Exploration of Smart City Construction

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In recent years, all walks of life have begun to propose the construction of "smart cities". It is hoped that the construction of "smart cities" can promote the transformation and upgrading of urban development and make our cities prosperous and sustainable. In the future, urban construction is very likely to develop in the direction of intelligence and intelligence, and a scientific and effective understanding and objective evaluation of the development status of China's smart cities will be conducive to the planning and design of China's smart cities in the new era, formulate scientific construction policies, and strengthen the supervision and guidance of construction. At present, as far as China is concerned, the urbanization process is accelerating, the urbanization rate is increasing year by year, and the level of urbanization has increased significantly, and people are beginning to think about how to better combine technology and services to serve the people. Smart cities, as one of the concerns, may be able to better solve this kind of problem.

1. Introduction

Accelerating the construction of smart cities is a major measure and comprehensive measure for China to promote a high degree of urban informatization and networking. In March 2014, the Central Committee of the Communist Party of China and the State Council issued the "National New Urbanization Plan (2014-2020)", which clearly "promoted the construction of smart cities", and included smart cities in the national strategic planning for the first time, representing that the construction of "smart cities" has officially become a national act. How to build a distinctive smart city is a question worth pondering in front of us.

"Smart cities" need to pay attention not only to the development of information and communication technology, but also to the quality of knowledge education and social services; Attention should be paid not only to the rational allocation of natural resources, but also to the participation of management, so that all elements can work together and promote the sustainable development of the economy and the improvement of the living standards of the people. "Smart city" is a higher level of urban digitalization and urban intelligence. Specifically, through digitalization, cloud computing, comprehensive perception, and intelligent analysis, the city's resources can be integrated with

each other, and information from different departments or units can be circulated to each other to make better use of resources [1].

2. The concept of smart city

At present, there are different opinions on the understanding of the concept of smart city, and there is no consensus in the academic community. Through the review of relevant literature, it is found that smart cities can be roughly summarized into three categories.

2.1 Emphasize the importance of technology

Jiao Minglian believes that smart city is a model that uses information and communication technology to collect and analyze information, integrate key information, and operate the core system of the city to meet the different needs of society. Huang Xinguang, Wei Zhenwu, Liu Lu, Zhang Yunyong, Wang Fang, etc. believe that smart cities are the embodiment of a new generation of information technology, and will effectively and reasonably solve the problems found in urban construction and management.

2.2 Emphasis on the process of urbanization

One point of view is that smart cities are gradually established in the process of continuous development from traditional cities to wireless cities and digital cities in the context of industrial informatization. Another point of view is that a smart city is the embodiment of a country's or region's digitalization of cities, the intelligence of cities, and the process of intelligent urbanization.

2.3 Emphasis on urban management

Chen Ruming believes that smart city is to use wisdom to manage and develop the city, public management and services should mobilize wider public participation, and the government should provide more, better and more convenient public service products, so as to better realize the city management function.

On the whole, the author believes that smart cities are based on the innovation and development of science and technology, relying on the new generation of information technologies such as the Internet of Things and cloud computing, adhering to the service tenet of "people-oriented, benefiting the people and facilitating the people", focusing on urban planning, construction, management, and services, promoting urban transformation and upgrading, promoting urban informatization and intelligent operation, and making cities prosperous and sustainable [2].

3. Development trend analysis

3.1 The scale of smart city construction in China continues to rise

In recent years, the construction of smart cities in China has entered a stage of explosive growth. Up to now, according to public data, 94% and 71% of provincial capitals and cities with independent planning in the country have carried out the top-level design of new smart cities to promote the implementation of various smart city projects. Governments at all levels have actively attracted social capital to invest in smart cities, which has effectively stimulated the development of related industries. According to the statistics of the China Academy of Information and Communications Technology, the total investment in smart cities in China reached 1.7 trillion yuan in 2020, accounting for 3.1% of the national fixed asset investment.

3.2 The volume of smart city infrastructure continues to expand

For example, the construction of infrastructure such as Xueliang project, smart transportation, smart pipe network, and smart water has promoted the application of various information and communication infrastructure such as smart street lights, communication base stations, and sensors, providing a foundation for accelerating the establishment of an Internet of Things perception system for urban components. At the same time, various localities are also stepping up efforts to build information infrastructure to facilitate data exchange, such as data centers, transmission networks, and information security facilities [3].

3.3 The level of smart city construction and development has been continuously improved

With the continuous enhancement of the ability to collect IoT sensing data, the application scope of digital technologies such as big data, artificial intelligence, and blockchain has expanded, the data resources of city-level platforms have become more abundant, and the data sources of smart cities have gradually expanded from government information to smart terminals, the Internet, enterprises and other types, and an urban big data operation system has been built to provide information through multiple channels and share and reuse data from all parties. At the same time, according to the statistics of relevant institutions, more than 90% of China's prefecture-level cities have built municipal-level cloud platforms, and nearly one-third of them are promoting the construction of city-level big data platforms. Cities are actively exploring

ways to interconnect data between various infrastructures and departments based on their own conditions.

3.4 Smart cities continue to give rise to various application scenarios

Smart city applications continue to expand and enrich the service scenarios of benefiting the people and enterprises, and have become a key area of smart city construction. While releasing and implementing the overall action plan for smart cities, all localities continue to promote the practice of specific fields such as "smart construction sites", "smart transportation" and "smart cultural tourism", combined with geographic information and artificial intelligence and other information technology applications, and provide real-time feedback on the operation of buildings, streets, pipe networks, environment, transportation, population, economy and other fields through data, and then a number of innovative service models for urban management, housing and construction, security, government affairs, education, medical care and culture have emerged, which can provide convenient, integrated and active public services. The construction of new smart cities provides new development opportunities for new infrastructure, Internet of Things, cloud computing, software services, network communications and other industries, and is gradually becoming a strong driving force for economic growth and high-quality development.

3.5 Smart cities are transforming from construction to long-term operation

Through the guidance of national policies, the coordinated promotion of various departments and the continuous innovation of various localities, the construction of China's new smart cities has achieved remarkable results, but it has also exposed the emphasis on construction and light operation. Emphasis on concept, light on connotation; Emphasis on government and light on society; Problems such as unclear construction and operation models and insufficient participation of social capital have become important factors affecting the effectiveness of new smart cities. It has become an inevitable choice for all localities to improve the effectiveness of smart city construction and achieve sustainable development by promoting the development of smart cities from construction-based to long-term operation, promoting a better combination of effective markets and promising governments, and building a value ecology of government guidance, government-enterprise cooperation, multi-party participation, and professional operation. From the perspective of operation, it is becoming the consensus of smart city operation

to take security as the premise, user-based, data as the key, and scenario as the starting point [4].

4. Problems in the construction of smart cities

4.1 Lack of awareness of the construction of smart cities

The essence of everything can be discovered only after in-depth thinking and investigation, and the in-depth and accurate understanding of the construction of smart cities can more effectively promote the construction and development of smart cities. Since the concept of "smart city" was proposed, the vast majority of first-tier cities and more than 50% of second-tier cities have started smart city construction. However, from the perspective of strengthening ideological security, there are still cognitive differences in the connotation of smart cities, and they are facing the problem of further deepening their understanding. Since the concept of smart city was introduced into China, experts and scholars, city governments, and enterprises have defined the concept of smart city from different perspectives. Some elaborate on the description of smart cities from the technical level, and derive the technical characteristics of smart cities; Some describe the construction guarantee system from the perspective of the overall development of smart cities, emphasizing the mutual connection, mutual support and coordinated development of each subsystem. Experts and scholars will naturally draw different conclusions when they carry out research on the construction of smart cities from different perspectives. Therefore, the understanding of the nature and development law of smart city construction has not yet been safely put in place, and this insufficient understanding is very likely to hinder the rapid development of smart city construction.

4.2 Advanced core technology support is insufficient

Although the construction of smart cities has emerged, the construction of China's communication network is still in the basic stage, which restricts the rapid development of smart cities. On the one hand, China's core technologies such as high-tech equipment, hardware facilities, and software maintenance are lacking, and most of the core technologies and services rely on foreign countries. Engineering and technical services, software equipment research and development, data transmission and other technologies are not perfect, and most of the information technology on data mining, processing, transmission and other aspects rely on traditional business operations for research and development, which cannot support the

Internet of Things, the Internet and intelligent smart city technology path. The lack of innovative research on core technologies hinders the development of information technology. On the other hand, there is a lack of supporting support for standards and specifications. Technical standards are the specification and unification of technology, and now the core technology is becoming more and more complex, and there is no unified standard constraint and specification, which will bring threats to social security. CAS, the world's leading security certification body, released data that argues that the increasing convenience of cloud computing and the Internet of Things has exacerbated the problem of data breaches. The national policy planning, laws and regulations have not yet been perfected, and there is a lack of unified industry standards and laws and regulations to restrict and guide the construction process. The interfaces are diverse and complex, and it is difficult to realize the interconnection of network systems, and it is difficult to coordinate information sharing, which is very likely to form and expand the problem of "information islands"[5].

4.3 Lack of support policies for the development of smart industries

A sound industrial system is an important force to support the rapid development of smart cities. At present, China lacks new policies for the development of new technologies, new applications and new forms of business for the construction of smart cities, as well as the deepening, refinement and effective implementation of existing industrial support policies. For example, although the State Council has formulated a number of policies to further encourage the development of software and integrated circuits, the corresponding strategic plans are formulated in different places, and the development of smart industries such as integrated circuits and Internet value-added services in some places is not the same. The operability is not strong, and in the specific implementation process, there are problems of poor implementation and unsatisfactory results. For example, in the process of implementing industrial support policies in some cities, there are more prominent problems such as "it is difficult to determine the target of policy support" and "the recognition of the identified support object is not high", which makes it difficult to implement special support funds and tax exemptions.

4.4 Lack of talents in the smart industry

The smart industry is just emerging, and there is a shortage of professionals in China's smart industry. On the one

hand, there is a lack of entrepreneurs in the smart industry. For a long time, the high-end market of the industrial chain in the fields of electronic information and communication technology has been mainly occupied by multinational companies such as IBM. The concepts, technologies, and standards of smart city construction, operation and management are also mainly controlled by some internationally renowned companies, and domestic enterprises are less involved. Even if it is involved, it cannot master the core technology and enter the key industrial links. As a result, there is a scarcity of large local companies and entrepreneurs with an international presence in this field. At the same time, the awareness of the emerging smart industry is limited, some domestic entrepreneurs dare not or are unwilling to enter the field of smart industry, and the pace of intelligent transformation of emerging smart industries or traditional industries is relatively slow. On the other hand, there is a lack of talents for smart industry applications. There is a lack of high-level interdisciplinary talents in fields such as economics and business management, as well as high-skilled talents such as software engineers, logistics engineers, and financial analysts[6].

5. Countermeasures and suggestions for the construction of smart cities

5.1 Deepen the understanding of smart cities

It is necessary to deeply understand the social background of smart cities, and further study the impact of smart cities on China's urbanization, modernization and informatization. At present, it is necessary to conscientiously summarize the experience of digital city construction, summarize the progress made in digital city construction, and make great efforts to comprehensively promote the construction of digital city.

5.2 Do a good job in top-level design and make overall and reasonable planning

Performance, scientific and reasonable planning, and steady and efficient process are the main issues that should be considered in the construction of smart cities. The scope and direction of the construction of smart cities should be comprehensively grasped and clarified, and the development of smart industries and the gradual optimization of industrial structure should be realized through the development of common technologies. Local government agencies should combine the actual situation, take the interests of the people as the center, select the key points in urban construction in a targeted manner, seek high-quality forms of government-enterprise cooperation, constantly change the mode of investment and financing, and actively mobilize the support of institutions and enterprises in

the construction of smart cities to create intensive smart cities.

5.3 Unified construction standards

At present, many cities across the country have launched the development strategy of building smart cities, but the mode and content of smart city construction are not the same, and a unified consensus and construction standards have not been reached. Therefore, it is urgent to realize the unified standards for the construction of smart cities at the theoretical and practical levels, formulate corresponding standards for information data collection and use, and realize the efficient expansion and versatility of the system. Establish a sound system evaluation mechanism and certification standards for smart cities.

5.4 Strengthen the integration and sharing of information resources on the basis of strengthening information security measures

In the process of application, the boundaries of information use should be clearly defined, and a sound information security system should be continuously established, especially for information that will threaten national and public security or interests, a strict confidentiality mechanism must be formulated, and at the same time, the establishment of relevant laws and regulations should be strengthened and improved, and the use of information should be standardized and legalized.

6. Conclusion

Since the concept of smart city was proposed, the development of smart cities in China has generally gone through four stages: exploration and practice, normative adjustment, strategic tackling and comprehensive development. The construction and operation of smart cities involves many fields, and the requirements for capital investment, talent team, and professional quality are extremely high. Focusing on the construction and operation of smart cities, an industrial chain and an ecosystem of smart city construction and operation have been formed in China composed of equipment manufacturing, software development, technology application, industrial finance, consulting and planning, solutions, system integration, operation services and other enterprises, and a five-in-one comprehensive promotion of "government, industry, research and research" has been initially formed. At present, more and more localities have begun to focus on promoting the transformation of smart city development from government-led construction to social diversified participation, joint construction and long-term operation, so as to provide fertile soil for the high-quality development of the digital economy. It has become an inevitable choice for all localities to improve the effectiveness of smart city construction and achieve sustainable development by promoting the development of smart cities from construction-based to long-term operation, promoting a better combination of effective markets and promising governments, and building a value ecology of government guidance, government-enterprise cooperation, multi-party participation, and professional operation.

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