Research on Urban Space Design Method Based on Smart City

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Abstract: The concept of smart city has been implemented in China for years and it has been used as an important measure to develop urbanization in China, aiming to promote new urbanization and improve the overall strength of the city. The construction of smart cities has provided convenience for civic lives in terms of medical care, education, transportation, etc. It provides numerous knowledge-based and service-oriented positions as well, which have made great contributions to the development of the city. However, it is inevitable that some problems will be encountered and need to be updated in the process of development. By the author's learning and practical experience, this paper first analyses the meaning of smart city development, then discusses the significance of developing smart city, eventually puts forward the urban spatial design method based on smart city.

1. The Meaning of Smart City

Smart city is a new concept about the topic of urban development, which mainly connects the government, enterprises and the public through science technology, the Internet of Things(IoT), etc., and promotes the harmonious development in those aspects. An crucial characteristic of smart city is to increase the quality of social public service system[1]. The improvement primarily refers to the aspects of environment, civil livelihood, public facilities construction in cities, industry and commerce development.The information can be collected, processed, analyzed, and shared through advanced technologies like Internet. Those methods can build a faster and more effective society as for the citizen. It is also beneficial to facilitate the management and supervision of the entire city. The intelligent development of the city is actually to create the intelligentization of various systems and modules. Then the network based up on the intelligentization enable the city to operate efficiently and harmoniously[2].

2. The Significance of Developing Smart City

2.1 Improved the efficiency of urban resources utilization.

Currently, both enterprises and government agencies are implementing digital management, and the updated type of smart city also use the advantages of the digitalisation and intelligentization. The digital system is applied to the construction and management of the intelligent city, which optimizes and integrates the resources, labour, material and financial resources, and significantly develops the utilization efficiency of the urban resources. First of all, the concept of intelligent city uses information technology and learn from the mature operation and management model. Then it completely integrates those methods to achieve the efficient implementation of government policies. Secondly, the intelligent city can strengthen the exchanges and cooperation of the cultural, educational and commercial aspects between the cities through the way of communication on the Internet. Therefore a win-win development can be the results for the cities. Finally, government regulation can be enhanced, and the regulatory system on public opinion and can be developed through the Internet platform and the regulatory system. As for the enterprises, and government functional departments, they can disseminate the information to the public through the Internet and the media, and information sharing is achieved[3].

2.2 Promoted the development of innovatory industries.

The construction of smart cities has driven a number of innovatory industries, which have

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affected some traditional enterprises. While developing new industries, they have also promoted the transformation of traditional industries. A major feature of the innovatory industry is the application of a large amount of green energy. And they develop the green development model, which greatly improves the ecological environment and avoids energy waste. Secondly, this new type of green energy relies on latest Internet technologies. Therefore, the popularization and construction of smart cities has expanded the scope of industrial development, led to the innovation and growth of a number of industries, and has also been vigorously promoted the communication among multimedia platform.

2.3 Led to development of scientific and technological innovation.

Science and technology has led to the emergence of fresh things, and the idea of the intelligent city has promoted the development of a batch of science technology as well. Technicians and related professionals must innovate the network and information technology in the process of implementing smart cities. At present, the development of computer artificial intelligence not only allows people gain a intelligent life, but also makes the whole city intelligent. Artificial intelligence has made major breakthroughs in terms of massive production, customized production, personalized services, and so on. Therefore, with the assistance of computer technology, the industrial development of cities will be expanded on a large scale. The strength of talent and technology will also be rapidly concentrated, promoting the growth of a new batch of science and technology.

3. Urban Spatial Planning Method Based on Smart City

3.1 The construction of smart city.

First, the industry strategy of smart city should comprehensively collect the existing industry data, and profoundly understand the existing operations of the business. Then combine the city's advantageous resources, comprehensively analyse the position and objectives of related industry, and promote the increasing of numerous emerging industries and intelligent service industries. And rationally arrange the layout of industrial development functional areas and various types of intelligent industrial zone. At the same time, it is also necessary to strengthen the construction of regional innovation network planning and integrated management platform, actively update the production and marketing model of enterprises, improve productivity, and conduct targeted marketing services. Second, smart transportation project should be connected with the spatial arrangement of the city's existing transportation network. The intelligent transportation construction should be people-oriented, convenient for residents to travel, improve urban operational efficiency. It needs the comprehensive analysis of rational planning or transformation of urban traffic trunks, and focus on designing urban residents' smart travel system, smart bus service system, intelligent logistics guidance system and parking guidance system. Thirdly, the planning of smart community refers to the scientific analysis of social network activities, community websites or monitoring data of urban residents. The intelligent community ought to fully understand the daily life cycle and rules of residents, comprehensively determine the targeted service functions of various smart communities, and rationally arrange the surrounding areas of the community, consider the ancillary services and intelligent systems or facilities within the community. Fourth, smart infrastructure planning means to analyse the city's current scope of infrastructure service and service quality through urban sensors and other monitoring data. It should focus on the construction of urban information infrastructure intelligent pipe network and smart disaster prevention system in order to achieve the urban intelligentization.

Taking the application of 3D Simulation Technology in Urban Planning as an example. General three-dimensional virtual technology in urban construction should include the following four steps: Firstly, set up a regional geographic database, and digitize the terrain, natural scenery and social information of an area by combining some database software or GIS software.Secondly, establish a building model database. Using above digital information and various building models to establish the building model database, combined with the computer software. Thirdly, the virtual

city model system is to construct by establishing the connection according to the scheme, communicating with the designer and combining the design scheme, linking the regional geographical database and the building model database[4]. Fourthly, experts make decisions. Deliver the constructed system to the experts in order to let the experts evaluate the virtual system, analyze the quality of various planning schemes, and select the best system model. For example, if you build a building in a residential area, you can first make a virtual simulation of the building to see if the building affects the surrounding residents, and where is the building best built.

3.2 Area of smart government.

The development of big data will change the government's management pattern greatly. Smart government means that government agencies use modern network communications, computer technology, Internet of things technology, etc., to achieve government management and service functions by streamlining, optimizing, integrating, and reorganizing them on the Internet, breaking the restriction of time, space and stripes, which makes it possible to share data so as to improve the efficiency of cooperative office, work for the people and the ability of the government to manage the society and the public service (see figure 1). Specifically speaking, relying on the development of big data, intelligent government administration is beneficial to economize government investment, strengthen market supervision and improve government decision-making ability, which in order to enhance public service capacity and realize regional management.

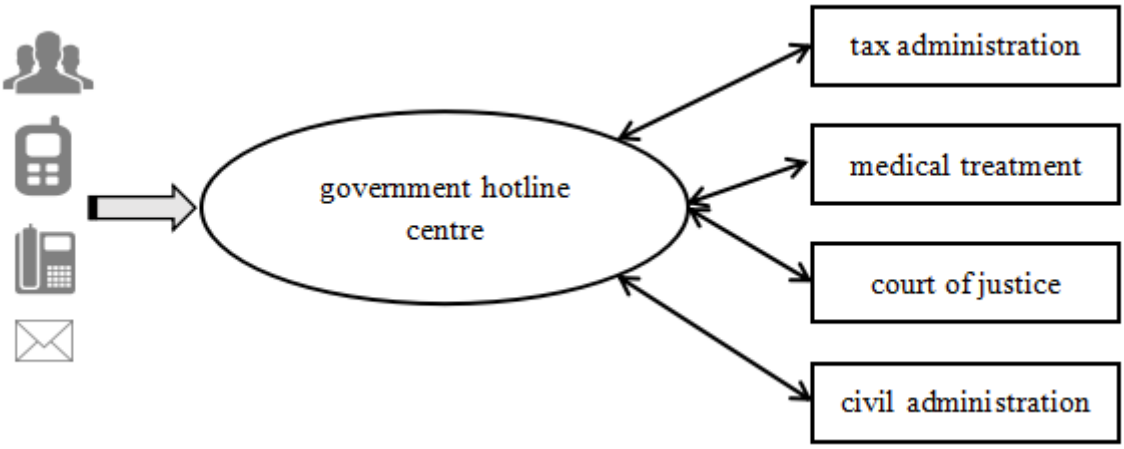

Figure 1 Smart Government Schematic

Smart government, represented by e-government, will undoubtedly become the button to open the door of "smart city". With the help of big data, gradually realize the three-dimensional, multi-level, omni-directional e-government public service system. Build an e-government cloud platform to provide screening and mining capabilities for comprehensive information such as government information, Internet information, public opinion, etc. Quickly and intuitively reflect the results and predictions of scientific analysis to the government, in order to provide accurate and scientific basis for their decisions. With the help of big data, the existing database of government management can achieve efficient interconnection, which greatly improve the ability of co-operating among various government departments, efficiently work for the people, significantly reduce the cost of government management and provide a strong support for government decision-making. Its incessant "wisdom" will push the intelligent city to the goal of being more intelligent, more scientific and more efficient.

3.3 Areas of wisdom and livelihood.

The intelligent city planning should be based on the comprehensive study of urban problems and laws. It should also make full use of all kinds of urban monitoring, through collecting and analyzing the behaviors and activities of residents, enterprises and governments to explore the space-time characteristics and problems of urban activities and mobile systems, and to optimize and adjust the urban spatial structure[4]. It's also a framework for smart city planning. On the basis of constructing

big data analysis platform with all kinds of sensors and video surveillance social network data as the main body, we should analyze all kinds of subjects in detail, make clear the problems, and explore the rational orientation and development goal of intelligent city. Coordination has been made in a variety of plans, in terms of systems and mechanisms, to determine overall requirements for the spatial development of intelligent cities, and to guide urban space development strategy, spatial quality evaluation of spatial development scale prediction and spatial development layout plan reasonably. Finally, the key areas of smart city planning are put forward, and the annual implementation plan of the construction demonstration project is put forward[5]. The main points are as follows: First, the key to the formulation of space strategy lies in the scientific analysis on the will of the government, enterprises, residents and other urban subjects to explore the future direction of urban spatial development. Second, the spatial development evaluation focuses on the construction of the spatial evaluation index system based on the subject site or social network data and the comprehensive analysis on the quality of all kinds of spatial development in the present situation of the city, so as to find out the key problems and causes of limiting the spatial development, and then to evaluate the livable degree of urban residents. Third, the spatial development prediction mainly uses intelligent collection, main website and so on to carry on the data analysis, so as to understand in detail the urban population and the land scale change in recent years, and to predict the reasonable capacity which supports the future wisdom city development accordingly.

4. Summary

Although Wisdom City and big data are also faced with many doubts such as speculation and bubble in the process of the great development upsurge, it is certain that with the continuous progress of ICT technology , the continuous application in various fields, and the constant changes of people's life and mode of production, the theory and practice of urban construction will be expanded and adjusted accordingly. People will continue to explore new methods on the track of urban construction, and then produce new ideas for construction. Presently, City of Wisdom may be just the beginning.

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