

Smart City from the Perspective of Artificial Intelligence

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Abstract: Smart cities have been widely concerned by both academic researchers and practitioners. The development of smart cities, however, is commonly considered as the construction of platforms and systems that are based on emerging information and communication technologies (ICT). Through the prior analysis, this paper provides an explanation on the intrinsic “urban trinity” of smart cities, regarding the concept of “smart city” as the comprehension of the city digitalization, the smart growth and sustainable development, and the knowledge and creative city. The aim of this paper is to shed light on further researches and practical developments of smart cities.

1. Introduction

Since the new century, especially since IBM proposed the "Smarter Planet" concept with "sensing-connected-intelligence" as its core, smart cities have attracted much attention worldwide. On the one hand, the academic community has carried out a lot of research and discussion on smart cities or smart cities; on the other hand, many cities around the world have actually carried out planning and construction of smart cities.

Community autonomy has long been regarded as the development direction of the community governance model. Hou Qi'an proposed that, in accordance with the principle of "community autonomy, separate discussion and establishment", explore the form of urban community self-government organizations with separate discussion and execution levels in the community. The fundamental nature of urban community organizations is autonomy. Some scholars regard community governance as an alternative plan for community administration, which needs to shift from the administration stage to the governance stage.

Chen Weidong believes that from the perspective of governance, community development is a process in which the government sets up a stage and "dances" with various social organizations. Some scholars compared "community governance" with "governance in the community." Jia Xijin proposed that the significance of community governance lies in establishing local autonomy centered on citizenship, weakening the government's dominance in the community, and developing participatory "Citizenship".[□] Applying governance ideas to the community governance model, some scholars have proposed to build a governance framework that can accommodate a variety of organizations in grassroots communities, and form a community autonomy-based party-government integration, block integration, and multiple interaction Community co-governance structure. Some scholars believe that the self-governing community governance model of citizens implements a kind of bottom-up democracy and provides people with multiple ways to participate in community affairs.

In many cities in China, the construction of smart cities is also in full swing. However, the construction of smart cities is a wide-ranging issue. At present, people's understanding of the overall picture of smart cities is not the same. Among them, in recent years, many information and communication technology companies have focused on the construction of smart cities from the perspective of ICT. The ICT concept they uphold has greatly influenced the thinking of smart city

[□] Newell A, Simon H A. Human problem solving [M]. Englewood Cliffs, NJ: Prentice-Hall, 1972.

construction, especially in many regions of China. Things to build urban hardware, software, and data infrastructure to enhance Dexterity and intelligence of various subsystems, such as city government management, transportation, energy, health care, and public safety□。 The construction of ICT platforms and systems is of course an extremely important and fundamental aspect in the construction of smart cities. However, understanding the smart city and implementing smart city construction only from this ICT perspective has a certain one-sidedness.

Civil society theory puts civil rights, social rights and state rights at the same level for consideration, thus constructing a new state-society relationship. As a subspace of society, the community can be said to be a microcosm of society. Taking civil society theory as one of the guiding theories of the community governance model can not only verify the guidance and applicability of theory to practice, but also enrich the practice to theory Expandability and extensibility. Xu Yong pointed out that the greatest possibility of civic participation comes from the social level, the way is to implement autonomy in a certain area.

This view of combining civil society theory with community governance is also reflected in other similar literature. Zhang Minjie pointed out that contemporary Chinese urban community organizations present a state of coexistence, blending and interaction of nationality and sociality. Nationality and sociality coexist and nationality is stronger than sociality is the reality of current Chinese society. Ding Yuanzhu believes that community is one of the forms and manifestations of civil society. It connects individuals together to participate in community affairs and serve the community to meet the individual's survival and development needs. Ma Baocheng pointed out that a new development trend of local governance; the relationship between the grassroots state power and the coordinated development of social forces is being formed.

Li Zizi put forward reflection after combing the existing research in this area. She believes that the existing research lacks reflection on the theory, especially on the power boundary in the interaction between the state and society, the mechanism of the interaction between the state and society, and the mutual empowerment of the state and society The theoretical issues such as the conditions of power are still lacking in-depth discussion. Although this research orientation is in line with the development trend of social pluralism and democratization, it takes the division between the state and civil society as the self-evident presupposed premise. Make due judgments on Chinese society.

The fundamental goal of smart city construction should be to solve or alleviate various problems that cities face, and to improve the urban growth model and urban quality. In this way, the starting point and fundamental focus of smart city construction should lie in the "city" itself, not just the information technology platforms and systems in the city. From the perspective of this "city", the construction of a smart city should be understood as a series of activities and processes that promote the overall development of the city and "smart".

2. Analysis of the Concept of Smart City

In the 1990s and early 2000s, the focus on digital cities focused on the use of technologies such as remote sensing and telemetry, geographic information systems, global positioning systems, and virtual reality to build urban spatial geographic information platforms and interact with information storage, transmission, and communication in the Internet environment. In recent years, with the further development of ICT, especially with the emergence of technologies such as the Internet of Things, cloud computing, big data, and pervasive computing, digital cities have been given more meaning.

The city's "smart growth" and sustainable development concepts are the main sources for people to explore smart cities. Smart growth is a trend of urban planning that has had a wide impact since the 1990s. It advocates the promotion of sustainable and fair development of cities through measures such as compact and intensive land use, encouraging public transport and non-motorized

□ Dirks S, Keeling M. A vision of smarter cities: How cities can lead the way into a prosperous and sustainable future [DB/OL] .2009.

vehicle travel, protecting urban open spaces and surrounding agricultural land. □。 This trend of thought is in the same vein as the idea of "sustainable development" that has attracted widespread attention since the 1970s. Based on the concept of sustainable development, under the overlapping concepts of "sustainable city", "ecological city", "green city", and "low-carbon city", urban development models that consider coordinated economic, social and ecological development Carry out a lot of research and practice with the path. The above ideas of smart growth and sustainable development have greatly promoted the exploration of "smart cities" since the 2000s. Based on this smart growth concept, Caragliu et. □ Smart cities are defined as: "Promote sustainable economic development and high-quality living in cities through investment in human and social capital and traditional and modern communications infrastructure, while achieving intelligent natural resource management through participatory governance".

We recommend using the term "Creativity" for generalization. Taking a closer look, urban creativity involves five aspects: scientific creativity, technological creativity, economic creativity, cultural creativity, and social creativity; the cultivation of urban creativity requires fundamentally the education and talents, technology, and culture of the city. And so on to improve the strength of the city□.

Secondly, as mentioned earlier, the essence of smart city construction is the process of continuously increasing the level of urban intelligence, and it should not be set as the target model of "building a smart city". Looking further at the construction of smart cities from a process perspective, the process of urban intelligence should be viewed as an evolutionary process of an intelligent open complex giant system combining self-organization and other organizations, rather than a purely engineering construction process .

Third, the specific content of smart city construction includes all aspects of the operation of the urban system, from the underlying urban infrastructure to the upper-level urban governance. From the perspective of systems engineering, a city is not only a system, but also a "System of Systems" integrated with multiple relatively independent systems. In this regard, the planning and construction of smart cities should be carried out in accordance with the ideas of "System-of-Systems Engineering" or Architecture Engineering. □ From the perspective of a systematic system, the city's infrastructure systems such as water, electricity, communications, and roads constitute the most basic member systems of the urban system.

In recent years, with the rise of big data-related technologies, "urban big data" and "urban computing" have increasingly attracted the attention of the academic community. The essence is to build methods and technologies from urban activity data acquisition, data management, data analysis, and service provision. And application architecture. Research on urban computing methods and technologies provides a powerful weapon for the study of urban operating modes and laws supported by information technology. In recent years, the academic community has studied various types of complex collective behavioral dynamics in urban big data scenarios (such as modes and rules of transportation travel).) And other issues have carried out a lot of useful research and exploration. This is a research line worthy of further exploration.

The innovation of the community governance model also requires the transformation of the role and function of the government, which is the premise of the reform of the grassroots social management system and the guarantee for achieving the goal of community autonomy. Zheng Yongnian pointed out that the objective reality of Chinese politics and the nature of political power during the transition period determine that state power will always live with us. It can be seen that the government has always been the leading force in community construction, which is also related

□ Mebratu D. Sustainability and sustainable development: historical and conceptual review [J] .Environmental impact assessment review, 1998, 18(6):493-520.

□ CaragliuA, Del Bo C, Nijkamp P. Smart cities in Europe [J] .Journal of urban technology, 2011, 18(2):65-82.

□ Bar-Yam Y. About engineering complex systems: Multiscale analysis and evolutionary engineering [C] .In International Workshop on Engineering Self-Organising Applications (pp. 16-31).Springer Berlin Heidelberg, 2004.

□ChourabiH, Nam T, Walker S, Gil-Garcia JR, et al. Understanding smart cities: An integrative framework [C] .The 45th Hawaii International Conference on System Science(HICSS), 2012. 2289-2297.

to the function of the government in the community.

Xu Yong believes that the intervention of the government has played a role in making up for the lack of social autonomy, and community autonomy in community construction has a strong government planning. Therefore, with the increasing development of community building, the role and function of government must be changed accordingly. Mao Shoulong pointed out that the process of the government's comprehensive governance reform is the result of the overall and systematic promotion of the macro, and it is also the result of specific public management innovation, accumulation and promotion of macro reforms in many aspects.

Scholars have different views on the thinking and practice of the transformation of government functions. Zhang Mingliang pointed out that to properly handle the relationship between government organizations and autonomous organizations, the core is to solve the problems of simplifying government and decentralization and shifting the center of gravity. Wang Lefu put forward the viewpoint of the socialization of Chinese government functions. Cui Yunwu believes that the government-led community construction must aim at promoting the self-management model of the grassroots and forming a new way of government social management. Pan Xiaojuan believes that the main task of the government in community services is to create an environment and provide conditions instead of directly participating in the provision of community services.

Yu Yanyan believes that the government's role in community service mainly includes formulating community service policies, setting community service goals, mobilizing citizens to participate in community service, establishing community service cooperative relations, and being the main body of community service responsibility. □Therefore, it is necessary to abandon the concept of "omnipotent government" and clarify the limits of the government's role in community construction. Reform the current community public administration system and build an institutional platform for community residents to participate independently.

So far, artificial intelligence technology in urban planning Application, mainly focused on the law of urban growth and urban space Machine Learning (ML) and Deep Learning (DL). Due to the complexity of the city. The study of the largest complex life created by this human on earth. Research and exploration has so far hindered the science of its planning discipline due to its complexity. Sexual development. Human intelligence can rise all over the world, especially in China. Urban planning and artificial intelligence are among the best in the global planning academia combining.

At the present stage, government departments are still the main promoters of the innovation of community governance models, and some of the management power is transferred to these diverse subjects. Through the formulation and implementation of rules, they are guided to perform their governance duties and become an important sharer in community governance. With collaborators. Hu Xiang proposed the concept of "meta-governance", highlighting the important position of the government. Meta-governance is a vocabulary used by western scholars to seek solutions to governance failures, but in fact, meta-governance is just another expression that governance theory attaches importance to the important functions of government in social public management networks.

The application of artificial intelligence technology in the urban planning discipline of China. Although it is preliminary from a long-term perspective, but from a global perspective. Look, but it is the leader. Artificial intelligence is mainly used for urban data. Large-scale mining, and large-scale upgrading of China 's urban planning community to the world. Understanding of the law of urban growth and the law of space. The author and working group have. After completing satellite image mining in built-up areas of more than 10,000 global cities. Digging has shown the law of the typology of a large number of urban space growth.

□ Stock G. Metaman: The merging of humans and machines into a global superorganism [M] . New York: Simon & Schuster, 1993.

3. Conclusion

Based on this "integrated harmonious intelligence", this article expands IBM's "3I" understanding of smart cities, which combines the development of social systems and information technology systems to promote more comprehensive "perception, interconnection, and intelligence" "To develop the overall" nervous system "of the city. Under this understanding, the city's "integrated harmonious intelligence" is also conceptually related to the theory of reality and artificial "parallel systems" advocated by scholars such as Wang Feiyue in recent years. In this way, the analysis of this article attempts to establish an understanding of the connotation of the concept of smart cities, in order to examine the construction of smart cities and smart cities from a more comprehensive perspective.

The above understanding of smart cities and smart city construction is still relatively shallow. The author is not eager to sort out the results of these staged imperfections, I hope to have a deeper understanding of this issue, and hope that the thinking in this article can lead to further discussions on the essence of smart cities and construction strategies. The emerging smart city construction can provide some ideas for reference.

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