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Analysis on the Trend of Environmental Development of Smart City in China

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Abstract:

As the impact of COVID-19 continues, the "New infrastructure" initiative is stepping up, bringing both opportunities and challenges to smart city development. During the 14th Five-Year Plan period, the construction of smart city in China will be guided by the requirements of modernization of national governance, based on the needs, combined with the characteristics of urban capabilities, conform to the development trend of information technology, deepen digital infrastructure, improve service level, accelerate data governance, and build collaborative mechanism.

Keywords*: Smart city, Carbon peak, Carbon Neutralize, AI plus 5G.*

I. INTRODUCTION

Foreign scholars have generally regarded environment as one of the important contents of smart city construction and try to discuss the impact of smart city on the environment. Chinese scholars generally regard smart environment as one of the evaluation indexes of smart city construction, and smart city construction significantly reduces environmental pollution.

In order to protect the environment and fulfill its responsibilities as a major country, China has put forward the proposal of the National People's Congress to adopt more favorable policies and measures, and strive to achieve the goals of "carbon peak" and "carbon Neutralize"[1]. However, as a developing country, China has a major responsibility that needs to improve to ensure people's wellbeing and achieve high-quality economic development. To solve the energy problem, we need to balance the economy and the environment from the source. The fifth Plenary Session of our central committee proposed to strengthen and innovate social governance and build a grassroots management and service platform with grid management, refined services, information-based support and open sharing"[2].

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II. TECHNICAL ANALYSIS

2.1 New Technologies are being Widely Applied

New technologies such as artificial intelligence, the Internet of things and big data are being widely applied. The integration of all kinds of new technologies will bring about the transformation of smart city application. and some cities are accelerating the deployment of cutting-edge technologies such as 6G, quantum communication and brain science[3]. Technology superimposed on each other to create more application scenarios. AI+5G, will open the era of wireless connectivity and intelligent automation, such as remote surgery, autonomous driving, smart home, smart agriculture, smart medical care; The combination of 5G and VR can be widely used in social software, education and medical care, making it an indispensable "social application" in many fields[4]. Blockchain technology enhances people's confidence and trust in big data applications, and data privacy will be effectively protected. The fusion reaction generated by edge computing +AI+5G is bound to be beyond imagination and have a profound impact on the business models of all walks of life, including finance, manufacturing, retail and education.

2.2 Urban Micro Infrastructure will be Widely Deployed

Micro-infrastructure is an extension of the concept of new infrastructure. It refers to the digital and intelligent innovation of community and surrounding service scenes, and is the construction of micro-infrastructure and public service system needed to meet the "last kilometer" life of residents. During the 14th Five-year Plan period, the construction of public service centers and government service centers with strong public attributes, as well as intelligent neighborhood centers, intelligent carports, intelligent charging piles and intelligent community gardens with strong market attributes will be accelerated[5].

2.3 Big Data Platform is Built Now

On the basis of the current big data platform and data center, the future smart city construction needs to strengthen the integration of artificial intelligence and Internet of Things, and improve the degree of data integration and standardization. In terms of data governance framework, local governments need to build a data framework covering the government, the public and enterprises, and manage the whole process of data front-end collection, data flow and data application. At the ecological level, future data management can refer to the governance ideas of large ecology and small pond.

On the one hand, urban data governance is carried out under the framework of the whole urban data governance system, which builds a data ecosystem that serves the needs of the whole city and covers the

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government, the public, industries and infrastructure. On the other hand, it is necessary to carry out intensive cultivation and in-depth governance according to the data scenarios and types in smart city. For example, the government service data service code unification, matters sorting, identity verification, for the standardization of video data, and for specific application fields, such as social credit data governance; In terms of mechanism, first of all, the data sharing mechanism, especially the cross-department and cross-region data sharing mechanism, and the data sharing boundary and sharing process should be determined on the premise of determining the business boundary. Secondly, future smart city need to make use of blockchain and other technologies to create urban data identity and improve data security.

III. ANALYSIS ON SYSTEMS ENGINEERING IN SMART CITY

3.1 Cloud Collaboration

From the perspective of smart city architecture, the future smart city architecture will break the boundary and form the cloud tube side and end collaborative architecture. The future smart city architecture with data value as its core needs to meet the circulation and interaction between data and applications. The future smart city architecture needs to promote platform integration by means of technical means and establish real-time human-machine-thing feedback mechanism. Take data collection and application as an example. On the one hand, massive data needs to be transmitted to various application scenarios with the help of the big data center with artificial intelligence capability to provide services for users, who constantly put forward upgrading requirements. On the other hand, in view of users' personalized customization requirements, it is necessary to integrate intelligent collection terminals distributed in different fields with protocols and standardized means, and establish cooperative relationships among intelligent collection terminals distributed in different scenarios. Establish a continuous, stable and implemented feedback mechanism, break the relatively independent operation mechanism of smart city technology system, and realize edge cloud collaboration.

3.2 Build Micro-service Model

A three-dimensional service model based on micro-services will be built in the coming city. Micro-service is the public service provided by the government. It focuses on the individual differences of different people and solves the practical problems of the public through cross-domain integration and multi-channel simultaneous implementation. In the future, the construction of smart city needs to provide diversified, multi-channel three-dimensional intimate services by classifying micro-services according to crowd portraits based on different business solutions and artificial intelligence means. For example, cross-domain services are provided for people living and working; According to the characteristics of service groups and intelligent terminals, accurately comb the services suitable for

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terminal management, and accurately deploy intelligent terminals; For people with low acceptance of intelligent services and areas that cannot be reached by the network, collaborative office is provided to realize online and offline complementation.

3.3 Pay Attention to "Micro Unit" Grass-roots by Urban Governance

In the future, local governments will strengthen the R&D and application of 5G, artificial intelligence, edge computing and other technologies, and improve the digital governance capacity of communities, buildings, parks and other grassroots units to realize the refined governance of city, with the normalization of epidemic prevention and control as the requirement and the starting point of urban "micro-unit" governance.

IV. CONCLUSION

During the 14th Five-Year Plan period, smart city construction will be more closely coupled with investment in new infrastructure and digital economy development, and will be deeply integrated from the planning level, scene level, implementation mechanism and innovation synergy level to jointly promote economic development. As a spatial carrier of digital technology innovation and economic development, smart city investment in digital infrastructure, digital government, urban governance, people's livelihood services, economic development and other fields of smart city continued to increase during the 14th Five-Year Plan period, and the main construction subjects were smart city, smart counties and smart parks.

4.1 Improve the Level of Data Governance

Data is the heart and soul of a smart city. Smart city construction covers all scenes of urban construction and operation, involving three major subjects: government, public and enterprises, and is a huge system. In this system, data sources are complex and the problem of "data islands" still looms large. Data governance is not only related to the operation effect of smart city, but also an important driving force to stimulate the new capacity of urban economy. Future smart city data resource capacity building still needs to strengthen governance from the four aspects of technology, framework, ecology, trust and exchange mechanism to solve the data sharing problem.

4.2 Reconstruct Urban Digital Basic Capacity

The new generation of information technology to accelerate the integration of urban development. In the outbreak era, wisdom city construction, it needs 5G, artificial intelligence, internet of things, big data, block release positive effect, more and more. such as client side framework change ability to

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innovation, in order to realize the urban dynamic holographic awareness, man-machine integration, intelligent decision and the goal, for the urban economic development to provide high quality digital support ability.

4.3 Improve the City Service Level

The construction of new smart city in China follows the core concept of "people-oriented". However, differences in digital infrastructure coverage, technological capacity, and urban governance concepts result in the majority of smart city construction mainly driven by technology and government, and the public user participation is obviously insufficient. The future smart city will start from serving the core needs of end users, namely the public, and be guided by solving practical problems and providing convenient and intelligent services. With the help of diversified "micro scenes", the city service level will be comprehensively improved.

4.4 Promote Economic Prosperity

At present, a new generation of information technology and industrial transformation is in the ascends, the digital economy is booming, and new infrastructure investment plans are being unveiled across the country. Smart city is not only the gathering place of the new generation of information technology innovation, providing a large number of scene resources for the landing of information technology, but also the problem generator of the landing of information technology, providing an important carrier of innovation trial and error, close coordination of resources and continuous optimization of space for information technology innovation. The new infrastructure is designed to meet the needs of high-quality economic development, providing digital infrastructure, Integration infrastructure and innovation infrastructure. New infrastructure provides a broad and solid digital resource base for smart city, and smart city provide rich landing scenarios for new infrastructure. The construction of smart city and new infrastructure will promote the development of digital economy from the aspects of industrial digital transformation and digital industry innovation.

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