Study on smart city construction of Jiujiang based on IOT technology

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Abstract. At present, with the technology of the Internet of things (IOT), building smart city is forming a powerful wave of city, which promotes economic and social development of city. This paper expounds the connotation of smart city, explores the social and economic significance of the construction of smart city, analyzes the present situation of smart city construction in Jiujiang, studies the basic principles development altar get and key construction projects, and puts forward relevant of Jiujiang smart city construction, and puts forward relevant proposals about smart construction in Jiujiang, Jiangxi.

1 Introduction

With the rapid development and in-depth application of IOT, new generation of mobile broadband network, cloud computing and other information technology, the digital city growing into higher smart city has become an inevitable trend. The Internet of things technology is the core support technology of smart city. On January29in 2013, the national smart city pilot working conference held in Beijing organized by Ministry of Housing and Urban-Rural Development of the People's Republic of China announced the first list of national smart city pilot, which also means that smart city will be vigorously built in the country.

2 The connotation of smart city

In recent years, there are a lot of controversies about the developmental direction of future city, such as digital cities, knowledge cities, eco-cities, creating urban and innovative cities. Fundamentally, these cities are trying to use IT to enhance the economical, political and cultural values [1]. This makes the boundaries between them blurred, even misused or abused.

    The concept of smart city evolved, the focus is no longer the hardware facilities, but the cultural and educational environment of cities, namely the soft power of urban construction. Scholars who held this view believe that the hardware infrastructure construction is the basis of building smart city, but in order to ensure its sustainable development, the humanities, education and social capital [2] is inseparable.

    In a certain sense, Smart city is an integrated digital, ecology and the creation of the city's three-dimensional city by means of information technology to improve the city's economic, political and cultural values [3]. It can be considered that smart city concept is a combination of digital city, eco-city, creating a diverse body of the city: it not only contains the technical architecture of digital city characteristics, but also has a livable ecology city environment, along with the creation of the city 's creativity, allow people to have convenient and smooth transportation network, guarantee high quality medical services, a safe and orderly environment, sustainable use of energy and water, reasonable and

optimize the education system, which will make the government management and service, transportation, information and communication, health care and health, urban management, public safety, public service, business economics, environment, livelihood, education, research and industry intelligent, smart, systematic, and so as   to ultimately achieve a healthy and harmonious urban sustainability development.

Although each person's understanding of intellectual city will be different, but from the perspective of technology development ,we generally consider that intelligent city is with the assistance of things , the Internet, mobile communications networks, cloud computing technologies, and apply   these technologies to the city in order to achieve fully aware, ubiquitous connectivity, pervasive computing and converged applications. It have four characteristics[4]: (1) full of Things : Smart sensing equipment will get urban public facilities, basic resources, environment and other living things together into a network, which run the core of the city by real-time sensing. (2) Full integration: the Internet of Things with full connectivity and integration systems, the data is integrated into the urban core system running full map, providing intelligent infrastructure, basic resources and living environment. (3) Encouraging innovation: to encourage governments, businesses and individuals in the intelligence infrastructure on top of technology and innovative business applications development for the city to provide a steady stream of power. (4) Work together: Based on the wisdom of the infrastructure, the city's various critical systems and participants in harmony will efficiently collaborate to reach the city running in the best condition.

The Internet of things technology is the key technology to realize smart city and an important symbol, and wise application service is the ultimate goal of it [5]. From this perspective, the smart city information and communication systems can be divided into three levels, the bottom is used to collect data and perception can make a wise response under Directive perception control layer, the second layer is a data transmission network layer, the top is the application layer. Smart City has developed a body of the same features as the life [6].

3   Social and economic significance of building smart city

After reform and opening up of development for 30years, China is accelerating the pace of urbanization. Although urbanization brings about the improvement of people's living standards, to maintain sustainable development is increasingly vulnerable because of a variety of factors, we need to switch mode, adjust structure, change lifestyle, and continue to solve emergencies and other issues.

First, the city needs to maintain sustained and rapid economic growth mode transformation, breaking the limits to growth. Increasingly urban development is constrained by land, space, energy and clean water and other resource shortages; urban population growth, environmental protection and other issues are also facing increasing pressure. These problems using traditional techniques and management methods has been difficult to effectively resolved, while developed countries are currently studying innovatively how to use of a new generation of information technology, knowledge and intelligence techniques to re-examine the nature of the city, urban development target location, city functions cultivation, urban restructuring, the city's image and characteristics of modern urban development and a series of key issues, particularly through smart sensing and intelligent decision-making platform to solve urban environmental protection, water shortages and other issues. "Smart city" project is proposed based on this background, the necessity and urgency of It is very obvious.

Second, the sustainability of urban economic development requires upgrading and restructuring industry. City must have a group with core competitiveness in the future of the industry, in order to have economic sustainability and growth potential. However, most of the city's pillar industries currently are resource -intensive and labor-intensive industries, It is a lack of core technology and brand advantage. Smart City can be introduced through technical means to the industry as a unit to create virtual and physical coordination mechanism innovation (such as smart logistics, smart environment, smart banking and wisdom hospitals), to make the integration of synergies between different sectors mechanisms (such as intelligent transportation and wisdom of urban management, etc.), and improve the city within and between cities' innovation, even promote industrial upgrading and structural adjustment.

Third, urban development must adapt to the post-industrialization industrialization especially after changing lifestyles. China's urban development in recent decades is following the pace of industrialization. Industrialization not only brings more material wealth to our people, but also completely changes the way people live in. The most prominent manifestation is living in a society, internationalization, by networking through social division of labor to provide various services to residents. But this brings food and drug safety, domestic service quality and safety, community safety and other issues, especially food safety issues have become increasingly prominent. Cities must use new generation of information technology to build real-time updates of control and coordination system, to realize intelligent management skills with an increasingly complex urban entity harmonization of systems and to achieve the goal of modern livable (such as the intelligence community, etc.). Advanced foreign experience shows that the city's high livability, high intelligence is one of the important conditions and vital and attracting talent.

Fourth, city development must quickly and properly resolve emergency incidents and emergencies problem. Economic development brings about China's economic integration and globalization; it also brings a vicious outbreak of infectious disease, malignant crimes increasingly, threat of international terrorism and other issues. In order to prevent and solve such problems, the introduction of smart city for the first time can quickly perceive these unexpected events, through its regulatory capacity and behavior of intelligent consciousness fast judgments and decisions accuracy, validity and timeliness, to achieve synergy of different sectors and regions and response capabilities, but also through its "learning" capabilities, and realize the continued improvement of emergency events and emergencies level so that the emergency plan follow procedures, intelligence.

4   How to build a smart city of Jiujiang city

Jiujiang has good fiber resources, which has been formed to support the "wisdom of Jiujiang" all kinds of applications of fiber optic cabling system and improval national information infrastructure facility protection. Jiujiang City, through several years of information technology infrastructure, "Wisdom Jiujiang " shape, so far, the construction of basic geographic information database and other infrastructure work has been advancing, Jiujiang City has completed various special network video surveillance system video capture point of about more than 6000, digital urban management, digital transportation, digital city emergency command and other digital application system has been put into use or being deployed. Construction of smart city is inseparable from digital city, wireless city of construction achievements.

Construction of smart city, we must consider the full end to end information transfer path. Any exchange of information is an end to end path, in this path, usually encounter a lot of associated technology, network, products, and only if we consider the whole network concept, smart city to become more specific. It has overall planning, but It   must be done step by step ,and, also needs simultaneous construction [7].

Basic principles can be summarized in five points: (1) solid foundation, step forward. To enhance the level of information infrastructure and consolidate intelligence application infrastructure in a prominent position, to strengthen overall planning, specification management, increase investment and construction efforts; through a phased development, rolling forward the implementation plan, to promote intellectual depth development of urban construction. (2) Innovation and development, to benefit people's livelihood. Focus on the promotion of economic development pattern and improve people's livelihood, and vigorously promote the technology, applications, management and institutional mechanisms for innovation and development, and explore new models, develop new formats , and continuously improve the efficiency of city operations and public service levels, and promote coordinated economic and social development, to make the general public, businesses truly feel the actual benefits of smart urban construction and convenience. (3) Focus, focus on items. Focus on economic construction, urban operation, social management and public service areas of focus, highlighting the appropriateness, effectiveness, operability, focusing public nature, fundamental, innovative demonstration, business collaboration projects, milestones and strengthen the construction and expediting information technology in all areas of urban development further application. (4)

Urban linkage, demonstration. City and county levels of government co-ordination to promote support pilot counties, to speed up key areas, key areas, key demonstration project construction, enhance radiation and leading role in promoting facilities, application penetration and industrial development. (5) Government guidance, enterprise subject. Strengthen government planning guidance, strengthen policies and regulations, normative standards, and improve market supervision, create a fair and orderly market environment. Give full play to the basic role of market allocation of resources; adhere to the demand-oriented enterprises as the mainstay, formation of the whole society to participate in construction of smart city, good atmosphere.

Smart City's three major power engine can be summarized as follows [8]: green, service-oriented and ubiquitous technology, Smart City will make cities smarter. Through the Internet everywhere, the city was implanted single object of the intelligent sensors connected together to form things, to achieve the overall perception of the physical city, cloud-based technologies such as information on the perception of intelligent processing and analysis, to achieve "digital city "and the integration of the Internet of Things, and issued instructions for including the government, the people's livelihood, the environment, public safety, city services, industrial and commercial activities, including a variety of needs, to make intelligent response and intelligent decision support.

Give full play to the role of the main force operating companies, in accordance with planning guidance, intensive building, resource sharing, standardize management, to meet the demand, the principle of moderate advance in order to expedite service levels to enhance the information infrastructure and universal service capacity main line, increasing construction investment, focus enhance the overall carrying capacity of information networks, facilities, resources, capacity and utilization of information and communication gathering radiation. Strengthen information infrastructure planning and construction management, improve the mechanism and modalities to promote innovation, and continuously meet the people and enterprises to improve communication quality and service level requirements. Several special focuses on the following construction:

First: Broadband urban construction. The construction of urban fiber-optic broadband network and Next Generation Broadcasting (NGB) building achieves full coverage of urbanization areas, significantly enhance the network infrastructure level, and built the country's largest fiber optic broadband, NGB network of cities, the basic completion broadband city. For new residential buildings and construction standards for fiber to the home, residential quarters have been built to accelerate FTTH and building renovation, FTTH ability to cover more than one million households. Expansion, optimize existing metro network, improve user access and service carrying capacity.

Second: the wireless city construction. Build a multi-level, wide coverage, multi-city hot spots wireless broadband network. WLAN hotpots cover major urban public spaces, the third generation mobile communication (3G) networks achieve full coverage of urban and rural areas, Long Term Evolution Time Division Synchronous Code Division Multiple Access (TD-LTE) took the lead in the country and put into trial commercial basically completed wireless city. Vigorously promote the city's public spaces, service establishments WLAN construction, the city's WLAN are totally more than ten thousand (about 10,000 AP). to Achieve public transport, administrative office, culture and sports, parks, tourist attractions, hotels, education, health, commerce and banking facilities more than 80% coverage of key sites, access capacity of 20Mbps,and the density and quality of the leading domestic coverage. To carry out network optimization, technology upgrades and improved depth of coverage, increasing macro base stations and indoor coverage system construction, improve the three standard 3G networks, wireless broadband data services to enhance the carrying capacity. The basic realization of the city's more than 1Mbps wireless broadband coverage, the central city and suburban town, the center of the town covering more than 3Mbps.

Third: Domestic and international Internet interconnection export expansion and construction should be strengthened. Strengthen international and domestic communication system construction, realize a substantial increase in export capacity of urban networks, the Internet bandwidth of international and domestic exports reached 1Tbps and 5Tbps; various operators in the international communication nodes through their implementation and the Asia-Pacific region's major telecom

operators directly connected networks, and enhance City communications hub capabilities; encourage operators to enhance interconnection direct linking, enhanced other network operatorsnter connection capacity.

Fourth: Completed IPTV, mobile TV and other integrated control platform and network information security technology management and control platform for audio-visual programs information network monitoring platform, improve the relevant business functions, preparing relevant docking platform to enhance network and information security with the city comprehensive monitoring system convergence. Expand the development of IPTV, mobile TV and internet access cable television network based in pilot activities to promote domestic-based cable television networks such as IP telephony services to carry out pilot projects to promote the multi-screen interactive, high-definition video, interactive entertainment, smart home integration of business applications , explore innovative management mechanisms and business models. Speed up video operations center phones, computers, television and other multi-screen interactive platform, multi-terminal device interactive applications.

Fifth: Multi-stakeholder involvement, increasing investment, integration of resources, rational distribution, focusing on energy saving and service innovation, to achieve large-scale deployment of centralized and IDC, enhanced cloud computing, storage and other high-end business service capabilities, the city's total number of racks IDC strive to break Wan aircraft. GPS integrated information network of Jiangxi province, based on completion of a multi-site compatible with BeiDou navigation satellites, GPS satellites, GLONASS satellite construction and renovation, built Continuously Operating Reference Station System, radio broadcasting platforms and high-precision location services platform to carry out a wide variety of location-based services applications for Jiangxi province. As shown in Figure 1, the planning and management of the city will be made into one.
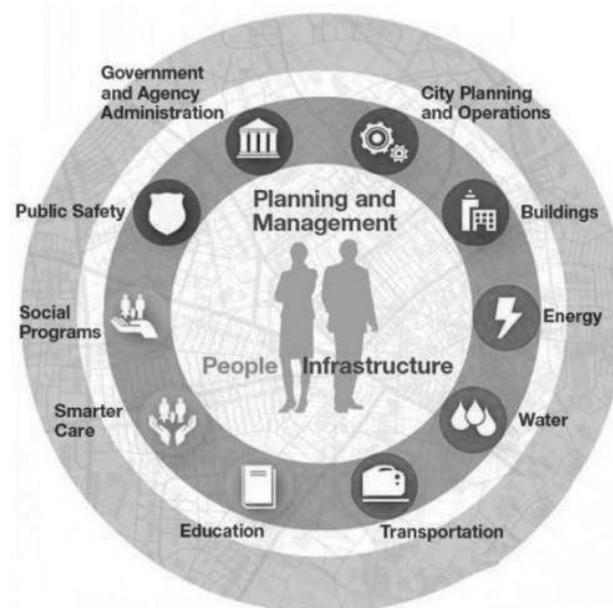
Fig.1 The architecture of smart city

5 Conclusion

Construction of smart city, is to implement the" interconnection, integration, collaboration, innovation, and intelligent" smart city concept, by means of a comprehensive, integrated various types of intelligence technology, through more comprehensive interoperability, more effective exchange and sharing , and more collaboration the associated application , more in-depth intelligence, to promote the city's flow, logistics, information flow, capital flow coordinated and efficient operation.

(1) Accurately understand the connotation of smart city, take advantage of networking technology, and steadily promote the "wisdom of Jiujiang" building. jiujiang ,As China 's top ten charming city,

tourist city, intelligent city building can be implemented on a priority basis in the tourism industry, and achieved certain results based on industry, can take advantage of this outcome, and then to carry out the construction of other industries. Points to face, recognize their own development status and stage of development, and gradually steadily, do not blindly pursue wisdom leapfrog urban construction.

(2) to cooperate with Enterprises and universities and play intellectual superiority of university teachers and research platform edge, advanced technology will be used in the market, so that the relevant scientific research land, save manpower, material and financial resources, shorten the construction period of smart city.

(3) Under Government guidance, to do policy support and financial investment well, build a communication platform, develope guidelines, do a good job in planning implementation and project construction. Consistent application and demand -oriented will   be done. regulate market' behavior, government investment and the combination of multi- market financing investment and financing mechanism will be established to guide the whole society to participate in the construction. As the main building, enterprises use their own capital and experience advantages, to develop specific programs and carry out projects.

Acknowledgements

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