



# The New Trend of Smart Cities and the Era of Comprehensive Integration—Take Shanghai as an Example

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## Abstract

With the rapid expansion of population and urban scale, urban governance has become more and more complicated. Facing various problems and pressures in housing, employment, education, medical care, pension, public security, and other aspects, thus the construction of smart cities arises at this historical moment. The development of smart cities has been pushed into full motion in many places in China. Intelligent services such as no-meet batch, appointment registration, and holographic sensing traffic monitoring are becoming increasingly common in urban social circles. The development of smart cities in China has entered the "deep water zone". The evolution of smart cities in the traditional sense to new smart cities is the new normal of economic development, the new advantage of urban development, and the inevitable outcome of the development of The Times. It is high time for all regions to build new smart cities that satisfy their people. Emerging cities like Shenzhen have the advantage of possessing various data-gathering information enterprises such as Tencent and Huawei to build a smart city, while finance and trade are the keys for Shanghai. With the release of the national 14th Five-Year Plan, the direction of developing a smart city in Shanghai has gradually become clear. Based on the current development status and actual cases, this paper is to comprehensively analyze the smart city in Shanghai and put forward relevant suggestions to promote its development as well as the coming of a comprehensive integration era.

## Keywords

Shanghai, Smart city, Full integration, Development

## 1. Introduction

In recent years, Shanghai has continuously improved its digital infrastructure, integrated data, and shared resources to accelerate the construction of digital government and made every effort to promote Shanghai to become a regional international smart city radiating to South Asia and Southeast Asia. Domestic smart cities should be based on public needs and highlight urban characteristics (Wangetal, 2013). Currently, many local governments led by Shanghai have begun to integrate and set up intelligent big data administration bureaus, which will become an effective measure for Shanghai to promote the construction of the smart city. The construction of smart cities should focus on both urban governance and innovative development (Zheng, 2011). Smart urban governance is a new form of urban governance that

integrates technological innovation, algorithm-first, data-driven, and efficiency-oriented (Chen, 2021). In the first half of 2020, according to the smart big data Administration Bureau of Shanghai, Guangzhou, Beijing, and other cities, some cities have shifted from one-Netcom operation to one-Netcom management, and the urban smart network has become much more perfect. Influenced by the active exploration and practice of these first-tier cities, the second and third-tier cities in many places also slowly began to join the construction of smart cities and fully integrate into The Times. However, many problems must be faced in developing smart cities, such as the unbalanced and inadequate development of new smart cities, widespread information silos, and serious personal information leakage. According to the data, the construction of smart cities in China is nearly one-third of the global smart city construction. However, the development of smart cities in a few cities is only superficial, which could be more conducive to residents' enjoyment of digital dividends and improving residents' living standards. Given this, to realize the new smart city from quantitative change to qualitative change, we need to put the combination of new smart city and digital infrastructure first to build an efficient city. Digital infrastructure is the foundation and guarantee for the construction of smart cities and a new driving force for high-quality economic development.

## **2. Current status and main problems of smart city development**

In the context of the smart era, society must be complicated to meet its "smart" requirement. Moreover, social governance is confronted with severe challenges of high concentration of risks (Zhu, 2020). At the same time, with the deepening of the construction of smart cities in China, some hidden problems are gradually surfacing. The Shanghai Municipal government is also gradually aware of this, and according to the "Guidance on Promoting the healthy development of Smart Cities" issued by the state, it points out the four main problems facing the development of smart cities at present: lack of top-level design and overall planning; lack of innovation in urban construction system and mechanism; network risks are prominent; and the construction ideas are not clear. To sum up, there are three problems in developing smart cities:

First, there is no overall planning, leading to severe problems of data barriers and the phenomenon of "isolated island" (Xu, 2020). The lack of overall planning refers to disorganized construction. Since the concept of smart city was put forward, some cities have blindly set up batches of so-called "innovative projects" following the previous information construction methods without fully considering their actual conditions, relevant local systems, and supporting measures. Some cities even have the phenomenon of independent construction between bureaucracies of "you do your work, I do my work," which makes it challenging to share resources. All kinds of local practical information form a closed loop within each department, making repeat constructing more and more prominent and eventually leading to the waste of many resources.

Secondly, lack of vitality. Shanghai's smart city development has the problem of the absence of multiple subjects; the construction of smart city is solely dominated by the government (Lvetal, 2017). Specifically, there is a bottomless hole in the construction funds of smart cities. Many cities do not have a long-term concept or a specific and systematic cognition in building smart cities. They habitually regard problems existing in the process of smart city development simply as technical problems. At the same time, without a long-term proper maintenance mechanism and relying too much on government investment, it is difficult to stimulate social forces to participate in the construction of smart cities. As a result, relevant local industries cannot be promoted, and the construction of smart cities cannot be self-recycling, leading to too much reliance on government funds, thus putting the investment of smart city construction into a bottomless pit.

Thirdly, the phenomenon of "one for all". The phenomenon of undifferentiated construction is specifically manifested as "one hundred cities following one model." Cities do not have a precise planning positioning and do not fully consider local history, culture, industrial structure, and economic conditions. At the same time, cities' geographical location and population factors are also the main reasons for undifferentiated construction. Some cities even directly apply the smart city solutions of famous foreign cities, blindly following the trend to buy equipment, build industrial parks, and develop real estate that does not match citizens' real needs, eventually becoming formalism-oriented urban construction.

## **3. How to effectively promote the development of Shanghai's smart city and comprehensive integration**

### **3.1 Focus on digital, economy, and trade**

Finance and trade is an industry that reflects rapid digitalization, which has high requirements for the construction of smart cities. The rational use of big data can reduce the risks of finance and trade. No matter from any aspect, the construction of Shanghai's smart city needs the digital economy to improve its development. At the same time, government

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data should be disclosed to a certain extent because it is the "foundation" of smart city construction, and its openness and sharing intensity determines the effectiveness of smart city construction to a large extent (Zhou & Cui, 2021).

### **3.2 Grasp the tertiary industry of Shanghai Smart City**

The construction of the service industry city in Shanghai smart city should also follow the people-oriented concept because many e-governments, public service infrastructure, and living facilities are built for people. So the smart city must meet the actual needs of urban residents in the construction and development process (Jin et al., 2022). Shanghai is an international metropolis with far and away, the most considerable population flow and data circulation in China. From the perspective of urban governance, Shanghai should seize the smart city service industry and provide more convenient services, including transportation, medical care, and education. This requires a corresponding guarantee for data collection, production, and application. Shanghai should not only build a prominent center within the country but establish a strategic connection both domestically and internationally.

### **3.3 Strengthening the development of industries relating to smart cities**

Shanghai, as an international metropolis, is at the forefront of urban construction in China. From Shanghai's urban development perspective, there is still ample space for digital development. The requirement for data quality can drive the development of related industrial chains, thus promoting the birth of other related digital economy industries. The construction of a smart city must be connected to the data. Therefore, to seek longer-term development, constructing a smart city in Shanghai must firmly grasp the critical factor of data. Better means and data information technology will be used to promote the digital transformation of social governance. According to its development plan, Shanghai will take data as the core and build a digitalization model of life, governance, and economy through integrating systems, technology, and scene, to form a good transformation and upgrade the smart city.

## **4. Example and Analysis of Shanghai Smart City Construction Enterprises**

Smart city construction plays a prominent role in promoting the urban innovation capacity in the Yangtze River Delta including Shanghai (Shi & Yang, 2021). Shanghai is building a comprehensive and systematic digital city to improve the current level of urban governance. Numerous benchmark scenes of digital life have been formed in building a smart city. As a company focused on sustainable development, Keppel Land China is not only a participant and beneficiary of Shanghai's smart city construction but also a thinker and has been exploring various solutions. Keppel Land is a wholly owned subsidiary of Singapore's flagship multinational Keppel Enterprises. Keppel Enterprises operates in more than 20 countries and provides solutions for sustainable urbanization with a focus on energy and environment, urban development, connectivity, and asset management. Keppel entered the Chinese market in the 1980s and has supported sustainable urbanization in nearly 30 cities. Keppel is a leading Singapore-side consortium in two flagship cooperation projects between the governments of China and Singapore - the Sino-Singapore Suzhou Industrial Park and the Sino-Singapore Tianjin Eco-City.

Meanwhile, Keppel Land China, headquartered in Shanghai, has been working here for more than 20 years and has many benchmark projects. Keppel Land China, together with Keppel Capital and other co-investors, acquired the Keppel Tower in the commercial district of Sichuan North Road in Shanghai and the Double Lion Tower in the heart of the North Bund in Shanghai. In August 2021, Keppel Land and Tongchuang Group established a joint venture platform. One of the initial projects is the new project of Keppel Land located in the core zone of Zhangjiang High-tech Park. In 2021, Keppel Land cooperated with Greenland for the first time to build a commercial project -- Keppel Green Profusion City on the metro in Jiading Malu, giving the mall a new look. Keppel Land also jointly invested with Gemdale Group to develop the core residential project in Jiading District - Gemdale Feng Fan; Keppel Land plans to deliver its first commercial complex in Shanghai -- Jing'a Centre -- in 2023. As the above examples show, Shanghai attaches great importance to relying on innovation to promote sustainable and healthy economic development. The Shanghai Municipal government has also taken specific measures to promote the digital transformation of the city and comprehensively promote the construction of the five urban districts, effectively optimize the urban spatial layout, and promote Shanghai to become a livable ecological city. The report on the work of the Shanghai Municipal Government in 2022 clearly states that Shanghai will adhere to holistic transformation and all-around empowerment in smart city construction this year. Actively developing new drivers, taking the lead in applying new technologies, and exploring new experiences are critical to seize the commanding heights of the future development of the smart city in China. At the same time, in the process of developing smart cities and promoting their comprehensive integration, it is required to accelerate the digitization of life and governance, adhere to the harmonious coexistence between man and nature, promote the synergistic efficiency of pollution and carbon reduction, and promote the comprehensive green transformation of economic and

social development.

## 5. Suggestions

It is suggested that the smart city construction of Shanghai should first start with top-level design and establish a future-oriented "smart Shanghai" planning system and method (Qin et al., 2013). From the above content, the development of smart city construction in Shanghai will have the following three trends: people-oriented social space, the benefit of the vast bright and healthy community, and artificial intelligence to realize the automation of urban operation. The coming trend of the era of comprehensive integration is inevitable, and the above three trends are the fulcrum of the mainstream trend of the era of comprehensive integration. Based on these three major trends, I will propose the starting points that can effectively boost the construction of Shanghai's smart city:

- 1) People-oriented, green public space. Promoting the achievement of global "carbon reduction" targets, making the city a tree-lined, flexible, and innovative public space as well as a livable center for both life and social attributes.
- 2) Building bright and healthy communities. Through artificial intelligence, GPS positioning, big data, and other cutting-edge technologies, we will build an entity that operates outside the traditional medical system and form an effective disease prevention mechanism and medical ecology.
- 3) Create a "15-minute city" life circle. "15-minute city" means that all supporting facilities of the entire route are concentrated within the 15-minute activity range, which not only reduces unnecessary travel and carbon emissions but also provides better one-stop services for the elderly.
- 4) Promote low-carbon and smart travel. With the increasing demand for carbon emission reduction, low-carbon intelligent travel and new energy have become the future trend.
- 5) Recycling and green cleaning have become the keyword. Recycling products and materials form a circular economy and enhance the city's local production capacity.
- 6) Artificial Intelligence and digital technology. Driven by technologies such as AI, 5G, and big data, cities will gradually form large-scale connected ecosystems with a wide range of Internet of Things, digital solutions, and applications. With the development of technologies such as biometrics, intelligent cameras, and artificial intelligence, cities in the future will adopt a broader range of intelligent solutions for urban improvement, major event management, and more.

## 6. Conclusion

From the above discussion and case analysis, it can be seen that the mainstream development direction of Shanghai's smart city construction in the future is the coming of the era of comprehensive integration. To achieve comprehensive integration of smart city construction, the government must actively act and cooperate with the masses. In the digital transformation of urban information, it is no longer necessary to do a single construction work or break through the department data level by building an additional organization or developing an application. Instead, it is necessary to think from multiple perspectives and take a diversified development route through the integration of multivariate data, all-line technology, complex scene integration, and all-around integration of ecology, service, and industry. Thus, it will promote the comprehensive transformation of city digitalization and make Shanghai's smart city construction more potential for development.

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