Introduction

After China’s Open Door Policy in 1978, Shenzhen transformed itself from a fishing village to a global innovation hub, and was predicted to become the ‘Silicon Valley of the East.’ As China’s ‘testing ground’ for its Open Door Policy, Shenzhen tested and implemented a number of innovative policies to promote economic development. The city’s modernization went through three main stages—the construction phase (1980-1985), the restructuring phase (1986-1990s), and the re-engineering phase (mid-1990s onwards).

The main aim of the policies of the Shenzhen municipal government, particularly during the re-engineering phase, was to promote science and technology development through open innovation. The government devised and implemented policies to steer the city towards high-tech development. This was clearly indicated by Shenzhen’s spending on R&D as a percentage of GDP, which reached 4.13 per cent in 2017—the highest of any Chinese city. In addition, the Shenzhen government encouraged an open source system of innovation that was considered an important driver of creativity and efficiency.

Shenzhen became an attractive place for both local and international technology companies to set up their offices or regional headquarters. Shenzhen’s economic incentives also attracted Hong Kong and international innovators and entrepreneurs establish joint programmes and innovation
centres that advanced the exchange of information, technology, R&D breakthroughs, and talent. Collaborative projects began to sprout in the 2000s in various places in Shenzhen.

In 2017, Shenzhen and Hong Kong signed the Memorandum of Understanding on Jointly Developing the Lok Ma Chau for higher education and innovative and scientific research. For this project, the main stakeholders were the Shenzhen municipal government, local and foreign startups and entrepreneurs, participants in the development and management of innovation hubs and science parks, and banks that provided loans for the infrastructure construction.

Shenzhen’s achievements and stellar performance in innovation and technology put it on the path to becoming the ‘Silicon Valley of the East.’ As you read this case study, consider the following questions:

- How does Shenzhen’s approach to development differ from other highly innovative cities like Palo Alto, California?
- Does Shenzhen’s success showcase an alternative policy path to creating a highly innovative city?

From ‘Factory of the World’ to ‘Silicon Delta’

Shenzhen had been a sleepy town located north of the British colony of Hong Kong before the People’s Republic of China promulgated the Open Door Policy in 1978 as part of the reforms set out in the Central Government’s Decision on a Number of Issues Concerning the Institutionalization of the Market Economy white paper. In 1979, Shenzhen was promoted to city status, consisting of six districts occupying a total area of 2,020 km². At the time, Shenzhen’s population was only 0.31 million. In 1980, Shenzhen was selected to be among the first Special Economic Zones (SEZs), the others being Zhuhai, Shantou, and Xiamen. Shenzhen had the advantage of being close to Hong Kong. The original SEZ in Shenzhen only included four administrative districts, namely Yantian, Luohu, Futian, and Nanshan, covering an area of 392 km². In 2010, the SEZ was expanded to the whole city of Shenzhen. SEZs functioned as “windows” for “observing global trends in economic, scientific, technological, managerial and market developments”, “training grounds” for Mainland Chinese talent, and “experimenting grounds” for “special economic management systems, flexible economic measures for enhancing economic cooperation and technology interflow between China and foreign countries.”

Since the advent of the Open Door Policy, the development of science and technology was seen as crucial to Shenzhen’s modernization. With the encouragement and support of the Chinese central government, the Shenzhen municipal government experimented with various market-
oriented policies, including employment and wage systems, immigration, housing, household registration, finance, etc. (see Exhibit 1 for examples of major policy shifts). In January 1984, Deng Xiaoping, the architect of the Open Door Policy and the principal decision maker in the establishment of SEZs, made a historic visit to Shenzhen. He was encouraged by the progress he saw, and remarked that the experiment of opening up was a success. His visit reinforced Shenzhen’s role as an “experimenting ground” for innovative policies which were gradually adopted in other sectors, departments, and cities within the country.

Shenzhen’s economic development could be divided into roughly 3 phases: the construction phase (1980-1985), the restructuring phase (1986-1990s), and the re-engineering phase (mid-1990s onwards). While Shenzhen’s development was generally characterized as rapid, each of these 3 stages possessed some unique features. The construction phase saw very little foreign investment, since most foreign investors preferred to adopt a ‘wait and see’ strategy. What little foreign investment existed came mostly from Hong Kong, which transferred its low value-added, labour-intensive outward processing activities to Shenzhen. These involved the assembly and manufacture of products that relied on imported parts and design, and which were then re-exported to other countries. In that initial stage of development, the government spearheaded huge infrastructure and building construction investments in Shenzhen.

The restructuring phase was mainly characterized by the efforts of the Shenzhen municipal government to improve the attractiveness of the investment environment to foreign investors and to boost exports. The decision by the Chinese central government to introduce economic readjustment policies and stringent fiscal control in 1985 meant that domestic sources of funding could no longer be relied upon and Shenzhen had to adjust its strategy to raise more funds from foreign investment and exports. This required administrative reforms to streamline government structures and operations, and to end government control over economic enterprises by granting the latter freedom from interference by government units into their financial and manpower matters. Learning from Hong Kong’s experience, the Shenzhen municipal government established a land market to increase government revenue needed to build infrastructures necessary to attract foreign investments.

The re-engineering phase was marked by China’s accession to the World Trade Organization, the establishment of more SEZs in the country, and Shenzhen’s reinvention of itself from ‘factory of the world’ to a ‘world city’ through innovation and the creation of new, original products. Measures were adopted to move towards high-tech industrial development, with a focus on R&D and innovative industries, which continued to the present. To boost innovation and technology development, the Shenzhen New and High-tech Production Investment Services Company was set up in 1996 to assist high-tech companies seeking bank loans. Since then, Shenzhen has become a hothouse of innovation home to many high-tech giants (Exhibit 2).
Besides the joint innovation zones (or R&D centres) run by Hong Kong universities and Mainland educational (and research) institutes based in Shenzhen, there were also many that were run by top international universities (Exhibit 3). Shenzhen gained the reputation of being the world’s leading innovation hub for future technologies, with many dubbing it ‘Silicon Valley of the East’ or ‘Silicon Delta.’

The developmental trajectory of Shenzhen would not have been possible without decisive support from the Chinese central government. Beyond the general decentralization measures, Shenzhen was also granted significant autonomy over its economic affairs—similar to that of a province such as Guangzhou. As such, the Shenzhen municipal government could draw up its own laws and regulations. This allowed for favourable fiscal arrangements that enabled the municipal government to retain a higher proportion of its revenue for urban development. Additionally, throughout its economic development, the city’s municipal government played the role of a purposive reformer, steering the SEZ towards industrial diversification, the development of high-tech industries, and a service- and knowledge-based economy through innovation and R&D. In the 13th Five Year Plan (2016-2020), the State Council reinforced the direction it wanted for Shenzhen, saying that:

“We will support the Pearl River Delta as it leads opening up, innovation, transformation, and upgrading, and accelerate the development of science and technology centres and industrial innovation centres in Shenzhen.”

In addition, to promote the continuous improvement of products and services and the equitable distribution of wealth and economic opportunities, the Shenzhen municipal government promoted the sharing of resources though open-source technologies and innovation.

**Global Open Innovation Ecosystem**

Shenzhen believed that an open-source system was the key driver of the innovation, creativity and efficiency that it needed to transform itself into the next Silicon Valley. Shenzhen has transformed from being a producer of knockoff brands and goods (referred to as ‘Shanzai’ in Chinese) into a producer and innovator of digital products (the so-called ‘New Shanzai’). This was partly due to the adoption of the digital open collaboration (or ‘open-source’) systems. Such an ecosystem required a culture that was “less ego-driven, caring most about product improvement rather than holding property rights.” In an open-source system, innovators would put purpose before profit, promoting “a trustful environment conducive to knowledge-sharing and co-creation.” See Exhibit
4 for four examples of recent initiatives in Shenzhen to promote open technology platforms, the first three by private technology enterprises and the fourth by the Shenzhen municipal government.

Shenzhen’s transformation after being selected as one of the first SEZs in 1980 from a low-end manufacturing centre to a technology and innovation hub was aided by its proximity to Hong Kong. Since the signing of the Closer Economic Partnership Agreement in 2003, the Shenzhen municipal government promulgated various preferential policies to attract Hong Kong entrepreneurs and innovators to start new companies in the city. The two sides set up various joint projects to strengthen exchange and cooperation, particularly in the area of innovation and technology. This was an important part of Shenzhen’s efforts to promote open-source technologies internationally. The next section gives some examples of such policies and collaborative initiatives between these two cities.

**Shenzhen-based Collaborative Initiatives**

There were many joint projects based in different parts of Shenzhen such as Qianhai New District, Longgang District, and Nanshan District. These facilitated talent and knowledge transfer between Shenzhen and Hong Kong. The Qianhai Shenzhen-Hong Kong Modern Service Industry Cooperation Zone (hereinafter Qianhai) was one of them. It was established in 2010 by the State Council. Nearly the whole of Qianhai’s 26 km² sat on reclaimed land southwest of Shenzhen. Qianhai’s location was strategic, being close to two international airports, within one hour of major Pearl River Delta cities, and just 30 minutes from Hong Kong (Exhibit 5). Several locations along the Qianhai coastline were suitable for ports. The construction of buildings, facilities, and infrastructures in Qianhai was scheduled to be completed in 2020, by which time Qianhai would be the world’s fourth largest core business district, after London’s 28 km², Tokyo’s 40 km², and Manhattan’s 60 km². Qianhai could potentially be developed into a financial, innovation and technology, and logistics hub of the Greater Bay Area.⁹

The Qianhai SEZ was designed with even more favourable policies and measures than other areas within the Shenzhen SEZ in order to promote greater cooperation between Shenzhen and Hong Kong. Qianhai offered incentives in the form of capital support, tax breaks, and discounted rents to attract talent and foreign investments, and to entice foreign (especially Hong Kong) entrepreneurs to set up their startups and businesses there. Qianhai-registered companies could apply for capital support if they engaged in any of the five modern services—namely finance, logistics, information technology, creative design, and professional services. The Shenzhen government provided successful applicants with preferential funding in the form of loan interest subsidies, cash rewards, equity investments, or industrial funds.¹⁰
The Shenzhen municipal government also provided other sweeteners. For example, the Qianhai Catalogue of Enterprise for Tax Preferential Program provided tax incentives to Qianhai-registered companies with business engaged in the five service industries mentioned above. Qualifying companies were granted a reduced corporate tax rate of 15 per cent (compared to 25 per cent in most Mainland cities). The Interim Measures on Individual Income Tax Subsidies for Overseas High-end Talents in Short Supply was also implemented in Qianhai, which capped the income tax rate of qualifying individuals at 15 per cent. Additionally, startup founders enjoyed discounted office rents at the Qianhai Shenzhen-Hong Kong Innovation and Entrepreneur Hub (or E Hub for short).\textsuperscript{11}

Established in 2014 by the Authority of Qianhai Shenzhen-Hong Kong Modern Service Industry Cooperation Zone of Shenzhen, the startup incubator E Hub sat on a 40,000 m\textsuperscript{2} site in Qianhai. Jointly managed by the Shenzhen Youth Federation and the Hong Kong Federation of Youth Groups, E Hub aimed to provide an innovative, entrepreneurial base for young people from Shenzhen, Hong Kong, and around the world. E Hub could support about 200 young entrepreneurs and startup companies that focused on the modern services mentioned above. It provided facilities designed to promote innovation and entrepreneurship,\textsuperscript{12} and provided a lodging area that could accommodate about 140 tenants.\textsuperscript{13} In addition, tenants who started a company in Qianhai would be provided with free office space and housing at E Hub for the first year of incubation.\textsuperscript{14}

According to the “Overall Development Plan” of Qianhai approved by the State Council in 2010, Qianhai would serve as a testing ground for liberalization of the yuan with a less restricted flow between Shenzhen and Hong Kong. The Chinese government’s decision to experiment with full convertibility of the yuan in Qianhai would benefit Hong Kong (currently China’s largest offshore renminbi trading centre with estimated yuan deposits of more than 1 trillion yuan in 2014\textsuperscript{15}). This policy to increase the liquidity of the yuan could facilitate capital flows in the form of bank loans and foreign investments, which would benefit innovative companies operating in Qianhai, including those started by Hong Kong entrepreneurs.

Major Hong Kong and foreign banks already started operating in Qianhai, including Hang Seng Bank, HSBC, Credit Suisse, and Bank of East Asia. By 2016, the registered cross-boundary loans in Qianhai totalled about RMB100 billion.\textsuperscript{16} In 2013, Shenzhen started the Pilot Program for Foreign-funded Equity Investment Enterprises, allowing government-approved Qualified Foreign Limited Partners to invest in non-listed domestic enterprises. The following year, another pilot program was introduced that allowed Chinese mainland investors to make overseas investments through the regulated Qualified Domestic Investment Enterprise scheme.\textsuperscript{17} Some of the funding schemes administered by Hong Kong’s Innovation and Technology Commission, e.g. the Innovation and Technology Venture Fund, were designed to attract local and foreign investors, including those based in Shenzhen, to invest in innovation and technology startups in Hong Kong.
According to Witman Hung, Principal Liaison Officer for Hong Kong for the Shenzhen Qianhai Authority, about 164,900 firms were registered in Qianhai SEZ as of early 2018, 40 per cent of which had already started operations. E Hub nurtured around 289 startups recently, half of which were founded by Hong Kong entrepreneurs. These fledgling startups altogether have received a total of about RMB1.4 billion (US$222 million) in funding from investors.¹⁸

To encourage young Hongkongers to start their own businesses locally or elsewhere such as in Shenzhen, the Hong Kong government established the Youth Development Fund in 2016. This fund provided matching grants to NGOs to run innovative youth development projects aimed at helping young people to fulfil their entrepreneurial aspirations. The ratio of the matching fund was capped at 2:1. Each qualifying NGO could receive as much as HK$3 million per year. The financial support provided to qualifying individual young entrepreneur applicants was capped at HK$300,000.¹⁹

Hong Kong collaborated with Shenzhen to provide internship and exchange programmes for young Hongkongers. In 2015, the Shenzhen municipal government provided 300 internship placements and 1,100 exchange opportunities.²⁰ These programs encouraged the youth to expand their horizons beyond Hong Kong and to consider setting up startups in Shenzhen, where they could benefit from mutual learning and technology and knowledge transfer owing to the presence of other top technology talents from the Mainland China and other countries. The experience and knowledge they gained could eventually drive innovation and technology development in Hong Kong as well.

Tony Chan, former president of Hong Kong University of Science and Technology, expressed a similar view when suggesting three things Hong Kong needed to develop as an innovation hub. He cited the example of DJI, the world’s largest drone-making company that was based in Shenzhen, as a model of willingness to try out new things, adaptability, and adventurous spirit:

‘...I am proud of our alumnus Frank Wang Tao, no matter where his company, DJI, is located! The mere fact he was educated in Hong Kong benefits the city, no matter where he chooses to build his career. We should welcome the best but also wish them well wherever they go.”²¹

In addition, to facilitate the free flow of innovation and technology professionals between Shenzhen and Hong Kong, in March 2015, the Hong Kong Information Technology Joint Council and the Shenzhen Computer User Association signed the “Agreement on Exchange, Co-operation and Mutual Qualification Recognition of Shenzhen Hong-Kong ICT Talents.” This resulted in the
introduction of the “Shenzhen/Hong Kong Chief Information Officer (CIO) Reciprocal Recognition Scheme.”

Elsewhere in Shenzhen, other joint innovation projects were established to further promote collaboration on innovation and technology between the two cities. These projects included:

- **Shenzhen-Hong Kong Youth Innovation Entrepreneurship Base** – Established in 2013, this was a joint incubator project that provided a platform for young entrepreneurs from the two cities to create original technology and R&D-focused businesses, and to exchange and incubate ideas. Occupying an area of about 2,000 m², it offered preferential office rates, well-equipped facilities, and professional consultation services. Another advantage of this project was its proximity to the Nanshan Yungu Innovative Industry Zone situated next to the University Town of Shenzhen, which itself was home to several subsidiary campuses of top Chinese universities such as Tsinghua University, Peking University and Harbin Institute of Technology.

- **Nanshan Shenzhen-Hong Kong Youth Innovation and Entrepreneur Hub** – One of the incubators located within this project was the Hong Kong WeChat marketing startup WeMine. The company was granted a year’s worth of free rent at the Nanshan Intelligence Industrial Park, home of the Tsinghua-UC Berkeley Shenzhen Institute.

- **Zetta Bridge** – This was an incubation platform for creative groups and individuals to promote the development of creative design services. A major function of this creative cluster was to provide support to Shenzhen-based manufacturing industry to market locally-created Chinese brands internationally, with the objective of transforming the industry’s image from one of “Made in China” to “Created by China.” Four parties contributed in different ways to the setting up of Zetta Bridge. These were the Qianhai Administration Bureau, the Hong Kong Federation of Design Associations, the China Merchants Group, and the Hong Kong-based Kicers Investment Holdings Limited. Members of Zetta Bridge benefited from professional services, infrastructure support, and financial assistance similar to those at E Hub.

- **Shimao Shenzhen-Hong Kong International Centre and the Software Town of Shenzhen Universiade** – These were two of the many joint innovation zones in Longgang District. The construction of the former began in early 2018 with target completion in 2023, and would include a Shenzhen-Hong Kong youth entrepreneurship and startup centre. The latter served as a science and technology industrial park to attract talent and to provide assistance to small and medium-sized innovative startup companies. In 2017, a Shenzhen-
Hong Kong youth innovation entrepreneurship base was set up in Software Town to provide training and assistance to young technology talent from both cities.26

- **Hong Kong-Shenzhen Innovation and Technology Park** – Situated in Lok Ma Chau Loop along the northern border of Hong Kong, this planned technology park occupied an area of about 87 hectares (Exhibit 6). The area used to be within the administrative boundary of Shenzhen before the realignment of Shenzhen River. A decision made by the State Council in 1997 made the area part of Hong Kong’s administrative boundary. In 2007, the area was announced as one of the major infrastructure projects in the Hong Kong Chief Executive’s Policy Address. A task force was created to initiate and lead the study on the planning and development of the area. After several years of joint study between the two sides, the Memorandum of Understanding on Jointly Developing the Lok Ma Chau Loop was signed in 2017.

- The two sides agreed to develop the Park for higher education and innovative and scientific research under the ‘one country, two systems’ principle of the Basic Law, Hong Kong’s mini-Constitution. The budget for the project was approved in the second quarter of 2018, and an injection of HK$20 billion was earmarked for the first phase of the development. The target was to have the land ready for building works by 2021. 27 The Hong Kong Science and Technology Parks Corporation set up a subsidiary (Hong Kong-Shenzhen Innovation and Technology Park Limited) to oversee the project. In August 1, 2018, Chan Chi-ming, a former deputy secretary of the Development Bureau, started work as its CEO.

While officials were upbeat about this project, others were doubtful about its potential. The government projected that the park would generate HK$60 billion worth of economic spinoffs annually. It attracted initial expressions of interest from Mainland Chinese technology companies and institutes, including the Chinese Academy of Sciences (a national academic institution and R&D centre) because of the its (planned) convenient entry-exit system as well as the robust legal system in Hong Kong. This project was expected to significantly benefit innovation and technology development in Hong Kong, particularly in terms of attracting Mainland Chinese and other foreign entrepreneurs that would boost the supply of talent. However, some legislators in Hong Kong questioned the project and the investments into it, arguing that the park would bring little benefit to Hong Kong mainly because its location was not strategic enough to attract big IT firms and big overseas companies who would prefer more accessible and convenient locations such as Central.28
Summary

Shenzhen’s transition from once a sleepy border town before the Open Door Policy of 1978 to ‘Factory of the World’, and subsequently to an innovation and technology hub with aspirations of becoming ‘Silicon Valley of the East’ has been largely guided and steered by the city’s purposive municipal government. With strong support from the Chinese central government, Shenzhen steered the economy, experimenting with innovative policies to promote industrial diversification and development of the service and technology sectors through innovation and R&D. Shenzhen’s open-source innovation system is considered an important driver of economic efficiency, sustainable development, and a more equitable distribution of the benefits of economic growth. Favourable policies implemented thus far by the Shenzhen Municipal Government have attracted many high-tech companies to establish their bases in the megalopolis. Its proximity to Hong Kong facilitated numerous collaborative initiatives, opening the door to an exchange of skills, knowledge, talent, and technology that enhanced the open-source innovation system.
### Exhibit 1: Major Policy Shifts in Shenzhen

<table>
<thead>
<tr>
<th>Traditional policies</th>
<th>Innovative policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Iron rice bowl” (permanent) employment system</td>
<td>Contract agreement system</td>
</tr>
<tr>
<td>Fixed salary system</td>
<td>Flexible wage system; piecework pay and bonuses</td>
</tr>
<tr>
<td><em>Danwei</em> or work unit system for employment with fringe benefits and social security provisions</td>
<td>Social benefits and social security</td>
</tr>
<tr>
<td>Job allocation system internal to companies</td>
<td>Matching of job requirements and professional skills</td>
</tr>
<tr>
<td>Stringent <em>hukou</em> or household registration system</td>
<td>Relaxed rules for <em>hukou</em> household registration system for migrant workers</td>
</tr>
<tr>
<td>Housing quality linked to <em>Danwei</em> or work unit</td>
<td>Liberalisation of housing and rental markets; home-purchase schemes for workers</td>
</tr>
<tr>
<td>Government intervention in micro economies</td>
<td>Macro strategy and market regulations; separation of commercial functions from the state and government departments; state-owned enterprises given more decision-making powers</td>
</tr>
<tr>
<td>Invitation system for infrastructure projects</td>
<td>Tender system</td>
</tr>
<tr>
<td>Bureaucratic red tape</td>
<td>Streamlined approval and administrative procedures; lower level local departments given more power to approve investment projects of a certain size</td>
</tr>
<tr>
<td>Traditional lending and capitalization system</td>
<td>Tradable stocks and securities system</td>
</tr>
</tbody>
</table>

**Source:** Adapted from Shen and Kee (2017)²⁹
### Exhibit 2: Some of the High-tech Giants in Shenzhen

<table>
<thead>
<tr>
<th>Company/Year established</th>
<th>Major business</th>
<th>Presence in Shenzhen/Year opened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huawei/1987</td>
<td>Smartphone manufacturer</td>
<td>Headquarter/1987</td>
</tr>
<tr>
<td>Tencent/1998</td>
<td>Internet and technology company</td>
<td>Headquarter/1998</td>
</tr>
<tr>
<td>ZTE/1985</td>
<td>Telephone equipment manufacturer</td>
<td>Headquarter/1985</td>
</tr>
<tr>
<td>Google/1998</td>
<td>Internet-related services and products</td>
<td>Office/2018</td>
</tr>
<tr>
<td>Apple/1976</td>
<td>Technology and computer company</td>
<td>R&amp;D office/2017</td>
</tr>
<tr>
<td>DJI/2006</td>
<td>Drone making</td>
<td>Headquarter</td>
</tr>
<tr>
<td>Alibaba/1999</td>
<td>E-commerce, Internet, AI and technology</td>
<td>Office/Southern headquarter/2015</td>
</tr>
<tr>
<td>Baidu/2000</td>
<td>Internet-related company and AI</td>
<td>Office/2015</td>
</tr>
<tr>
<td>BYD/1995</td>
<td>Automaker/electric cars</td>
<td>Headquarter</td>
</tr>
<tr>
<td>Xiaomi/2010</td>
<td>Electronics company</td>
<td>Flagship store/2017</td>
</tr>
<tr>
<td>Qualcomm/1985</td>
<td>Chip-making and wireless telecommunications products and services</td>
<td>Innovation center/2016</td>
</tr>
</tbody>
</table>

**Source:** Constructed by the author based on literature review
### Exhibit 3: Some of the Joint-R&D and Innovation Centres in Shenzhen

<table>
<thead>
<tr>
<th>Institutions / Year established</th>
<th>Major specializations</th>
<th>Innovation zone / Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tsinghua-UC Berkeley Shenzhen Institute/2014</td>
<td>Environment, new energy, data science, IT, precision medicine, and healthcare</td>
<td>Nanshan Intelligence Industrial Park/Nanshan district</td>
</tr>
<tr>
<td>Institute of Robotics and Intelligent Manufacturing of the Chinese University of Hong Kong/Shenzhen Ganglong robotics/2016</td>
<td>Robotic and intelligence manufacturing with applications in areas such as medical services, electricity, and logistics</td>
<td>Software Town of Shenzhen Universiade/Longgang district</td>
</tr>
<tr>
<td>Shenzhen-Hong Kong Youth Innovation Entrepreneurship Base/2012 or 2013</td>
<td>Innovation and incubator hub for technology startups</td>
<td>Nanshan Yungu Innovative Industry Zone/Nanshan district</td>
</tr>
<tr>
<td>Nanshan Shenzhen-Hong Kong Youth Innovation and Entrepreneur Hub/2013</td>
<td>Innovation and incubator hub for technology startups</td>
<td>Nanshan Intelligence Industrial Park/Nanshan district</td>
</tr>
<tr>
<td>Qianhai Shenzhen-Hong Kong Innovation and Entrepreneur Hub or E Hub/2014</td>
<td>Innovation and incubator hub for technology startups</td>
<td>Qianhai Shenzhen-Hong Kong Modern Service Industry Cooperation Zone/Qianhai</td>
</tr>
<tr>
<td>Harbin Institute of Technology Shenzhen Graduate School/2002</td>
<td>Engineering and computer science technology</td>
<td>Shenzhen University Town/Nanshan district</td>
</tr>
<tr>
<td>Tsinghua University Shenzhen Graduate School/2001</td>
<td>Energy, environment, IT, advanced manufacturing, logistics, and technology</td>
<td>University Town of Shenzhen/Nanshan district</td>
</tr>
<tr>
<td>Peking University Shenzhen Graduate School/2001</td>
<td>Energy, engineering, planning, and advanced materials</td>
<td>University Town of Shenzhen/Nanshan district</td>
</tr>
</tbody>
</table>

**Source:** Constructed by the author based on literature review
Case sample 1: BYD D++ Open Ecosystem

BYD, a Chinese automobile manufacturer founded in 2003 and well known for its electric cars, organized the “BYD Worldwide Developer Conference” held in Shenzhen on September 5, 2018. The conference theme was “Open, Innovate the Future.” BYD’s CEO and President, Wang Chuan Fu, believed in open technology’s role in driving greater progress in the car-making industry. According to Wang, open technology, which was becoming a buzz word in the car industry, was about the sharing of accumulated intellectual resources that everyone could tap on equally. The main event of the conference was the launching of a smart car equipped with the DiLink system, an intelligent network system. One of the pioneering elements of the DiLink was an auto-rotation pad named DiPlatform, a tablet computer with an Android operating system that could control the car and support various apps (Figure 1). DiPlatform was an open software and hardware platform aimed at promoting autonomous driving development and providing an intelligent travel experience. BYD believed that the DiLink system would become the generation 3.0 genuine open-source intelligent car development platform.

![DiPlatform](source: BYD)

Figure 1: DiPlatform

Case sample 2: Shenzhen Open Innovation Lab (SZOIL)

SZOIL, an open innovation platform, was established in 2015 by Shenzhen Industrial Design Profession Association (SIDA) in collaboration with Maker Collider. The year before, SZOIL
director David Li announced at an international conference held in Shenzhen that a consensus among elite international makers had been reached to build an open innovation lab in the city. SIDA was a non-profit organization founded in 2008, and perhaps the largest professional design association in China. SIDA was the first Chinese association to join the World Design Organization (WDO). Maker Collider was Intel’s innovation accelerator launched in 2015 to accelerate connections between venture capital and industry, and to promote the integration of innovation and industry. Besides being an open global maker service platform for worldwide makers to communicate and cooperate, SZOIL was the first fabrication laboratory in Shenzhen authorized by MIT’s CBA (Center for Bits and Atoms) as a research and development partner of FabLab 2.0. SZOIL offered Fab Academy Courses and promoted open-source design. Practically anyone could come to SZOIL to make their own prototypes which was then made available for anyone to recreate, redefine, transform, or improve. According to a SZOIL staff, open-source design could greatly increase the quantity and speed with which innovative designs could be invented and reinvented:

“In the field of design, open source design is regarded as the style or element designed by designers, which can be used by other designers for free. Instead of copying, other designers must make improvement and the upcoming products will also be stored in the database of open design for public use.”

Case sample 3: IoT Open Ecology Alliance

On July 4, 2018, the IoT Open Ecology Alliance was formed by several Chinese technology companies including Vivo, OPPO, TCL, and Evocacs. The alliance’s objective was to create a completely open trust-based smart ecosystem to promote fairness and cooperation for the common good. This ecosystem would provide customers a complete, convenient, safe, and smart household experience with a single device or app that could control multiple brands. It would also enable manufacturers to develop products compatible with different control terminals. Through this ecosystem, alliance members would have access to an open platform to share solutions, a cost efficient way to improve their products and services.

Case sample 4: “Tropical Rain Forest” ecosystem model in Nanshan Intelligence Park in Shenzhen

Nanshan Intelligence Park was built by the Nanshan district government as a new strategic industrial cluster aimed at attracting famous innovators and makers. Nanshan district promoted the “tropical rain forest” ecosystem model. The park was likened to a forest where different species of animals competed and cooperated. Nanshan district was home to a diverse range of industries.
working in synergy, such as manufacturing, creative enterprises, electronics, new materials, biomedicine, finance, and so on. In addition, bigger companies were encouraged to help smaller startups by sharing resources via an open platform. Higher institutes of education including Tsinghua University and six other Hong Kong universities have set up presences in the park. The park provided continuous support, training, and education to help startups mature within an open innovation environment, fostering the movement from single to integrated innovation and from sectoral to system development. There were more than 200 makerspaces, 1,500 creative teams, and 6,500 innovators in Nanshan district.
Exhibit 5
(Qianhai is shaded red)

Source: Khoo, “Trade and Investment.” (cf. footnote 2)
Exhibit 6

Source: Innovation and Technology Commission
Endnotes

1 Mee Kam Ng, “Shenzhen,” Cities 20, no. 6 (2003): 429-441.


3 Ng, “Shenzhen.”


5 Shen and Kee, “Shenzhen.”

6 State Council of the People’s Republic of China, “The 13th Five-Year Plan For Economic and Social Development of the People’s Republic of China,” Beijing, Chapter 37, Section 4.

7 The term (山寨) literally means ‘mountain village’ or ‘mountain fortress’ referring to distant mountain strongholds of bandits or warlords that are difficult to put under official control.


10 Funding applications are assessed annually, and the limit for each application is capped at RMB20 million (around US$3 million) for innovative headquarters, RMB2 million (around US$300,000) for Hong Kong-funded enterprises, and another RMB20 million for innovative projects related to any of the above modern services.


12 Its facilities included Incubator Blocks providing work space with a modern, flexible, and practical design; an Exhibition and Entrepreneurial Service Centre, providing customized and professional services and an open space designed for various types of events such as exhibitions, conferences, business matching activities, and so on; an Entrepreneur Academy for training, educational programs, and promotional activities; an Innovation Centre where equipment for recoding, film editing, video playing, and so on were made available for use.


17 Khoo, “Trade and Investment.”


This video (https://www.youtube.com/watch?v=imTJsaHYUVg) gives the viewer a brief tour of SZOIL.


Cai Jixia, “Chuangxin Pingtai.”