

Research on Intelligent Urban Management Information System Framework Based on Big Data

Li Wuke

Computer Science Department, Hunan University of Arts and Science, Changde, Hunan, China

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Abstract: Smart city is the direction and advanced form of urban development in the future. It integrates the functions of digital city, knowledge city, ecological city and creating city. Big data is changing our life, work and thinking, bringing about a major transformation of the times for the development of human society. Apart from the scientific and reasonable top-level design, a set of implementable technical system framework is urgently needed to help the construction of smart city. Massive data exists in all aspects and areas of the city. How to apply it to the construction and management decision-making of smart cities is a hot topic of continuous research and practice by the state and the government. This paper analyzes the problems in the construction of smart cities and the relationship between big data and smart cities. This paper discusses the establishment of a smart city technology system framework based on big data technology, and discusses the feasibility of the technology system framework.

1. Introduction

With the accelerating pace of urban construction, the government and society pay more and more attention to urban management in China. However, compared with the situation of accelerating urbanization, there are still many management problems that can not be ignored [1]. With the upsurge and exploration of global smart city construction, the rapid changes of social economy, life and business model have been triggered, and the content and meaning of smart city itself are constantly evolving [2]. Smart city is the direction and advanced form of urban development in the future. It integrates the functions of digital city, knowledge city, ecological city and creating city [3]. And above the city complex. The level of urban management determines the progress and quality of urbanization. In the future, the breakthrough of smart city construction will undoubtedly lead the industrial upgrading, social transformation, benefiting people's livelihood and the evolution of ecological civilization [4]. To make urban management smarter and more effective, smart city construction is particularly important. Data spread across many areas of smart cities, tapping the potential value of massive data and providing reliable decisions and recommendations for urban governance will make big data a booster for urban development.

Opportunities are always accompanied by challenges. China has encountered many difficulties and problems in the construction of smart cities. The construction goals of most smart city construction projects are unknown [5]. A smart city is an Internet of Things formed by connecting intelligent sensors of urban objects through the Internet to realize real-time perception of physical cities [6]. Big data is changing our lives, work and thinking, and has brought about a major transformation of the times for the development of human society. The realization of smart cities requires comprehensive awareness, information sharing and intelligent problem solving [7]. In the process of urban planning, construction, management and operation, we should use information technology, wisdom, refinement, visualization and other scientific and technological means to promote management innovation [8]. Due to the lack of technical system framework, it is impossible to carry out the construction of intelligent city systematically and reasonably, and the difficulty of resource integration among various construction projects, resulting in duplication of construction and the lack of obvious construction effect [9]. The unrestricted expansion of urban scale and the rapid growth of urban population have caused serious problems in the process of urbanization. Apart from the scientific and reasonable top-level design, a set of implementable

technical system framework is urgently needed to help the construction of smart city.

2. Big Data Helps Intelligent City Construction

Smart cities are a fusion of the real world and the digital world based on digital cities, the Internet of Things and cloud computing. To achieve the perception, control and intelligent services for people and things. Big data has penetrated into every industry sector and department to varying degrees. Its in-depth application not only helps business operations, but also intelligent analysis and effective use of city information. For the construction of smart cities, it can be divided into government-led construction and enterprise-led construction [10]. Government-led construction focuses on the collection, management, analysis, monitoring and sharing of basic data. Big data is a dynamic concept. It refers to the whole process of processing and analyzing massive data with potential value and complexity and diversity. As the main component of the development of smart city, smart industry provides basic support for the development of urban economy and cultural construction. Enterprise-led construction focuses on industry applications, with the main goal of building smart industries. At present, we may not have a comprehensive and profound understanding of the specific meaning of "smart city". But this does not mean that there is no real advance and progress in our life.

The problems of system and implementation mechanism will be solved by the government and enterprises along with the construction process of smart city. Building risk management system on the basis of various basic data can further improve the level of urban management, eliminate potential safety hazards and achieve rapid response. The multi-information information fusion visualization system is an important means to solve and support the implementation of "multi-regulation" through informationization in the context of smart cities. The construction of smart cities is also a key link in the national informationization strategy in recent years, and has also achieved great development results in the continuous practice in recent years. It is necessary to constantly explore and accumulate experience during construction. Figure 1 shows the network structure system of talent information fusion management.



Fig.1. Talent Information Integration Management Network Structure System

In life and society, big data can be said to be ubiquitous. Big data sources include network data, enterprise data, government data and so on. The purpose of wisdom city construction is to make people's life more comfortable and convenient. The development of science and technology and the progress of society must ultimately serve and apply to people. Technology enables computer systems to analyze and learn independently based on massive data, thus providing decision support for urban managers. It is also an important feature of smart city which is different from digital city. The new type of community will be the main direction of future urban development, and will have a subversive impact on future industrial development and social management models. Building an efficient urban operation monitoring system is an important means of collecting big data in urban operations. As a new generation of information technology, big data has brought great changes to the methods and models of national governance. Big data is a big boost from the transition from an

empirical governance model to a scientific governance model. The technical system framework for smart city construction can be considered to some extent as the technical system framework of big data systems.

3. Challenges of Smart City Construction

Nowadays, information technology, represented by Internet and mobile Internet, has penetrated into every field of people's life. All kinds of human activities can be given a specific meaning through data information. Consumer's shopping habits, consumption feelings, potential consumption intention and other information can be presented in the form of data. The main body of the community is the crowd. The main purpose of intelligent community is to improve the quality of life and public service level of residents, which is a reflection of the wise people's livelihood. Digital city management is a grid virtual physical platform. With the help of modern information technology, it will include all aspects of urban information, such as natural resources, social resources, infrastructure, humanities, economy and so on. Network has become a necessary tool in most people's daily life. In the network age, people's shopping situation, consumption bills and so on can be presented in the form of data. The trend of human lifestyle networking will undoubtedly deepen in the future, and personal life will be more and more affected by big data technology. Various industries can collect people's consumption information and consumer willingness through big data technology. And to analyze and explore market demand and develop a smart economy.

In the development of the smart industry, it is possible to rationally plan the industrial layout in the horizontal direction by establishing a smart industrial park and under the guidance of the industrial park. Focus on the development of high-tech information industry and build industrial clusters. Today's Internet technology continues to penetrate into all areas of people's lives, and people's lives will be increasingly influenced by big data technology. Data is the cornerstone of smart city construction and can be divided into spatial data and non-spatial data. In terms of the company's own development, it is possible to monitor the production and management of the enterprise by changing the production and marketing model of the enterprise. And analyze the consumer and customer spending trends, targeted marketing services. The integration of talent website resources, service model innovation, and function optimization are extremely urgent. Financial support and technological upgrading. The basic guarantee for the smooth implementation of informatization is to increase the investment of informatization funds for public employment personnel, update the technological level of informatization construction and improve the quality of professionals. Increase the investment of special funds for employment in the construction of public employment service informatization, including computer and network hardware, software acquisition, and development and application expenditure, and incorporate the system maintenance funds into the budget at the same level. Figure 2 is the architecture of talent information construction.

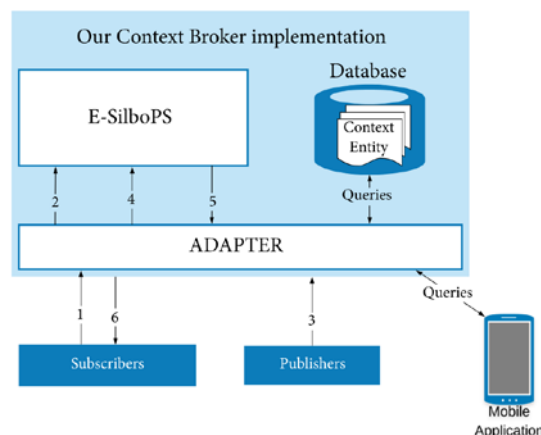


Fig.2. Talent information construction system structure

The emergence of large data is the inevitable outcome of the information age, and no one can stop entering the era of big data. When some servers have problems, the model calculation can continue unaffected. The mode of public service provision has been transformed into government-sponsored citizen autonomy. Large data enables people to build three-dimensional visualization systems reflecting real-time changes in the built environment of cities, which can serve as a platform for public participation. By using big data technology, people can record, screen and integrate shopping data information, social information and travel information. Find ways to further meet people's quality of life. The intelligent management of the government is the transformation of the decision-makers in management thinking, and the traditional government issued orders. Compared with such a governance model, citizen enterprises and organizations make the city management autonomous. Although big data technology has made some progress in the construction of smart cities, it is still in its infancy. Big data in the cloud era enables individualized, convenient, and intelligent personal travel by collecting and analyzing data in real time.

Model implementation is generally implemented in the form of a model server in an actual system, providing model computing capabilities in the form of services. As a new thing, big data has the potential to promote urban construction, and there are problems and limitations in using big data for urban construction. For each city's complexity, it is necessary to complete the top-level design and planning according to its own characteristics. At present, there are few studies on the content and main framework of smart city, and there is no definite theory of system planning. By means of information technology, the problem of uneven distribution of educational resources is gradually alleviated and improved, so that every student can enjoy high-quality educational resources. Although big data still has problems of one kind or another. In the face of the surge and development trend of big data, the government must fully realize the importance and great potential of big data. The ultimate goal of a smart city is to put people first. Its fundamental task is to better serve urban construction and management and to facilitate people's lives.

4. Conclusion

In the planning of smart cities, people's needs should be fully considered and the core strategy of people-oriented should be established. In the process of building a smart city, it is the first principle to adhere to the people-oriented concept. On this basis, perfect information infrastructure construction and technical support are the important guarantee for the realization of intelligent urban management. Personnel management is an important defense line to ensure data security. We should not only be highly vigilant and prevent illegal users from stealing and destroying data, but also strictly manage legitimate users. All trades can observe the data of consumer credit card consumption record, shopping behavior, collocation preference, brand attention and so on. Infer the customer's consumption habits and willingness to consume, and use this as a basis to adjust the product to create greater business value. The basic principle of smart city construction is to be people-oriented and to create urban services with equal opportunities for all residents. Construction requires coordinated collaboration between various parts of the city, integration of multiple types of data and planning, and balancing of management systems. Reasonably construct the basic framework and standards of smart cities, and use human wisdom to promote the transformation of data society. Ultimately achieve urban science, efficient and sustainable development.

References

- [1] Vilajosana I, Llosa J, Martinez B, et al. Bootstrapping smart cities through a self-sustainable model based on big data flows[J]. IEEE Communications Magazine, 2013, 51(6):128-134.
- [2] Tang B, Chen Z, Hefferman G, et al. Incorporating Intelligence in Fog Computing for Big Data Analysis in Smart Cities[J]. IEEE Transactions on Industrial Informatics, 2017, 13(5):2140-2150.
- [3] He Y, Yu F R, Zhao N, et al. Software-Defined Networks with Mobile Edge Computing and Caching for Smart Cities: A Big Data Deep Reinforcement Learning Approach[J]. IEEE

Communications Magazine, 2017, 55(12):31-37.

[4] Yuzhe W, Weiwen Z, Jiahui S, et al. Smart city with Chinese characteristics against the background of big data: Idea, action and risk[J]. Journal of Cleaner Production, 2018, 173:60-66.

[5] Zhu C, Shu L, Leung V C M, et al. Secure Multimedia Big Data in Trust-Assisted Sensor-Cloud for Smart City[J]. IEEE Communications Magazine, 2017, 55(12):24-30.

[6] He X, Wang K, Huang H, et al. QoE-Driven Big Data Architecture for Smart City[J]. IEEE Communications Magazine, 2018, 56(2):88-93.

[7] Navarro J M, Tomas-Gabarron J B, Jose E. A Big Data Framework for Urban Noise Analysis and Management in Smart Cities[J]. Acta Acustica united with Acustica, 2017, 103(4):552-560.

[8] Han G, Guizani M, Lloret J, et al. Emerging Trends, Issues, and Challenges in Big Data and Its Implementation toward Future Smart Cities: Part 3[J]. IEEE Communications Magazine, 2018, 56(3):126-127.

[9] Enayet A, Razzaque M A, Hassan M M, et al. A Mobility-Aware Optimal Resource Allocation Architecture for Big Data Task Execution on Mobile Cloud in Smart Cities[J]. IEEE Communications Magazine, 2018, 56(2):110-117.

[10] Li B, Kisacikoglu M C, Liu C, et al. Big Data Analytics for Electric Vehicle Integration in Green Smart Cities[J]. IEEE Communications Magazine, 2017, 55(11):19-25.