

# How to Build another Silicon Valley —— Taking Singapore as an Example

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**Abstract:** With the continuous advancement of technology and the intensification of global competition, every city wants to achieve technological innovation and economic development, so planning another Silicon Valley has become a popular urban development strategy for almost all cities. To arrange another Silicon Valley, it needs to establish a complete technological innovation ecosystem, attract talent, build infrastructure, create a cultural atmosphere, and provide government support. Taking Singapore as an example, this paper analyzes the practice of Singapore's smart city construction and the role of smart cities in planning another Silicon Valley and finds that Singapore's smart city construction provides firm support and guarantee for another Silicon Valley. Planning another Silicon Valley is a task full of challenges and opportunities. Other cities can learn from Singapore's practice and adjust according to their characteristics and resources to realize the dream of a technological innovation center.

**Keywords:** Silicon Valley; Smart City

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## 1. Silicon Valley

### 1.1 Planning another Silicon Valley has become a Popular Strategy

Urban development strategies for practically all communities now frequently involve creating another Silicon Valley. Because it can bring substantial economic, social, and cultural impacts, create more opportunities and possibilities for cities, and increase their competitiveness and influence in the world force (Angel, 1991; Chandler Jr, 1995; Carnoy et al., 1997; Klepper, 2010).

First, planning another Silicon Valley could boost the city's economic growth. Silicon Valley is known for its many technology companies and innovative businesses that provide a huge boost to the local economy and drive the economic development of the entire region. Therefore, many cities hope to attract technology companies and talents by imitating the Silicon Valley model to promote economic growth in the area.

Second, planning another Silicon Valley could increase job opportunities in the city. Silicon Valley has created many employment opportunities, such as technical engineers, designers, and marketing personnel, providing many employment opportunities for the local and surrounding areas. In addition, these enterprises can also provide high-paying and high-skilled jobs to attract more outstanding talents and further enhance the competitiveness and attractiveness of the city.

Third, planning another Silicon Valley can enhance the city's image. Silicon Valley is a high-tech industrial center and represents innovation, vitality, and forward-looking. These characteristics can shape a better image of the city, increase the city's domestic and international popularity and reputation and attract more investment and talent to come and develop. The better the city's image, the more likely it is to attract more enterprises and talents to promote its development.

Fourth, planning another Silicon Valley can enhance the city's soft power. The success of Silicon Valley has also brought it a global reputation and influence, and other cities hope to improve their soft power, influence, and competitiveness in the international community through similar methods. By attracting more enterprises and talents, cities can promote innovation and development, improve the city's comprehensive strength and international competitiveness, and become a city with global influence.

Fifth, planning another Silicon Valley can promote urban innovation and growth. Silicon Valley is famous for its innovative spirit and vitality, and these characteristics can inject new impetus and vitality into the innovation and development of the city. By attracting more enterprises and talents, cities can obtain more resources and opportunities to promote local technological innovation and industrial development.

Sixth, planning another Silicon Valley could boost the city's social development. Silicon Valley is not only a technology industry center but also a diverse and inclusive community. This kind of culture and values can bring more social value and influence to the city and promote the social development and progress of the city. By attracting more enterprises and talents, cities can absorb more external cultures and ideas, improve city's inclusiveness and diversity, and promote the city's social harmony.

Finally, planning another Silicon Valley could improve the city's sustainability and environmental friendliness. Silicon Valley is known for its innovation and environmental awareness, which can inject new impetus and ideas into the sustainability and environmental protection of the city. By attracting more enterprises and talents, cities can promote local environmental protection and sustainable development and improve the city's environmental awareness and capabilities. This can enhance the city's quality of life and capacity for sustainable development while also fostering a better natural environment.

In conclusion, creating another Silicon Valley has become a common urban development strategy for practically all communities.

## **1.2 How to Plan another Silicon Valley**

To plan another Silicon Valley, the following aspects need to be considered (Sturgeon, 2000; Bresnahan et al., 2001; Moore & Davis, 2004; Bresnahan & Gambardella, 2004; Adams, 2005; Hospers et al., 2009):

### **1.2.1 Establish a Technological Innovation Ecosystem**

To become a technological innovation center, a city needs to establish a complete ecosystem. This includes universities, research institutes, start-ups, investors, and government support. There needs to be good cooperation and interaction among these institutions and organizations to effectively promote scientific and technological innovation.

### **1.2.2 Attracting Talents**

Silicon Valley has become one of the centers of technological innovation because it attracts the best talents in the world. To entice and keep talent, urban planners must create a number of rules and measures. This includes providing high-quality education and training, a good living and working environment, and a good salary and welfare package.

### **1.2.3 Establish Infrastructure**

Urban planners need to establish a series of infrastructures to support the development of technological innovation. This includes high-speed internet and communication facilities, good transport networks, advanced energy and water resource management systems, and more.

### **1.2.4 Create a Cultural Atmosphere**

Silicon Valley can breed many successful technology companies partly due to the open, inclusive, and innovative cultural atmosphere it has created. Urban planners need to create a similar culture that encourages innovation and entrepreneurship and supports the free exchange of ideas and collaboration.

### **1.2.5 Provide Government Support**

The government is important in promoting technological innovation. Urban planners need to provide policy and financial support to encourage enterprises and individuals to carry out scientific and technological innovation and provide necessary legal and financial support to help innovative companies and start-ups obtain the resources needed for development.

To sum up, if a city wants to plan another Silicon Valley, it needs to establish a complete technological innovation ecosystem, attract talent, build infrastructure, create a cultural atmosphere, and provide government support.

## **2. The Connection between Smart Cities and Silicon Valley**

### **2.1 The Role of Singapore's Smart City Construction in Creating another Silicon Valley**

Singapore is one of the financial centers and technology innovation centers in Asia. As the Singaporean government has actively promoted the development of smart cities in recent years, an increasing number of technology innovation companies have established themselves in Singapore, creating the opportunity and the groundwork for Singapore to create a second Silicon Valley.

First of all, construction of Singapore's smart city can encourage the growth and innovation of regional technology firms. Singapore has encouraged and supported local technological innovation, especially in artificial intelligence, big data, and the Internet of Things. The construction of a smart city provides local technology companies with more market opportunities and application scenarios. At the same time, it provides them with better policy and financial support, thereby promoting their innovation and development and providing Singapore with a powerful force to create another Silicon Valley support.

Second, Singapore's smart city construction can attract international technology companies to settle in. The Singapore government has been committed to creating a good business and innovative environment. The construction of a smart city has provided more development opportunities and market prospects for international technology companies. At the same time, Singapore's policy and financial support have also attracted more and more international technology companies to set up R&D centers or Asia-Pacific headquarters in Singapore, thereby further promoting local technology innovation and development and providing more impetus for Singapore to build another Silicon Valley.

Third, construction of Singapore's smart city can support industrial modernization and transformation. The development of a smart city can encourage the digital and intelligent transformation of established sectors while also fostering the development of new industries, which promote high-quality economic development and provide Singapore with a better industrial foundation and innovative support for building another Silicon Valley.

Fourth, Singapore's smart city construction can enhance the city's competitiveness and image. Singapore's smart city construction has improved the city's efficiency and convenience, provided residents and businesses with a better living and working environment, and enhanced the city's competitiveness and attractiveness. At the same time, Singapore's smart city construction has also received widespread attention and praise from the international community, improving Singapore's international image and reputation. This provides better international recognition and support for Singapore to build another Silicon Valley.

Fifth, Singapore's smart city construction can improve the city's sustainability and environmental protection. Singapore's smart city construction combines digital technology and environmental protection to promote sustainable urban development and environmental protection, thereby providing residents with a cleaner, safer, and healthier urban environment.

In conclusion, Singapore's smart city development has an important role to play in creating another Silicon Valley. It can promote innovation and development of local technology companies, attract international technology companies to the city, promote industrial upgrading and transformation, enhance the competitiveness and image of the city, as well as improve the sustainability and environmental friendliness of the city. All of these provide strong support and guarantee for Singapore to build another Silicon Valley.

## **3. Smart City Construction in Singapore**

### **3.1 The Leading Players and their Roles in Singapore's Smart City Construction**

The main participants in constructing Singapore's smart city include government agencies, technology companies, academic institutions, and social organizations. These participants take on various roles in the construction of smart cities and jointly promote the rapid development and continuous innovation of Singapore's smart city construction. (Engel, 2015; Calder, 2016; Chang & Das, 2020).

First, government agencies are the main promoters and decision-makers of Singapore's smart city construction. The Singapore government has established special agencies, such as the Singapore Digital Economy Development Agency and the Singapore Smart Nation Office, to promote smart city construction planning, design, implementation, and supervision. The government formulates relevant policies, coordinates resources from all parties, and offers the financial resources and technical assistance needed to offer

reliable assurances for the development of smart cities.

Second, technology companies are the main technology providers and innovation drivers for Singapore's smart city construction. Singapore has many internationally renowned technology companies and innovative companies, such as Google, Microsoft, IBM, Apple, Alibaba, Tencent, and Grab. These companies provide advanced technologies and solutions for the construction of Singapore's smart city and promote the research and development of new technologies and innovation, exploring new business models and market opportunities, which has brought new vitality and impetus to the construction of Singapore's smart city.

Third, academic institutions are the main research and academic supporters of Singapore's smart city construction. Singapore has many high-level academic and research institutions, such as the NUS, NTU, SMU, and etc. These academic and research institutions cultivate outstanding professionals and promote academic exchanges and cooperation, which provide high-level scientific research and technical support for the smart city of Singapore.

Finally, social organizations are the main participants and promoters of Singapore's smart city construction. Social organizations in Singapore include individuals and various organizations, such as residents, enterprises, and NGOs. These organizations and individuals provide market demand and user feedback, participate in discussions and make suggestions on smart city construction, which promote urban development.

In short, the participants in Singapore's smart city construction play different roles and jointly promote the rapid development of smart city construction. Government agencies provide policy and financial support; technology companies provide technology and innovation drivers; academic institutions provide academic support and talent training; and social organizations provide market demand and public feedback (Engel, 2015; Calder, 2016; Chang & Das, 2020). These players work together to form a collaborative ecosystem, laying a solid foundation for Singapore to build another Silicon Valley.

## **3.2 Singapore Mobilizes Resources for Smart City Construction**

Much emphasis has been given to Singapore's achievements in the development of smart cities. This is inseparable from the strong support of the government and the mobilization of resources. The following are the main resources mobilized by Singapore for the construction of smart cities (Engel, 2015; Liang, 2015; Calder, 2016; Chang & Das, 2020):

### **3.2.1 Policy Resources**

The development of smart cities is mostly fueled by policy resources, and government policy choices and action plans have a significant bearing on this process. The Singapore government has launched a series of forward-looking and innovative policies on constructing smart cities, such as the Digital Singapore Plan, the Smart Transportation 2025 Strategy, and the Smart Country Plan. These policies provide macro planning and strategic guidance for Singapore's smart city construction, which has effectively promoted the development of smart city construction.

### **3.2.2 Technology resources**

Singapore has also invested a lot of resources in technological innovation. The government has set up a number of innovation centers and laboratories, such as the Institute of Infocomm Research and AI Singapore, which have attracted numerous international and domestic technology firms and research institutions to settle in, which provided support and guarantee for Singapore's technological innovation and research and development.

### **3.2.3 Financial resources**

Funding resources are a critical component in the development of smart cities. The scale and impact of smart city construction would be limited unless adequate financial support is provided. The Singapore government has invested a lot of money in constructing smart cities, including funds from the national budget and funds from private investors and international organizations. These funds are used to build smart transportation, smart energy, smart environment, and smart projects in various fields, such as medical care. In addition, the government also promotes the innovation and investment of enterprises in the field of smart city construction by establishing innovative technology funds and guiding investment.

### **3.2.4 Social resources**

Social organizations in Singapore have also contributed significantly to the development of smart cities, including various

enterprises, community organizations, and non-profit organizations. These organizations have promoted the progress and innovation of smart city construction through their businesses and projects, such as non-profit organizations that solve urban management problems by applying blockchain technology and enterprises that solve traffic problems by developing smart parking.

### **3.2.5 Data resources**

The Singapore government is actively promoting digital transformation and building a smart city, which requires a lot of data support. Through open data, the government provides free and open data resources for enterprises and research institutions, such as real-time traffic data and weather forecast data, which play a critical part in smart city operation and administration. In addition, the government has also built a smart city data analysis center to collect, analyze and apply massive urban data, providing strong support for smart city management and decision-making.

### **3.2.6 Human Resources**

Human resources are an important guarantee for the construction of smart cities. The Singapore government has mobilized a large number of human resources to take part in the development of smart cities by attracting global talents and strengthening talent training. The government provides young people with a wide range of opportunities to acquire technical skills. Singapore's universities and vocational schools are also providing better education and training for the new generation of digital talents, such as Nanyang Technological University's Smart City and Architecture and National University's City Design, which provides important support for the cultivation of talents. At the same time, the government also cooperates with enterprises and academic institutions to train relevant personnel and improve the skills of city managers, technicians, and service personnel to ensure the smooth implementation and operation of smart city projects.

In short, Singapore has mobilized multiple resources for smart city construction, including policy resources, technological resources, capital resources, social resources, data resources, and human resources. These resources are the key to Singapore's success in smart city construction (Chang & Das, 2020; Calder, 2016; Engel, 2015; Liang, 2015). The effective integration and full use of these resources have enabled Singapore to achieve remarkable results in smart city construction and provided critical support for Singapore to become another Silicon Valley in the future.

## **3.3 The Impact of Singapore's Smart City Production from the Perspectives of Different Scholars**

### **3.3.1 From an Economist's Point of View**

The impact of Singapore's construction of a smart city primarily manifests itself in the following aspects: (Cavada & Rogers, 2019; Lim et al., 2021):

Promote economic growth: Smart city construction can enhance the efficiency and productivity of the city, attract more enterprises and investment, and support the growth of the urban economy.

Reduce costs: Smart cities can reduce the city's operating costs, improve resource utilization efficiency, and reduce waste through the use of information technology, thereby improving the city's competitiveness.

Raising the standard of living for locals: Building smart cities can advance the environmental quality and public service level of the city and provide residents with better housing, education, medical care, and transportation services. Residents' quality of life is consequently enhanced.

### **3.3.2 From the Perspective of Sociologists**

The impact of Singapore's construction of a smart city is mainly reflected in the following aspects (Liang, 2015; Chang & Das, 2020):

Improve the social environment: Smart city construction can enhance the environmental quality of the city, reduce pollution and noise, improve public safety, and improve the social environment.

Promote social equality: By establishing a smart city, a city can increase its level of public services, more fairly distribute its resources, and encourage social equality.

Increase social interaction: Smart city construction can increase the interaction between urban residents through various

information technologies and promote social integration and development.

### **3.3.3 From the Standpoint of Planners**

The impact of building a smart city in Singapore is mainly reflected in the following aspects (Liang, 2015):

Increase the level of urban planning: Smart city construction can improve the precision and accuracy of urban planning, making urban planning more scientific and reasonable and more in line with the needs of urban growth.

Increase the effectiveness of urban management: Smart city construction can enhance the effectiveness of urban management through the use of information technology, making urban management more efficient, convenient, and accurate.

Optimizing urban traffic: Smart city construction can optimize the city's traffic system by collecting and processing traffic information, reducing traffic congestion, and improving urban traffic efficiency.

### **3.3.4 From the Perspective of Geographers**

The impact of Singapore's construction of a smart city primarily manifests itself in the following aspects: (Lim et al., 2021):

Enhance urban space utilization effectiveness: Smart city construction can optimize the spatial layout of the city and enhance the utilization efficiency of urban space through information technology.

Promote sustainable urban development: Smart city construction can reduce urban energy consumption and carbon emissions by optimizing the use of urban resources, thereby promoting sustainable urban development and protecting the urban ecological environment.

Improve urban competitiveness: Smart city construction can improve the service level and efficiency of the city, make the city more attractive to talents and investment, improve the city's competitiveness as well as its status and influence.

In general, from the perspective of different fields, the impact of Singapore's construction of a smart city is multifaceted, which can bolster the expansion of the metropolis economy; improve the efficiency and productivity of the city; improve the city's environment and standard of living; promote social equality and integration; optimize urban planning and transportation; improve sustainable urban development; enhance urban competitiveness and influence (Cavada & Rogers, 2019; Lim et al., 2021; Liang, 2015; Chang & Das, 2020).

## **3.4 The Learning from the Practice of Singapore Smart City to others**

Singapore offers several successful examples of smart city development, and these experiences can also be used as a reference for other cities. The following is a summary of Singapore's experience in building a smart city:

Actively promote digital transformation. Singapore attaches great importance to digital transformation, actively promotes the digital transformation of the government and enterprises, and realizes the trinity of digital management of the government, businesses, and the people. This provides important infrastructure and assistance in the development of smart cities.

Adopt comprehensive urban planning and design. Singapore adopts comprehensive urban planning and design. Starting from the overall planning and design of the city, it gives consideration to building public facilities, greening, and environmental protection. This can ensure the overall image and quality of the city, raise the standard of living for residents and the city's ability to compete.

Promote public digital infrastructure. Singapore vigorously promotes public digital infrastructure, such as public Wi-Fi, intelligent transportation systems, intelligent lighting systems, and intelligent buildings, to provide citizens with a more convenient living and working environment and to enhance the city's intelligence and modernization level.

Strengthen urban governance and citizen participation. Singapore has made many achievements in urban governance and citizen participation. It implements citizen-centered urban governance, attaches great importance to citizens' opinions and feedback, and strengthens citizen participation through social media and other means to improve citizens' satisfaction and sense of identity.

Achieve sustainable development. Singapore pays attention to the sustainable development of the city, implements measures such as resource conservation, environmental protection, and low-carbon economy. It also promotes renewable energy and green buildings to improve the ecological environment and sustainability of the city.

In general, Singapore adheres to the concepts of citizen-centered, sustainable development, digital transformation, urban governance, and comprehensive planning in building a smart city. It uses technological means to improve the wisdom of the city and build knowledge for other cities provide important references and inspiration.

## 4. Conclusion

With the continuous advancement of science and technology and the intensification of global competition, every city wants to catch up and achieve a leap forward in technological innovation and economic development. Planning another Silicon Valley has become a popular urban development strategy for almost all cities because it can bring about substantial economic, social, and cultural impacts, create more opportunities and possibilities for cities, and enhance their competitiveness among world powers and influence (Angel, 1991; Chandler Jr, 1995; Carnoy et al., 1997; Klepper, 2010).

It needs to build a complete technological innovation ecosystem to plan another Silicon Valley. It needs to attract talent, build infrastructure, create a culture, and provide government support.

Singapore's innovative city development is essential in creating another Silicon Valley. Singapore's smart city construction can promote the innovation and development of local technology companies, attract international technology companies to settle in, promote industrial upgrading and transformation, enhance the city's competitiveness and image, and improve the city's sustainable development and environmental protection. These have provided strong support and guarantee for Singapore to build another Silicon Valley.

Singapore has mobilized various resources for the construction of smart cities, including policy, technical, capital, social, data, and human resources. These resources are vital to building a smart city in Singapore (Enge, 2015; Liang, 2015; Calder, 2016; Chang & Das, 2020). The effective integration and full use of these resources have enabled Singapore to achieve remarkable results in constructing smart cities, providing critical support for Singapore to become another Silicon Valley in the future. Moreover, participants in the construction of smart cities in Singapore play different roles and jointly promote the rapid development of smart city construction. Government agencies provide policy and financial support; technology companies provide technology and innovation impetus; academic institutions provide academic support and talent training; social organizations provide market demand and public feedback (Engel, 2015; Calder, 2016; Chang & Das, 2020). Together, these players form a collaborative ecosystem, laying a solid foundation for Singapore to create another Silicon Valley.

Singapore adheres to people-oriented, sustainable development, digital transformation, and comprehensive urban governance planning. It uses technological means to enhance the wisdom of the city, which can provide essential references and inspiration for the knowledge construction of other cities.

By building another Silicon Valley, a city can attract talent, drive economic growth, enhance its image, improve its soft power, promote urban innovation and development, improve residents' lives, and play a more critical role on the global stage. Cities can learn from Singapore's practice and adjust according to their characteristics and resources to realize the dream of a technological innovation center. All in all, for cities, planning another Silicon Valley technology innovation center is a task full of challenges but full of opportunities. The city needs to seize the opportunity and actively move toward the future of technological innovation.

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