, Hefei of Anhui and Xi'an, each with its distinct advantages and focus areas, to leverage the foundation of industry development of the respective regions.

Figure 3 Five Designated Comprehensive National Science Centres



Note 1: Major scientific facilities refer to major infrastructure built for conducting scientific research in a large scale. They include not only the major equipment and installations for the experiments but also the ancillary systems in support of the relevant research work
Sources: Government websites; Websites of the respective Comprehensive National Science Centres

The GBA is a multi-centre region comprised of multiple cities with high development potential, including Hong Kong, Shenzhen and Guangzhou (as illustrated in Figure 4). Given the similarity in key I&T industries across major GBA cities, it is essential for Hong Kong to capitalise on its own unique advantages and pursue synergistic development with other GBA cities.

In summary, the new wave of global technological revolution is characterised by considerable overlaps in the targeted industries, hence a precise differentiated positioning for Hong Kong's I&T industry is crucial. Given the continuous increase in R&D investment of governments and leading enterprises around the world and that our country is becoming increasingly competitive in I&T, Hong Kong should seize the opportunity presented by the development of an international I&T centre and a Comprehensive National Science Centre in the GBA. Building on the established foundation in planning, Hong Kong should leverage its highly internationalised and competitive strengths in basic research and proactively dovetail with the GBA's collaborative innovation framework and I&T resources, so as to achieve synergistic development with other GBA cities and create impetus for growth of Hong Kong's I&T industry.

Figure 4 The Multi-centre Layout of the GBA Features Complementary Advantages Alongside Competition

	Representative I&T Park	Park Positioning	Industry Pattern of the City					
			Life & Health Technology	Artificial Intelligence	New Energy	New Materials	Micro-electronics	Robotics
Hong Kong	• San Tin Technopole (the new I&T land in San Tin area) • Hong Kong Park in the Hong Kong-Shenzhen I&T Co-operation Zone • Hong Kong Science Park, Cyberport	• Science and technology park that can **satisfy the development needs of midstream and downstream sectors of the I&T industry chain at various stages** • Focuses on the R&D of **biomedical technology, AI, electronics, green technology, information and communications technology, as well as materials and precision engineering**	√ Life & Health	√ AI & Data Science	√ New Energy Technology	√ New Materials	√ Micro-electronics	√ Robotics
Shenzhen	• Shenzhen Guangming Science City • Shenzhen Park of Hetao Shenzhen-Hong Kong Science and Technology Innovation Cooperation Zone	• Concentrates on the development of such industries as **new materials, high-end medical equipment, biomedicine and brain-like intelligence** • An R&D transformation and pilot production base for industries, with a focus **on new-generation IT, biomedicine, AI**, etc.	√ Biomedicine	√ New-generation IT	√ Marine Economy, Green and Low Carbon	√ New Materials	√ Advanced Equipment Manufacturing	√ Advanced Equipment Manufacturing
Guangzhou	• China-Singapore Guangzhou Knowledge City • Guangzhou Science City • Guangzhou International Bio Island	• Focuses on eight major industries, namely **automotive manufacturing; new display; green energy; new materials; beauty, health and wellness; integrated circuits; biomedicine; and high-end equipment**	√ Biomedicine and Health	√ New-generation IT	√ Smart and New Energy Vehicles	√ New Materials and Fine Chemicals	√ Smart Devices	√ Smart Devices & Robotics

Sources: "14th Five-Year Plan", "Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area"

1.2 Current Situation and Trends of I&T Development in Hong Kong

Opportunities and Challenges for Hong Kong's I&T Development

I&T are essential for driving Hong Kong's high-quality economic development and creating high-quality employment opportunities. The National 14th Five-Year Plan and recommendations for the 15th Five-Year Plan both expressly support Hong Kong to develop into an international I&T centre and to deepen I&T co-operation with the Mainland. In 2022, the HKSAR Government promulgated the I&T Blueprint, which sets out four broad development directions, namely enhancing the I&T ecosystem and promoting "new industrialisation" in Hong Kong, enlarging the I&T talent pool to create strong impetus for growth, promoting digital economy development and developing Hong Kong into a smart city, as well as proactively integrating into the overall development of the country and consolidating Hong Kong's role as a bridge connecting the Mainland and the world, to steer Hong Kong's I&T development through top-level design.

The I&T Blueprint also clearly states the need to focus on the development of strategic technology industries such as life and health technology, AI and robotics, advanced manufacturing, and new energy technology in order to enhance the I&T ecosystem. Additionally, to couple with the HKSAR Government's policy direction on driving the development of I&T and new industrialisation-related industries, the ITIB, in collaboration with the Census and Statistics Department, compiled and released in April 2025 statistics on the performance of economic activities of "manufacturing and new industrialisation-related industries" to reflect more precisely the economic performance of these industries in Hong Kong. In 2023, the value added of Hong Kong's "manufacturing and new industrialisation-related industries" accounted for approximately 2.6% of the GDP, representing an increase of 7.6% over the previous year.

The advantages of Hong Kong's I&T industry are as follows:

Opportunity 1: Leveraging Hong Kong's Unique Advantage of Being Highly Internationalised and Closely Connected to Both the Mainland and the World

Although Hong Kong's manufacturing sector has started to decline following the relocation of production processes to the Mainland in the 1980s, the "Made in Hong Kong" brand remains a symbol of quality and reliability in the global market. With the accelerated development of new industrialisation-related industries in Hong Kong, the internationally recognised "Made in Hong Kong" brand can provide branding support for Hong Kong's innovative and advanced manufacturing sector, enhancing the reputation and appeal of Hong Kong-developed or Hong Kong-made products in the international and Mainland markets, thereby facilitating the development of high value-added products and services. Hong Kong's unique advantage of being closely connected to both the Mainland and the world enables it to provide a wide range of quality services, including market research, legal consultation, supply chain management and so on, for enterprises seeking to expand overseas to help them tap into the market around the world.

Opportunity 2: Leveraging Hong Kong's Well-established Scientific Research Infrastructure and World-renowned Higher Education Institutions to Pool I&T Resources from Around the World

Hong Kong possesses an internationally renowned higher education system which brings together a wealth of R&D resources for I&T. The city has five of the world's top 100 universities and a total of 22 degree-awarding higher education institutions. These institutions not only excel in basic academic research, but also possess a number of globally leading disciplines, top-tier research teams and laboratory platforms (such as State Key Laboratories and InnoHK research clusters) in fields such as life and health technology, AI and robotics, microelectronics and smart devices, new materials, new energy and green technologies which are closely aligned with those strategic industries as set out in the I&T Blueprint. Such scientific research infrastructure forms a powerful upstream R&D engine, providing frontier knowledge, core technology prototypes, and high-calibre talents for Hong Kong's I&T industry. Meanwhile, the resources of Hong Kong's academic institutions are being actively transformed into industry, academia and research resources through various channels such as the Research, Academic and Industry Sectors One-plus Scheme (RAISe+) launched by the HKSAR Government, university technology transfer offices, incubation programmes, and university-enterprise collaboration projects. These initiatives promote the transformation of research outcomes into practical applications, directly empowering I&T enterprises in technology innovation and product development, and providing the technology and talent bases for Hong Kong's development into an international I&T centre.

Opportunity 3: Leveraging the Strengths of Hong Kong's Existing Industries to Lay a Foundation for I&T Development and Provide Opportunities for Commercialisation

Hong Kong has a strong foundation in multiple traditional industries or sectors. For example, in the field of finance, Hong Kong is one of the world's top three international financial centres with the financial services industry accounting for 24.9% of the GDP in 2023. Regarding

healthcare, Hong Kong, with its high-quality healthcare professions and efficient healthcare system, assumes a leading place in the world in a number of health indicators and is among those regions with the highest life expectancy.

The above well-developed sectors possess clear advantages in terms of commercialisation experience, market demand, and business foundation, and there is significant development potential for technology applications jointly developed by these sectors and the I&T industry. Examples include the synergistic development of the life and health technology and the healthcare industries; the application of AI and robotics in finance, healthcare, retail and other sectors; and the application of microelectronics, new energy, and other advanced industries in construction, transportation and healthcare. Therefore, by leveraging the I&T industry which emerges from the sectors of traditional strengths as the foundation, Hong Kong will develop at a faster pace and with more resources available for use. This will help reinforce Hong Kong's core advantages and highlight the city's distinctive edges amidst global competition.

Opportunity 4: Leveraging Hong Kong's Robust Legal System As a Platform to Accelerate the Internationalisation of the I&T Industry

As a regional intellectual property trading centre, Hong Kong facilitates the conduct of R&D activities and market expansion by Mainland and international enterprises. As a common law jurisdiction with a legal system aligned with international standards, Hong Kong has a strong commercial law in place and is one of the key dispute resolution centres in the Asia-Pacific region. Furthermore, the city possesses the unique advantage of having both internationally recognised standards and registration systems, allowing multinational companies to simultaneously serve the Mainland and international markets, thereby enhancing operational efficiency.

Opportunity 5: Leveraging the Quality International Living Environment to Attract Global I&T Talents

As Asia's world city and a globally acclaimed financial, trade and shipping centre, Hong Kong offers plentiful career development and job opportunities, and a quality internationalised living environment to talents. The city also enjoys a low tax rate and a simple tax regime and possesses such advantages as free flow of information and a facilitative immigration regime. As a liveable metropolis with diverse options for arts and cultural activities, the city appeals to professionals from around the world. In recent years, the HKSAR Government has rolled out various talent attraction schemes, such as the Technology Talent Admission Scheme and the Admission Scheme for Mainland Talents and Professionals, to attract key talents to Hong Kong.

However, upon a closer examination and analysis of Hong Kong's current situation of its I&T development, it is evident that the I&T sector is facing a number of challenges. The four major challenges are as follows:

Challenge 1: Limited Scale of the Existing Manufacturing Sector

The manufacturing and new industrialisation-related industries account for a relatively small share of Hong Kong's overall GDP. In 2023, the value added of "manufacturing and new industrialisation-related industries" amounted to HKD 76.8 billion and accounted for around 2.6% of the GDP, reflecting an urgent need to strengthen operation of the entire chain from R&D to production in Hong Kong.

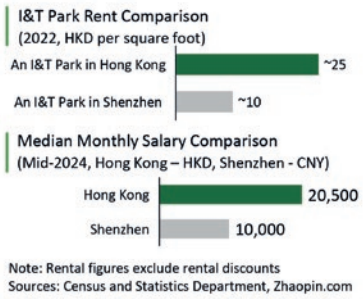
Despite the HKSAR Government's increased investment in I&T and its introduction of a series of important measures to support the development of I&T and new industrialisation-related industries in recent years, the scale of Hong Kong's existing manufacturing and new industrialisation-related industries remains relatively small. As a complete industry chain also takes time to form, manufacturing and new industrialisation-related industries have yet to become a major driver of Hong Kong's economic growth at this stage.

Challenge 2: Intense Competition with Other Major Cities in the Mainland

There is a significant overlap in the I&T industry focus areas across various Mainland city clusters, most of which are having an I&T industry overlap rate of 90-100%. Take the GBA as an example. Shenzhen focuses on the development of seven strategic emerging industries, namely next-generation IT, biomedicine, digital economy, high-end equipment manufacturing, new materials, marine economy, and green and low-carbon technologies. Meanwhile, Guangzhou focuses on three emerging pillar industries, namely next-generation IT, smart and new energy vehicles, and biomedicine and health, while also nurturing five emerging industries with strengths, namely intelligent equipment and robotics, rail transit, new energy, energy conservation and environmental protection, new materials and fine chemicals, and digital creativity. As for Hong Kong, the I&T Blueprint identifies a number of strategic technology industries, including life and health technology, AI and robotics, advanced manufacturing, and new energy technology, for focused development. The overlapping development priorities of the I&T industry in Hong Kong and the above neighbouring cities may pose a risk of homogeneous competition.

Challenge 3: High Cost of I&T Development in Hong Kong

Figure 5 Comparison of I&T Development Costs between Hong Kong and Shenzhen



Despite being one of the most business-friendly locations in the world, Hong Kong faces higher labour and rental costs when compared to its neighbouring cities. The cost of living in Hong Kong is also higher. The labour and rental costs lead to higher operating costs of enterprises in doing business and in recruiting talents for research and production activities.

Challenge 4: Pressing Need to Strengthen Incentive to Commercialise Research Outcomes

Hong Kong's universities have traditionally placed more emphasis on basic academic research, with the quality of published research papers being a key indicator for evaluating faculty performance in higher education institutions. Despite big shifts in recent years, university research personnel actively engaging in the transformation of research outcomes is not yet prevailing, with I&T development focusing more on the upstream research of higher education institutions. Owing to a lack of supporting industry and supply chains for technology innovation, it is more difficult for research outcomes to undergo pilot production and mass production locally. This not only impedes the development of Hong Kong's I&T industry at the commercial level but also limits the opportunities for local industries to utilise technologies to enhance their competitiveness.

In summary, Hong Kong faces various challenges, including a relatively small manufacturing sector, intense homogeneous competition with other cities in the Mainland, and high development costs. When promoting the development of the I&T industry in Hong Kong, we should take the above into consideration and focus on the I&T areas where Hong Kong has a comparative advantage.

Development Positioning of HK's I&T Industry

Hong Kong's overall role is being gradually enhanced from a "super connector" primarily facilitating collaboration to a "super value-adder" providing a greater variety of value-adding solutions and services. In the context of I&T industry development, Hong Kong should strive to give full play to its role as a "super value-adder" and should further expand this role by not only creating external added value but also internal added value.

In developing its I&T industry, Hong Kong should position itself as a "super value-adder". It should develop itself into an innovative value-adding platform by tapping international and Mainland industry development opportunities externally, and drive local economic development by mobilising value-generating industry resources internally. Specifically, Hong Kong should perform the following two functions:

Firstly, Hong Kong should align with national development strategies and serve the country's needs by fully leveraging its unique advantages of having a highly free and open business environment, a mature and vibrant capital market, a variety of investment and financing channels, an internationally recognised legal system aligned with major economies in the world, the widely recognised "Made in Hong Kong" brand, and close connectivity to both the Mainland and the world, to establish an international "going global" platform to facilitate rapid entry of products into the Mainland, the Belt and Road and other overseas markets.

Secondly, Hong Kong should serve as a pilot production platform for the I&T industry by creating a "low trial-and-error cost" environment for I&T R&D and industrialisation, and providing room for piloting various new technology products, so as to enable enterprises or I&T talents in the Mainland and overseas to carry out R&D, prototyping, pilot production, and small-scale manufacturing of products in Hong Kong with greater efficiency and a faster product iteration cycle when compared to the neighbouring cities.

As a key initiative for promoting Hong Kong's I&T industry development, the STT can adhere to the above positioning and functions of Hong Kong's I&T industry to further amplify the city's unique advantages in terms of its scientific research capabilities, international linkage, brand recognition, financial and capital market, rule of law environment, as well as close connectivity to both the Mainland and the world, to establish itself as a key platform for advancing the high value-added development and internationalisation of Hong Kong's I&T industry, and a premier springboard for Mainland I&T enterprises to expand into the international market.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1.3 Vision, Objectives and Positioning of the STT Development

Vision and Objectives of the Development

The planning of the STT actively aligns with national development strategies and Hong Kong's medium- and long-term development needs, and assumes great significance. The vision and objectives of the STT development are clear: to leverage Hong Kong's unique advantages in industry development to serve as a key I&T hub supporting the country's "bringing in and going global" strategy, and to become a major area for developing emerging technology industries in Hong Kong and an important base for developing new quality productive forces in the future.

Adjacent to the Hong Kong Park in the Loop, the new I&T land in the STT occupies an area of about 210 hectares around San Tin and is a natural extension of the Loop. With a clear strategic position, the area can integrate with the comprehensive industry supply chains in the Mainland cities of the GBA, and take up the transformation and industrialisation of research outcomes of the Hong Kong Park in the Loop, thereby driving economic growth, creating high-quality employment opportunities and leading to structural upgrades of industries. The STT, with its superior geographical location and strategic position, will provide an ideal place for Mainland and overseas enterprises to establish a presence and develop emerging technology industries in Hong Kong, and will attract high-calibre I&T enterprises and talents from around the world. It will serve as a key pillar in the development of Hong Kong into an international I&T centre, providing a stronger impetus for the city's high-quality development.

Positioning

Taking into account the vision and objectives of the STT development and making reference to the development positioning and success factors of other leading technology industrial parks in the world, the STT development will be positioned as follows:

Positioning 1: Providing Space for Prototyping, Pilot Production, and Small-scale Manufacturing

As Hong Kong's largest industrial base occupying some 210 hectares of new I&T land around San Tin, the STT can engage in the transformation of research outcomes of the Hong Kong Park in the Loop. While the Hong Kong Park in the Loop will serve as a hub for R&D resources and strengths, the new I&T land around San Tin will act as a base for production and demonstration, accelerating the local "1 to 100" transformation of Hong Kong's R&D outcomes by providing industrial space for prototyping, pilot production, and small-scale manufacturing.

Positioning 2: Developing High-quality Local I&T industries

The STT can provide land of larger scale to support the development of strategic I&T industries as set out in the I&T Blueprint. Apart from pooling I&T resources, the STT can facilitate development of two to three core industries. In the course of the development, efforts can be made to explore developing sub-sectors with great market potential in the future and a relatively strong ability to drive economic growth. The industries concerned should also be compatible with the foundation of existing local industries. For example, there should already be a certain foundation in both upstream R&D and downstream application for the sub-sectors of the industries.

Positioning 3: Pooling Global I&T Resources and Talents

The STT should actively align with national development strategies, serving the country's needs by pooling I&T resources and talents from around the world. It should enhance the development of the I&T industry ecosystem by supporting efficient collaboration among the government, industry, academic, research and investment sectors, as well as improving connections of essential elements such as enterprises, universities, research institutions, financial services, professional services and urban infrastructure, with a view to promoting active collaboration among various elements. Meanwhile, Ngau Tam Mei, which is located to the south of the STT and only a station away from the San Tin Station of the forthcoming Northern Link, will be developed into the Northern Metropolis University Town focusing on scientific research, complementing the I&T development in the STT.

Chapter 2 Industrial Spatial Layout

2.1 Principles and Concepts of Industrial Spatial Planning

Planning Principles

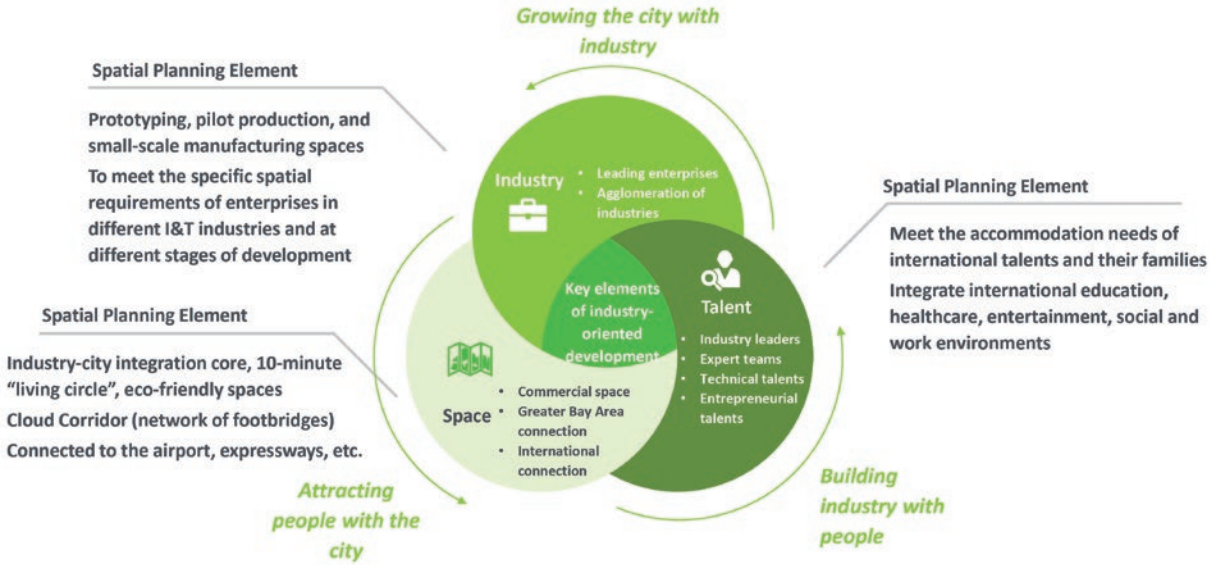
Based on the vision, objectives and positioning of the STT development and with reference to the spatial planning characteristics of the world's leading technology industrial parks, the key elements of the spatial planning of the STT include: (1) design of an integrated industry ecosystem spanning from R&D to pilot production; (2) creation of industry clusters through "industrial catalysts[1]"; (3) emphasis on the industry-specific spatial requirements; and (4) requirements of supporting facilities for talent communities and industries:

(1) Design of an integrated industry ecosystem spanning from R&D to pilot production: The STT should focus on the interaction among industries, talents, and space to create a virtuous cycle of "enhancing the city's quality with industries", "attracting talents with the city", and "developing industries with talents" (as shown in Figure 6).

(2) Creation of industry clusters through "industrial catalysts": The STT should combine the clusters of various I&T industries, like life and health technology, AI and robotics, etc., and make planning for areas which can serve as catalysts to accelerate the I&T ecosystem development, such as industrial infrastructure, academic research facilities, and pilot and showcase projects. By focusing on certain I&T industries as catalysts at different stages, the STT can attract relevant supporting facilities to be established therein in a targeted manner and continue to maintain its appeal to enterprises.

(3) Emphasis on the industry-specific spatial requirements: The STT should provide "industry-oriented" spatial forms tailored to the varying spatial needs of different I&T industries. Having made reference to information collected from, among others, desktop research, surveys and interviews, and case studies on the space of other industrial parks, we identify the industrial space needed by technology industries such as life and health technology, AI and robotics, microelectronics and smart devices, new materials, new energy, and green technology, as well as the specific spatial requirements of supporting facilities for the industries.

Figure 6 Industrial Ecosystem Design Incorporating Stages from R&D to Pilot Production



[1] The concept of "Industrial Catalyst" is spinned off from the term "Urban Catalyst". The concept of "Urban Catalyst" was first put forward by Wayne Attoe and Don Logan, American urban designers, in their book titled American Urban Architecture: Catalysts in the Design of Cities in the 1990s. Some elements can create urban catalytic effects, which will in turn stimulate the development of urban forms and foster the formation of more elements. Such catalysts aim to promote the sustainable and progressive development of urban structures. Urban catalysts can take various forms, implying that elements which facilitate urban development in nearby areas can be considered as "catalysts". They could be large-scale urban development projects, such as city centres or building complexes; a single building or parts of a building like hotels, shopping malls, transportation hubs, museums or open spaces, etc.; or in such an intangible form as policies and systems, design concepts and so on. For I&T industry development, elements which can facilitate the formation of industry clusters and expedite I&T ecosystem development are referred to as "industrial catalysts".

(4) Requirements of supporting facilities for talent communities and industries: The STT should provide ancillary facilities to support the development of the I&T industry, including exchange platforms and exhibitions (e.g. venues for exchanges of talents and knowledge, conventions and exhibitions, venture capital platforms), transportation and logistics (e.g. cloud facilities, infrastructure facilitating cross-boundary movement of I&T personnel and materials, and a robust transport network), and professional services (e.g. one-stop enterprise services, investment promotion platforms, patents and certification service, and services provided by other professional bodies), in order to enhance the connectivity and innovative atmosphere within and outside the I&T Park of the STT for greater flexibility and operational convenience. On the other hand, with talents as the soft power and an essential element of the STT, provision of one-stop talent supporting facilities in the STT can be considered, with a view to developing a carrier providing space to cater for the employment and living needs of talents such as scientists, senior management personnel and communities of start-up entrepreneurs.

Planning Concepts

The spatial planning of the STT is based on the following design concepts: phased development strategy, industrial use of land parcels, function design and ecological supporting facilities.

- **Phased Development Strategy** (see Section 2.2 below): The STT will adopt a phased development strategy according to the timetable for land disposal on one hand, and take into consideration the sequence of introducing industries and relevant upstream and downstream sectors, the incremental value of property and timing of capital investment.

- **Industrial Use of Land Parcels** (see Section 2.3 below): Industrial Use of land parcels includes the planning framework and zoning of different industries. The planning framework mainly focuses on development hubs as the core, with development corridors radiating laterally around these hubs. Zoning should be based on the specific land parcel needs of various I&T industries so as to create a clustering effect.

- **Function Design** (see Section 2.4 below): The planning should cater for the diverse needs of different industry chain segments of various I&T industries by providing highly integrated industrial functions and efficient infrastructure, thereby enhancing the development of the I&T industry ecosystem.

- **Ecological Supporting Facilities** (see Section 2.5 below): The planning will seek to enhance city-industry integration of the STT in the future by creating a one-stop convenient community and "living circle" for talents and providing ecological supporting facilities conducive to efficient integration of work and life of the talents.

2.2 Phased Development Strategy

The phased development strategy for the STT should fully take into account factors such as the sequence of introducing industries and relevant upstream and downstream sectors, the incremental value of property, and the timing of capital investment, while the timetable for land resumption and site formation works to be undertaken by the Government will dovetail with the relevant strategy. To tie in with the pace of development suitable for the I&T industry, the industry development strategy is formulated with five phases: Phase 1 Stage 1 (P1S1), Phase 1 Stage 2 (P1S2), Phase 1 Stage 3 (P1S3), Phase 1 Stage 4 (P1S4) and Phase 2 (P2). In promoting future development, if necessary, we will take into account factors such as the industrial clustering effect at that time and make appropriate adjustments.

Phase 1 Stage 1 (P1S1): Introduction Stage

This stage focuses on the initial development of the STT, including the establishment of a service centre and the preliminary introduction of industries.

Phase 1 Stage 2 (P1S2): Industry Ecosystem Expansion Stage

In synergy with the Hong Kong Park in the Loop, this stage provides midstream and downstream segments of the industry chains with expansion space for the commercialisation of R&D outcomes.

Phase 1 Stage 3 (P1S3): San Tin City-Industry-Hub Stage

A comprehensive and functional landmark of the STT will be developed at this stage, creating a highly integrated zone where industry development and urban development co-exist.

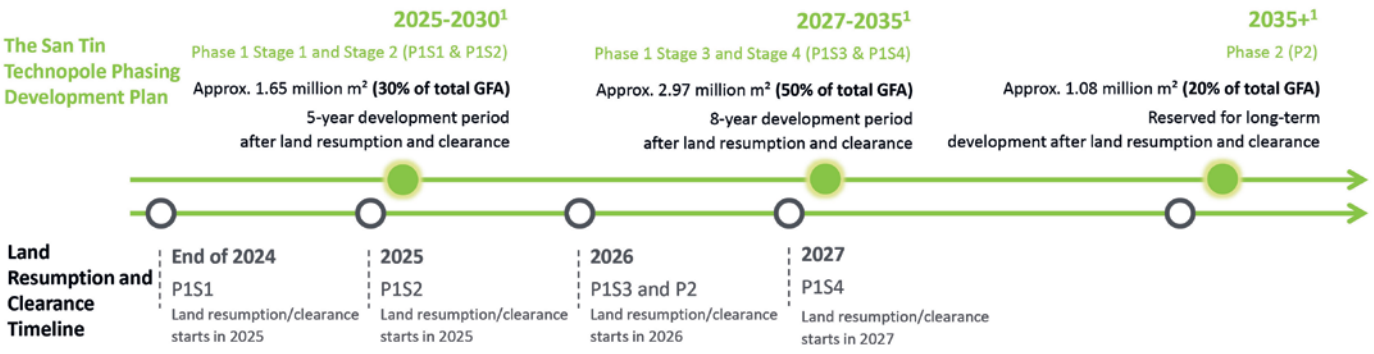
Phase 1 Stage 4 (P1S4): I&T Industry Consolidation Stage

This stage involves large-scale development of the main zone of the STT, fostering a clustering effect.

Phase 2 (P2): Strategic White Space Stage

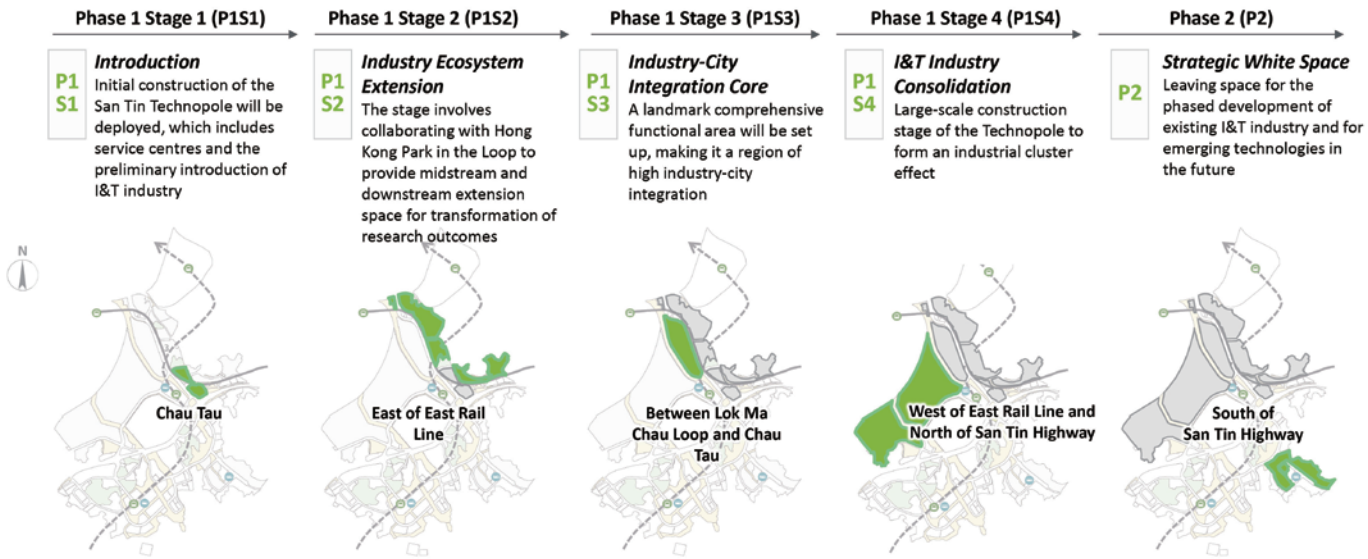
This phase reserves white space for the phased expansion of the existing I&T industry and the development of emerging technologies in the future.

Figure 7 The San Tin Technopole Phased Strategy[1]



Note: 1. The target years shown in the phased development plan are for reference only. Actual development periods will commence upon completion of land resumption and clearance.
Sources: Innovation, Technology and Industry Bureau; public policy documents from the Legislative Council; desktop research

Figure 8 Phased Industrial Development of the San Tin Technopole



Note:
1. The Hong Kong Science & Technology Parks Corporation is conducting a consultancy study on the areas south of Chau Tau. The industrial positioning thereat may be subject to finetuning.
2. The Strategic White Space accounts for approximately 20–30% and can be flexibly adjusted based on actual development needs. More reserved land may be released during the P1S4 phase. Separately, the three land parcels in southwestern regions south of the San Tin Highway are classified by the Development Bureau as pilot areas of large-scale land disposal.
3. Proposed railway and station locations are for reference only.

2.3 Industrial Use of Land Parcels

Prototype for Industry Ecosystem Development

Regarding spatial planning, it is proposed that in taking forward each phase of development at the STT, the development hubs will be responsible for co-ordinating and leading the development of various advanced industries, such as life and health technology, AI and robotics, microelectronics and smart devices, new materials, new energy and green technology, as illustrated in Figure 9. In collaboration with the Hong Kong Park in the Loop, the STT will provide I&T industries with an integrated space for offices, prototyping, test and pilot production, as well as manufacturing.

Functions of Development Hubs and Corridors and their Collaboration

- Definition of **"development hubs"**: Development hubs are geographical centres of the entire STT or local areas of the STT which are positioned as comprehensive development zones.

- Definition of **"development corridors"**: Centred around the development hubs, these development corridors form a diversified industry pattern, enabling clustering of similar industries and fostering collaboration among various industry development corridors.

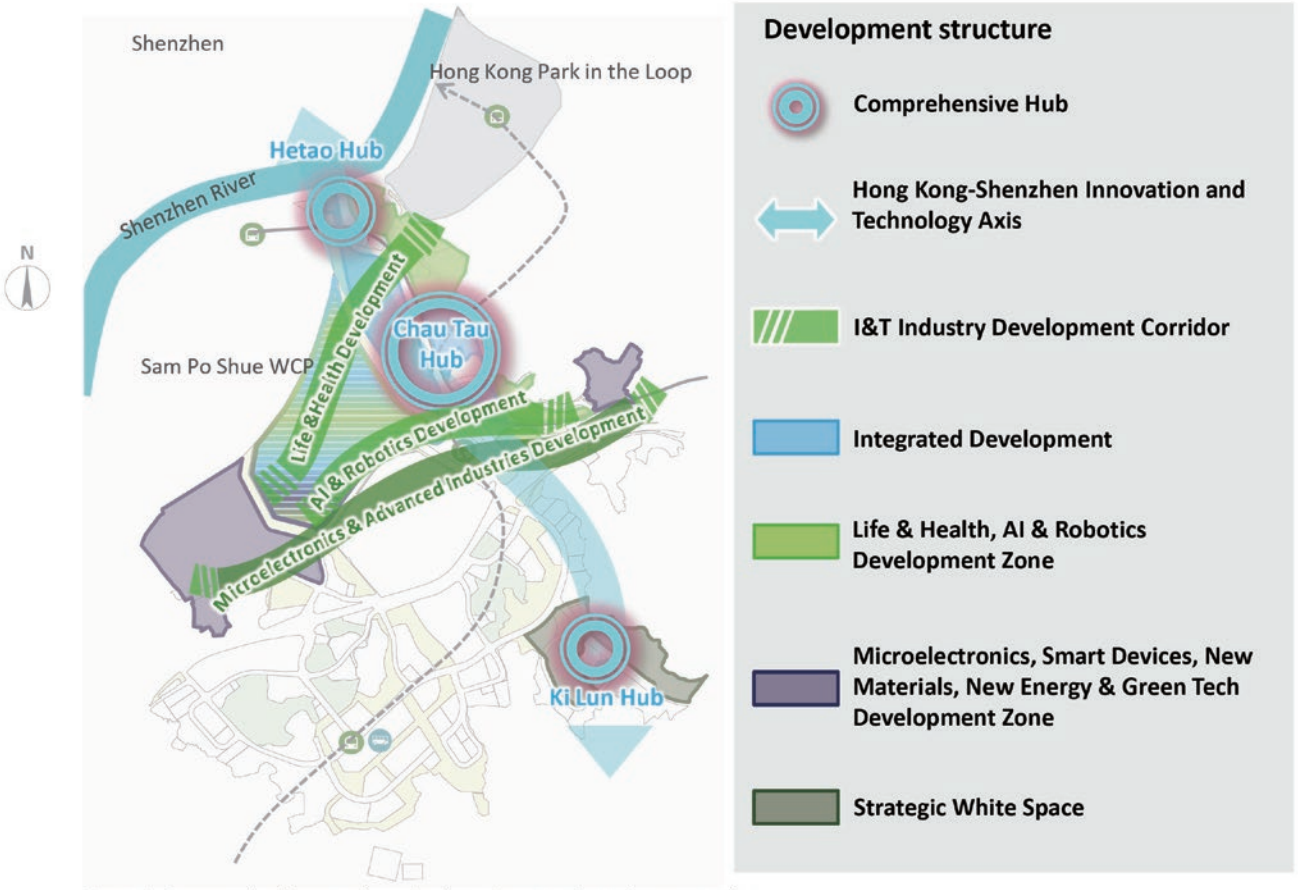
Planning Framework

The proposed planning framework features three development hubs from north to south, tentatively known as the Hetao Hub, the Chau Tau Hub and the Ki Lun Hub. The Hetao Hub is located around midway between the Lok Ma Chau MTR Station and the Hong Kong Park in the Loop. There are ecologically significant resources within and in the vicinity of the area, such as the Sam Po Shue Wetland. The maximum building height in this area is restricted to 35 metres above Principal Datum (mPD) so the I&T industry-related facilities there will be relatively constrained in height. That said, given its proximity to Shenzhen and the Hong Kong Park in the Loop, the area will serve as a bridgehead for I&T. The Chau Tau Hub, located near the Chau Tau Station of the Northern Link under planning, will be bringing in top-tier international academic and research institutions, patent and certification services, as well as other services provided by professional bodies. There will also be office spaces for I&T enterprises, hotels, and accommodation for international talents, which will create a park-like environment for active exchanges and open sharing. Given that the strategically reserved land for future development or the strategic white space in the southernmost is geographically distant from the primary I&T zones in the STT, it will be difficult for the Hetao Hub and the Chau Tau Hub to extend their hub functions to that area. Moreover, since the above area is close to the densely populated residential zone in the STT and the planned San Tin MTR Station, it is proposed that another hub, i.e. the Ki Lun Hub, with supporting commercial facilities for I&T talents should be established to serve as a central node of development planning for exploring city-industry integration in the area, with strategically reserved land for accommodating I&T development trends in the future.

The entire piece of new I&T land in the STT will be divided into land parcels along the three hubs in the STT, forming the Hong Kong-Shenzhen I&T axis and three industry development corridors. The development hubs will take the lead, with the northernmost corridor promoting the efficient development of life and health technology in collaboration with the Hong Kong Park in the Loop, and the southern side of the Chau Tau Hub advancing the development of two corridors, one for AI and robotics and another for microelectronics and advanced industries.

The new I&T land around San Tin in the STT and the Hong Kong Park in the Loop will together form a crucial node for the integrated development of upstream, midstream and downstream industries, offering full-chain support to I&T industries by providing a comprehensive space for offices, prototyping, test and pilot production, as well as manufacturing. From a strategic positioning perspective, the development hubs are located at the geographical centres of the entire STT or local areas of the STT, functioning as "mini-central business districts". The development of similar industries in areas close to the development corridors will enable clustering of industries and foster collaboration among various industry development corridors.

Figure 9 Planning Framework of the San Tin Technopole



Note: 1. Proposed railway and station locations are for reference only

Industry Zoning

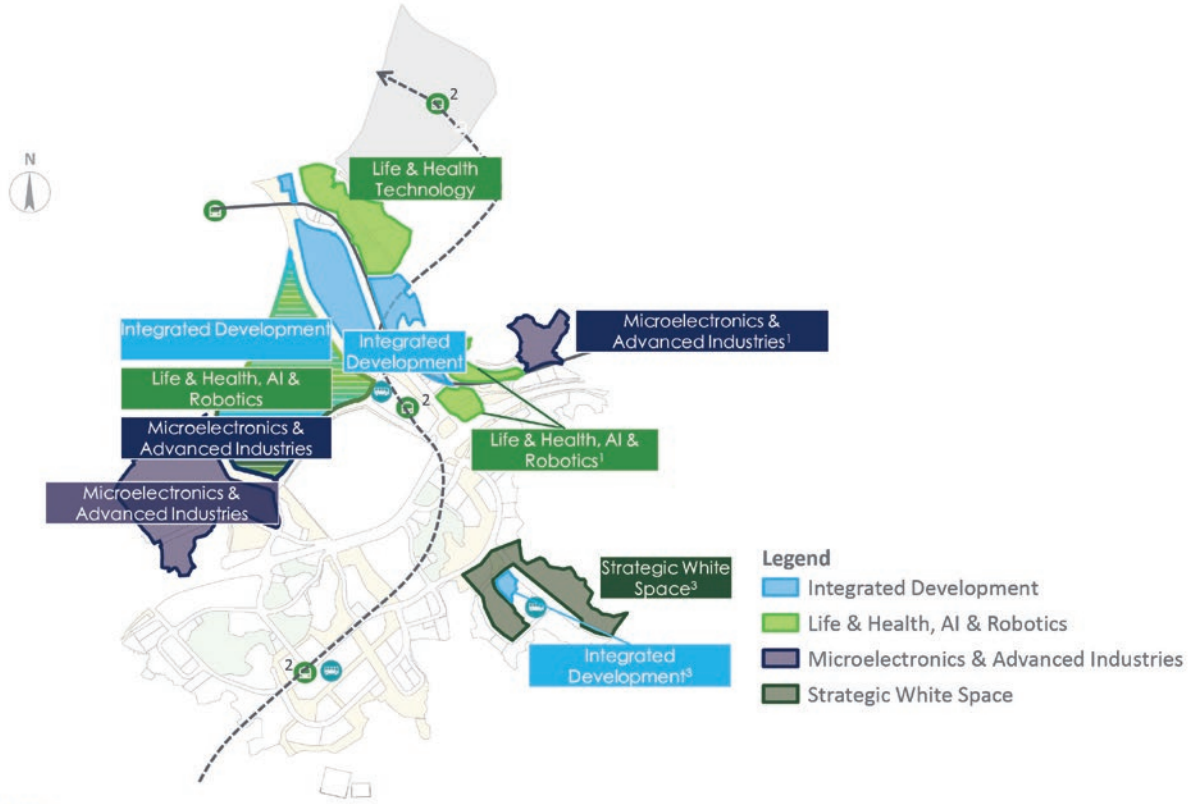
Comprehensive Development Zones: Land parcels for comprehensive development of government agencies, industry institutions or industry ecosystem supporting facilities, such as professional services, academic institutions, exchange centres, catering and retail establishments.

Zones for Life and Health Technology, AI and Robotics: Priority zones for life and health technology, and AI and robotics industries, which will help bring in top-notch enterprises together with related upstream and downstream industry chains to form industry clusters. With a preference for R&D, office and factory-cum-office setups, these industries require standalone or flatted spaces for office development.

Zones for Advanced Industries like Microelectronics and Smart Devices, New Materials, New Energy and Green Technology (hereinafter referred to as "microelectronics/advanced industries" or "microelectronics and advanced industries"): Priority zones for advanced industries like microelectronics and smart devices, new materials, new energy and green technology , which will help bring in top-notch enterprises together with related upstream and downstream industry chains to form industry clusters. With a preference for standalone factory and factory-cum-office setups, these industries require larger production spaces for prototyping and pilot trials in addition to office spaces.

Strategically Reserved Land of the White Space: Land parcels reserved for the flexible use of the above I&T industries and related ecosystem supporting enterprises, or sites strategically reserved for development of emerging technology industries in the future.

Figure 10 Industrial Zoning of the San Tin Technopole



Note:
1. The Hong Kong Science & Technology Parks Corporation is conducting a consultancy study on the areas south of Chau Tau. The industrial positioning thereat may be subject to finetuning.
2. Proposed railway and station locations are for reference only.
3. The three land parcels in southwestern regions south of the San Tin Highway are classified by the Development Bureau as pilot areas of large-scale land disposal.

2.4 Function Design

The function designs of P1S1 and P1S2 aim to reserve suitable sites for the development of science and technology industries, facilitate the provision of office, prototyping and production spaces, and offer one-stop services for enterprises. In particular, the land parcel for the life and health technology industry has a relatively low building area requirement, which is conducive to the low density park development. Contrary to the northern land parcel, the site concerned is connected to the Hong Kong Park in the Loop on the east. Such arrangement will facilitate the co-ordinated development between the new I&T sites of the STT and the Hong Kong Park in the Loop, and offers diverse forms of buildings to meet the needs of the life and health technology industry. The land parcels within this area are suitable for smaller enterprises which have to operate solely on their own due to industry-specific production constraints.

The planning for P1S3 will seek to develop a core city-industry integration hub, with a design for a 10-minute neighbourhood incorporating spaces for international headquarters, commercial complexes and talent accommodation. At this stage, a network of cloud corridors and footbridges will be built to link up the main industry zones and the comprehensive hubs of the STT, with a view to enhancing walkability and industry connectivity. Moreover, a quality environment for walking will also be created, making the footbridge network a prominent public architectural feature.

Adjoining the Sam Po Shue Wetland, the development site of P1S4 boasts eco-friendliness while fostering collaboration among research personnel. It is recommended that buildings in the area may combine laboratory and multi-purpose social spaces to support the development of enterprises.

The development site of Phase 2 is adjacent to the Northern Metropolis Highway and has a building height restriction of 170 mPD. The lenient height restriction and the medium-sized land parcels bring about diverse development potential in different aspects and provide enterprises with flexibility in spatial arrangements, thereby supporting the development of various industries. The function design of Phase 2 should remain consistent with the building prototypes in previous phases, with certain land area strategically reserved (the strategic white space) to better meet the needs of emerging technology industries in the future.

Please refer to Figure 11 for an overview of the function design and ecosystem supporting facilities in the spatial planning of the STT.

2.5 Ecosystem Supporting Facilities

In the planning of the STT, consideration has been given to location selection, moving-in and growth of enterprises as well as the employment, living, learning and social needs of I&T talents, etc. The ecosystem supporting facilities will be classified into three categories, namely industry support facilities, liveability services and industry infrastructure. With regard to the supporting facilities of P1S1 and P1S2, services sites should be reserved for taking forward the management of the I&T Park and the provision of industry-specific facilities, while for the ecosystem supporting facilities of P1S3 and P1S4, focus should be put on enhancing the supporting facilities and infrastructure for the I&T industry in the STT to foster the I&T atmosphere. In addition, professional services sites can be separately reserved in the P2 land parcels for supporting facilities required to provide research personnel with liveability services. Certain white zones of the P2 site should also be strategically reserved for other supporting facilities to be considered in subsequent phases.

Phase 1

Planning Principles

- **To reserve land for government offices to take forward the development of the initial phase**: The I&T development of the STT should feature the channelling of both public and private resources. Therefore, the planning of Phase 1 should actively align with this direction by reserving space for the moving-in of relevant government offices and facilities.

- **To establish an I&T industry platform or attract international R&D institutions**: The most crucial task during the initial phase is to build a high-profile I&T industry platform or attract top-notch international research institutes, so as to enhance exposure and thus the clustering effect.

- **To highlight and reinforce the advantages of Hong Kong and Shenzhen (and the GBA)**: In planning for the ecosystem supporting facilities, focus should be placed on both software and hardware industry support facilities to highlight and reinforce the advantages of the STT, with a view to leveraging strengths under the principle of complementarity with the Mainland cities like Shenzhen and fostering synergy in development.

- **To improve the necessary infrastructure for the I&T industry:** The development of supporting infrastructure should aim to consolidate the upstream and downstream sectors for an enhanced industry ecosystem. Development of industry-specific infrastructure should also be considered to facilitate efficient vertical integration.

Phase 1 Stage 1 (P1S1) and Phase 1 Stage 2 (P1S2)

Industry Support Facilities

- **Land reserved for professional services facilities**: To reserve land for service platforms to facilitate subsequent establishment of one-stop service platforms, cross-boundary co-operation offices, investment promotion centres, etc. according to development needs, thereby promoting international co-operation, technology transfer and the development of innovation ecosystems.

Industry Infrastructure

- **Supporting facilities for the development of life and health technology industry** (e.g. cold-chain logistics and biobanks): There is a clear industry demand for cold-chain logistics and biobanks. Such facilities can be operated by the private sector and can also serve the Hong Kong Park in the Loop.

- **Supporting facilities for the development of AI and robotics industry** (e.g. scenario incubation experience centres): The land parcel can be used to develop scenario incubation experience centres by top-notch enterprises to provide a public showcase function for the the AI and robotics industry development.

Liveability Services

- At this stage of industry development, it is expected that the operation of the land parcel concerned will be undertaken by enterprises. The interpretation of "Other Specified Uses (I&T)" in the Notes of the published San Tin Technopole Outline Zoning Plan also allows enterprises to put in place their own talent accommodation and other living facilities (e.g. catering and retail establishments).

Phase 1 Stage 3 (P1S3) and Phase 1 Stage 4 (P1S4)

Industry Support Facilities

- **Platforms for conventions, exhibitions and venture capital**: To construct a small convention and exhibition venue for hosting I&T conventions, exhibitions and major events at regional level, as well as to leverage Hong Kong's advantages in capital as a financial hub to establish a dedicated venture capital platform and investment institutions.

- **Top-notch international academic and research institutions**: To reserve suitable space and implement facilitation measures to attract world-class leading academic and research institutions to establish a presence, and to drive technological breakthroughs and commercialisation of technology applications in relevant industries by providing cutting-edge technologies and innovative thinking.

- **patents and certification service, and services provided by other professional bodies:** To reserve service space for promoting transformation of innovative outcomes, capital raising and patent and certification applications.

Industry Infrastructure

- **The San Tin Cloud Corridor**: To consider introducing low-capacity and eco-friendly transportation facilities such as Travellator, Personal Rapid Transit (PRT) and Autonomous Shuttle to extend the coverage of major transit systems.

- **Industry development infrastructure** (e.g. data centres and computing centres): To provide the AI industry with powerful computing resources and a secure environment to support big data processing, model training and testing, offer flexible and scalable support for cloud computing services and create an environment with secure configurations to ensure the safety of data application and computation.

- **Supporting facilities for the development of microelectronics and smart devices/new materials industry** (e.g. reclaimed water treatment and reuse facilities specifically for microelectronics and smart devices/new materials[2]): To provide supporting facilities for prototyping/pilot production of advanced industries (such as microelectronics) dedicated reclaimed water treatment and reuse plants to ensure that the production process is stable and environmentally sustainable.

- **Efficient logistics infrastructure**: To provide transportation services for timely product delivery worldwide, supported by efficient warehousing, precision packaging and real-time tracking functions to enhance supply chain efficiency.

[2] Certain production processes of advanced industries such as microelectronics and smart devices as well as new materials will generate large amount of industrial wastewater. By using dedicated reclaimed water treatment facilities to process and produce reclaimed water for reuse, industrial wastewater discharge will be reduced and sustainable operation of the water cycle can be achieved.

Liveability Services

- **Venues for Talent exchanges**: To provide venues for holding annual global technology mega events, featuring, among others, a global academic collaboration ecosystem, an I&T business academy, relevant forums and seminars, international talent exchanges, and professional training.

- **Hotels and apartments for international talents**: To plan for an appropriate proportion of hotels and talent apartments to cater for the living needs of professional talents of enterprises, with proposed locations on the southern side of the land parcel and supplemented by access to retail and other living facilities.

- **Leisure retail streets**: To provide appropriate retail functions to meet the needs of the working population in the course of the development.

Phase 2

Planning Principles

- To reserve development sites to promptly address the I&T industry development needs in the area.

- To allow certain flexibility in development by strategically reserving space or the white zone for considering supporting emerging technology industries in the future at subsequent phases.

Industry Support Facilities

- Land reserved for professional services facilities: The area is relatively distant from the primary I&T zones of the STT. As such, land can be reserved for professional services facilities in the area to enable I&T-related companies to establish their presence therein, in a bid to address efficiently the I&T industry development needs.

Liveability Services

- To improve liveability support services for R&D talents. Proposed supporting facilities for other industries will be considered at subsequent phases.

- A community for R&D talents: To foster a convenient living community for I&T experts and their families, and create a residential zone within the STT to strengthen city-industry integration.

- Education supporting facilities: To provide education supporting facilities adjacent to the R&D community to meet the education needs of children of the I&T talents.

2.6 Overview of Industrial Spatial Planning

Figure 11 Overview of the San Tin Technopole's Spatial Layout, Functional Design, Supporting Facilities and Infrastructure

Overview of Industrial Spatial Planning of the San Tin Technopole

P1S1 and P2S2

1. Integrated development
2. Life and health science technology industrial use
3. Supporting facilities for the development of the life and health science technology industry (e.g. cold chain logistics and biobanks)
4. Life and health, AI and robotics industrial use [1]
5. Supporting facilities for the development of the life and health, AI and robotics industry (e.g. scenario incubation experience centre)
6. Microelectronics and smart devices, new materials, new energy and green technology, and other advanced industrial use

P1S3

7. I&T office space
8. Leading international research and educational institutions
9. Patents, certifications, and other professional services
10. Hotels and international talent accommodation
11. San Tin Cloud Corridor [2]

P1S4

12. Exhibition, venture capital platform
13. Talent exchange venue
14. Hotel and international talent accommodation
15. Leisure commercial zone
16. San Tin Cloud Corridor [2]
17. Supporting facilities for industrial development (e.g. data centres, computing centres)
18. Supporting facilities for industrial development (e.g. reclaimed water treatment and reuse facilities for microelectronics/new materials)
19. Supporting facilities for industrial development (e.g. efficient logistics infrastructure)

P2 [3]

20. Integrated development
21. Strategic White Space

Note:

1. The Hong Kong Science & Technology Parks Corporation is conducting a consultancy study on the areas south of Chau Tau 4 5 6 . The industrial positioning thereat may be subject to change.
2. The Cloud Corridor refers to a covered, pedestrian bridge network, used for connecting the major industrial zones and integrated hubs of the San Tin Technopole;
3. The three land parcels in southwestern regions south of the San Tin Highway 20 and left of 21 are classified by the Development Bureau as pilot areas of large-scale land disposal.
4. Proposed railway and station locations are for reference only.

Chapter 3 Formulation of Development Model

Development Model

Development Model Options

To achieve the objectives of developing the STT into a key I&T hub supporting the country's "bringing in and going global" strategy, a major area for the development of future emerging technology industries in Hong Kong, and an important base for developing new quality productive forces, four major factors should be taken into consideration in deciding on the development model:

(1) To expedite the development process. To bolster market confidence in the development of the STT, multiple resources should be co-ordinated at the initial development stage to expedite the process, and certain land area should be reserved for the development/implementation of iconic zones/projects with a comprehensive ecosystem.

(2) To balance strategic development and financial return. The I&T sites in the STT are characterised by high development costs and long payback periods. To meet the long-term goal of promoting industrial transformation and economic growth, placing too much emphasis on short-term financial return should be avoided. There should be room for private sector participation and investment to optimise development costs.

(3) To adhere closely to the industry-oriented principle. Leading enterprises should be attracted to establish their presence in the STT to foster the formation of industry clusters, and dovetail with the positioning of the STT in midstream and downstream transformation of R&D outcomes. The development at different stages should be tailored to the actual circumstances in a flexible manner, having regard to the characteristics of the land parcels, development maturity, market response, investment return profiles, etc. in each phase, thereby ensuring the orderly development of the STT.

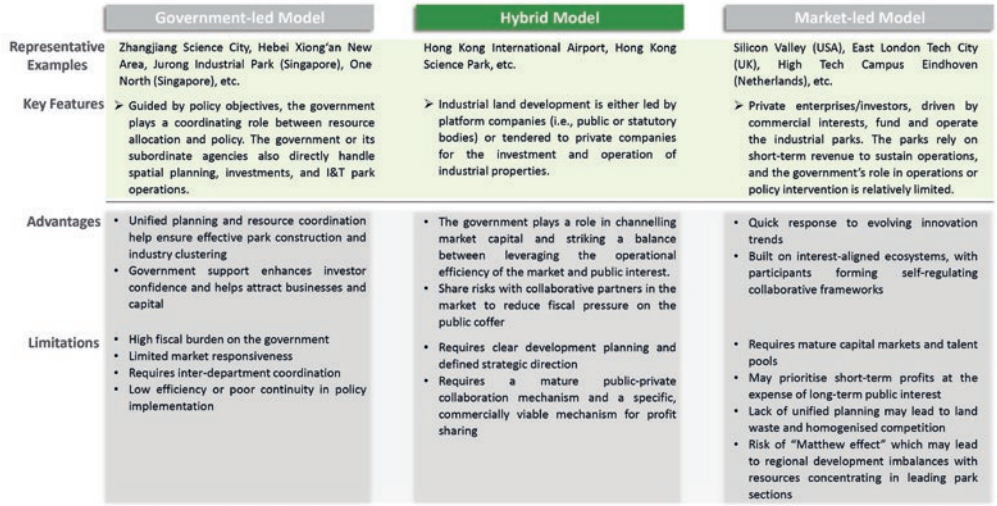
(4) To ensure co-ordinated and consistent development. Given the large scale, the long time span and a diverse range of industries involved in the development of the STT, it is essential to ensure consistency and co-ordination in development at each stage. An effective co-ordination body should be established to ensure the implementation of the Government's industry policy on one hand, and to flexibly adjust the development pace and measures in light of the actual situation on the other hand, with a view to ensuring that the development positioning, design concepts, operation and management of the STT are in line with the directions and objectives of the Government's industry policy.

Around the world, Government-led and market-led approaches are both adopted in developing industry land. In Hong Kong, the development model for industry land is a mix of both. Many industry land development projects are led by "platform companies" (i.e. public organisations/statutory bodies), such as the Airport Authority Hong Kong. Alternatively, projects may be taken up by private companies through tendering, and under which the company will take charge of the investment or operation of the properties concerned. Examples include the Kai Tak Sports Park.

Under the model of mixed approaches, the Government can play a role in channelling market capital and striking a balance between leveraging the operational efficiency of the market and public interest. This approach can also reduce fiscal pressure on the public coffer through risk-sharing with collaborative partners in the market, thereby giving play to the combined strengths of "a capable government and an efficient market". This approach requires a sophisticated public-private partnership mechanism, setting out clearly the party taking the lead and relevant profit-sharing arrangements.

Rendering

Figure 12 Summary of Innovation and Technology Park Development Model



Development Model for the STT

As the STT involves a huge financial investment and a long payback period, the institution spearheading the STT development needs to have strong financial capabilities. In selecting the development model for the STT, the Government should follow the guiding principle of "a capable government and an efficient market". Therefore, it may consider establishing a "platform company" to take forward the development of the STT in collaboration with the market.

A "capable government" implies that Government will make a long-term commitment to investment. Given the high land development costs and the long payback period of the STT, it is necessary to have the financial capacity for sustained investment, such as having a balance sheet that can support larger-scale financing. The Government may jointly develop the STT with the market through the "platform company" by bearing the land and construction costs in the form of equity investment, thereby ensuring that the STT development will align with Hong Kong's long-term planning while making up for its commercial viability.

An "efficient market" implies that market resources will be fully utilised. The platform company of the Government may explore various co-operation models with enterprises, such as Build-Operate-Transfer (BOT), Build-Own-Operate (BOO), Joint Venture (JV), and Design-Build-Finance-Operate (DBFO), to channel market capital for supporting the smooth execution of core parts of the project including development, construction and operation. While appropriate development models and collaborative partners will be selected according to the industry themes of different zones within the STT, monitoring and incentive mechanisms will also be established to ensure consistency with respect to the development objectives of collaborative partners and the Government.

In particular, the platform company may adopt a two-tiered or multi-tiered structure to balance long-term strategic development objectives while leveraging market resources to accelerate development and optimise development costs.

For the first tier of the platform company, it will be wholly owned by the Government, with the Board members of the company appointed by the Government to ensure that the direction governing major decision-making will be in line with the Government's industry policy objectives. As for the second tier, the platform company may collaborate with enterprises through various models as mentioned above, such as BOT, BOO, JV, or DBFO, by establishing subsidiaries (project companies) to engage in strategic co-operation with collaborative partners or obtain investments from them.

There will be a wide range of potential collaborative partners in the market, including investors, industry players, developers and conglomerates/state-owned enterprises. With a relatively large capital size, investors such as private equity funds, pension funds and insurance companies demonstrate strong resilience to short-term financial fluctuations and focus on return in the long run. As industry players possess experience in developing the I&T industry, the participation of relevant industry leaders can help enhance the I&T ecosystem of the STT timely to achieve the objective of industry-oriented development. Meanwhile, developers may include local, Mainland and overseas property developers, which have strong execution capabilities in real estate development. Focusing on policy-aligned and strategic investments, conglomerates/state-owned enterprises including public utilities, main building contractors and company groups will be collaborative partners offering diverse industry resources. For the STT development, there could be a flexible choice of multiple strategic co-operation or investment models, based on such circumstances as location of the land parcels, themes of development and project phasing.

Chapter 4 Economic Benefits

Estimated Economic Benefits

The STT is an important bridgehead for Hong Kong's I&T development with the goal of developing the Northern Metropolis into a new world-class I&T centre. Apart from serving as the core of the I&T development clusters, the STT also seeks to foster synergy with Mainland cites in the GBA with a view to fostering a new industry pattern in Hong Kong, thereby enhancing Hong Kong's global position in technological innovation.

The STT will focus on developing high value-added I&T industries such as life and health technology, AI and robotics, microelectronics and smart devices, new materials, and new energy. These technology-intensive, knowledge-intensive and capital-intensive industries, characterised by their high value-added nature, are capable of generating significant economic impact.

The STT will build a complete I&T ecosystem around the above-mentioned industries, in which the clustering of industries can facilitate smooth and convenient knowledge exchange and technical co-operation among enterprises, the availability of supply chains nearby can enhance industry efficiency, and the demand for I&T commercialisation can be further stimulated by the convention and exhibition industry and the producer services industry. This comprehensive and vibrant ecosystem will help attract more enterprises to set up international or regional headquarters, R&D centres, as well as pilot production or manufacturing bases in the STT, which can further drive economic growth and create more employment opportunities.

Meanwhile, the design of the STT, which promotes city-industry integration, will attract an international pool of I&T talents and provide direct employment opportunities in I&T. It will also create numerous indirect and induced employment opportunities and economic values for the related producer services industry, including, among others, catering, retail, healthcare, education, logistics, transport and property services.

As regards the economic impact assessment on the STT, according to the consultancy firm's estimation[3], the STT will contribute some HKD 250 billion or more to Hong Kong's GDP annually (including direct, indirect and induced contributions) upon its full operation.

In terms of employment opportunities, according to the consultancy firm's estimation, the STT will provide over 300 000 full-time equivalent (FTE) positions (including direct, indirect and induced employment) for the Hong Kong economy as a whole.

[3] The GDP contribution of the STT and the number of FTE positions brought by the STT are calculated as follows:

Direct value added and direct employment: Direct employment is calculated by multiplying the total gross floor area of various sites in the STT, estimated by category of function design and ecosystem supporting facilities (e.g. pilot production, R&D, data centres, convention and exhibition, retail, talent apartments, and hotels), by the worker density in the respective categories. Direct value added is obtained by multiplying direct employment by gross value added per worker.

Indirect value added and indirect employment: On the basis of direct value added, indirect value added is calculated by applying an indirect value added multiplier to the direct value added, while indirect employment is calculated by applying an indirect employment multiplier to the indirect value added.

Induced value added and induced employment: Induced value added and induced employment are calculated by applying an induced value multiplier to the sum of direct and indirect value added.

Chapter 5 Closing Remarks

Closing Remarks

With a clear development positioning, the STT serves as a vital platform for the development of Hong Kong's I&T industry. As a key I&T hub supporting the national strategy of "bringing in and going global" and a major area for developing emerging technology industries in the future, the STT will focus on the development of advanced technology industries, including life and health technology, AI and robotics, microelectronics and smart devices, new materials, new energy, and green technology.

The new I&T sites around the STT will provide ample space for the midstream and downstream development of the I&T industry chain. The industrial spatial layout design of the STT will align with the industry-specific spatial functions and ecosystem support requirements of various I&T industries, providing spaces for offices, prototyping, test production, pilot production and manufacturing, as well as the provision of supporting facilities along each industry development corridor, thereby promoting the efficient flow of innovative resources and collaboration among enterprises and talents. The STT will, together with the Hong Kong Park in the Loop, form an I&T ecosystem with co-ordinated development across the upstream, midstream and downstream sectors.

Combining the successful experiences of leading global I&T parks with Hong Kong's unique characteristics, the development of the STT will adopt a pivotal approach of a "capable government and an efficient market", integrating the forces of the Government, the industry, as well as the academic, research and investment sectors organically. By leveraging the role of the Government in channelling market capital and fully harnessing the operational efficiency of the market, the STT will accelerate its co-ordinated development under the industry-oriented principle and build a vibrant industry ecosystem to provide staunch support for achieving the goal of developing Hong Kong into an international I&T centre.

Looking ahead, the STT will capitalise on its unique advantages to facilitate the development of high-quality I&T industries in Hong Kong and pool together global I&T resources and talents. In so doing, the STT will help expedite the integrated development of technological and industrial innovations in Hong Kong, thereby spearheading the high-quality development of the Hong Kong economy.

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