Singapore's Experience and Enlightenment of Building a "Smart Nation"

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Abstract. Singapore's construction of a "smart country" has achieved remarkable results, and many countries around the world are currently building a smart society. This article summarizes the construction concepts and experience values of the "Smart Nation" project in Singapore, it is intended to provide some references for the construction of china's smart society.

1 Introduction

As the second most dense populated country in the world, Singapore has a population density of 7,796 people per square kilometer, and this number is still increasing. In addition to facing huge space pressures, Singapore's aging population is also getting worse. In addition to the prolonged life expectancy and the chronically low fertility rate, the post-war baby boomers began to get older, further exacerbating Singapore's aging problem. In order to solve these problems, Singapore launched the "Smart Country 2025 Plan" on the basis of the "Smart City 2015 Plan". This plan is the first blueprint for a smart country and an upgraded version of the "smart city" in the world. By means of data sharing, we will try our best to give full play to people's subjective initiative, improve the scientific level of decision-making, and provide the people with better, more timely and complete services [1], which will help to achieve a more sustainable and smarter Singapore.

A smart society is a new social form that is constructed using a new generation of information technology. At present, the construction of a smart society has become an important way for developed countries to improve their national well-being and an important measure to promote economic growth. In the process of building a smart society, China objectively requires learning and learning from the effective experience of foreign smart city construction in urban construction, avoiding detours, doing more practical things, enhancing confidence in the construction of a smart society, and better promoting the construction of a smart society.

2 The concept of building a smart country in Singapore

The core concept of a smart country is the three "Cs", namely Connect, Collect and Comprehend [2]. Singapore launched the "Smart Country Platform", and the first phase of the platform's construction focused on "connection" and "collection". The goal of "connection" is to provide a safe, high-speed, economical and scalable national communication infrastructure [3]. "Connection" refers to ensuring that everyone is interconnected at any point in time, anywhere. "Collecting" refers to the collection of effective real-time data through sensor networks all over the country, and sharing them appropriately. "Understanding" means that based on the collected real-time data, through the analysis of these data, we can better predict the needs of the people and provide better services [4].

Under the guidance of the "three Cs" concept, in order to promote the widespread adoption of digital and intelligent technologies throughout Singapore, Singapore has identified key national strategic projects. These projects are key driving factors for Singapore's realization of the "Smart Nation" plan. These projects include CODEX, E-Payments, Moments of Life Initiative, National Digital Identity, Smart Nation Sensor Platform and Smart City Six major projects of Smart Urban Mobility.

(1) The purpose of CODEX is to establish a lean, agile and future-oriented government. Its core business is to develop an exchange platform that enables the government to provide citizens with better digital services faster and more efficiently, including building government data structures, transferring data to commercial clouds, and using Singapore Government Technology Lines (SGTS) Targeted construction of digital applications.

(2) The purpose of E-Payments is to bring simple, convenient, seamless and secure digital transactions to everyone, and to create an open, convenient and interoperable national electronic payment infrastructure, aiming to provide citizens and enterprises Provide more convenient and efficient services.

(3) The "Moment of Life" initiative (MLI) is to provide citizens with the required comprehensive services and effective information through a single

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platform. Its purpose is to provide citizens with personalized and proactive support at critical moments in their lives. At the same time, relevant government information and services are bundled among various agencies according to the needs of citizens.

(4) The National Digital Identity (NDI) is a digital identification system for Singapore residents and businesses to conduct digital processing with the government and the private sector in a convenient and safe manner. It will begin operation in 2020. Including programs or websites such as SingPass (Singapore personal access), mobile phones and myinfo.

(5) The Smart National Sensor Platform (SNSP) is a comprehensive national sensor platform that systematically uses sensors and data to improve urban planning, establish faster and more reliable public transportation, and better public safety.

(6) The purpose of Smart City Mobility (SUM) is to use digital technology to improve the comfort, convenience and reliability of the public transportation system. This project will help improve the commuting experience and improve the mobility of commuters, especially the elderly and the disabled, through the "non-contact toll collection" and "automated vehicles" to be implemented.

3 Singapore's experience in building a smart country

3.1 Focus on long-term planning and the information and communication industry

By consulting relevant literature, it is found that Singapore has always put the information and communication industry in a more important position and has long attached importance to the development of this industry. Since the 1980s, Singapore has been committed to formulating plans for advancing informatization (see Table 1). So far, Singapore has formulated a total of 7 strategic plans. The gradual advancement of these plans has laid a solid foundation for the implementation of Singapore's "Smart Nation" 2025 plan.

Table 1. The evolution of Singapore's "smart country" construction.

Time phase	Plan name	Goals
1981-1985	*National Computerization Plan*	Promote computerized applications in the government to realize office automation and paperlessness
1986-1991	*National IT Plan*	Gradually extend the government system to enterprises
1992-1999	*Wisdom Island Project (IT2000)*	Citizens can enjoy IT services at any time and place
2000-2003	*Information and Communication 21st Century Project*	Promote the rapid growth of information, communications, and technology in Singapore's economy and modern service industry
2003-2006	*All Union Singapore*	Unleash the potential of communication, create new value, and realize new possibilities
2006-2015	*Wisdom Country 2015 (IN2015)*	Improve cross-regional and cross-industry resource integration capabilities
2015-2025	*Wisdom Country 2025*	Build an operating system and infrastructure for data connection, collection and analysis covering the entire country

3.2 Attach importance to social forces and regard information construction as a process of participation by all citizens

In the process of formulating the plan, Singapore solicited opinions from all walks of life, and received positive responses from the public. In addition to the first time, the Singapore government promoted the establishment of the IN2015 Promotional Literature Committee, and there are 10 professional committees under it, covering various aspects of education, medical care, etc. The members of the committee are composed of senior people from various industries. It can be said that IN2015 is a national project which jointly created by the government, enterprises and the public.

3.3 Attach importance to talent cultivation and development

IN2015 plans to assist the management department IDA, attach importance to cultivating a large number of professionals proficient in information and communication technology, and integrate them into the process of information development. In addition, Singapore is also actively introducing young students and foreign professionals to engage in the information and communication industry to ease the situation of the shortage of talents in the development of the country.

3.4 Attach importance to the construction of supporting infrastructure and provide more convenient services to the public

For example, in the SUM project, in Singapore, which lacks land, 12% of the land is reserved for roads and transportation infrastructure. As the population continues to grow and there are more than 1 million vehicles on the road, Singapore's challenge is how to use its limited space to provide more convenient and high-quality transportation services. [5] In order to better solve this problem, the Land Transportation Authority of Singapore (LIA) collects information about locations and traffic conditions through a series of APPs and other methods, and analyzes this information to gain insights

into how people behave-route selection, The means of transportation used, etc., in order to analyze and study the corresponding policies to change the mode of public transportation. For example, an APP called My Transport Jouney Planner launched by the Land Transportation Bureau can provide people with real-time traffic information. People can not only accurately predict the arrival time of the bus, but also know the congestion on the bus. So you can decide whether to take the transportation and better plan your own route. A similar APP called "Smart City Parking" allows the driver to know the list of parking lots available around the destination and also the price. The system will also actively reduce the number of temporary parking places at night to ensure that residents have enough parking spaces when they return home .

3.5 In-depth application of technology to the field of people's livelihood to enhance the happiness of public life

The wireless sensor network test was completed at the end of 2018. Such as the use of wireless sensor networks to transmit water consumption data of smart water meters. The installation of smart water meters enables users to access near real-time water consumption data, and can detect water leaks through mobile applications, which can effectively help users save water. A 2016 trial observed that households found water leaks and good water-saving habits through mobile apps to save about 5% of water. In addition, sensors are installed on the car, and if there is damage to the road surface when driving through a certain highway, it can be sent automatically, or it can be easily processed by electronic means such as mobile phone positioning. At Singapore Changi International Airport, every restroom has a QR code. Passengers can scan the QR code to locate the restroom and help solve the problem quickly if they find that there are facilities that need to be repaired or have sanitary problems[6].

4 Enlightenment for the construction of a smart society in china

In 2017, marked by the 19th National Congress of the Communist Party of China, china entered the stage of building a smart society. At present, our society is still in the stage of digital development. In order to promote the construction of a smart society, combined with Singapore's experience in the construction of a "smart country", considering the huge differences between cities in china, the construction of a smart society is subject to many factors. As far as China is concerned, while building a smart society, while learning from Singapore, it also needs to learn from the actual situation in China. Put forward the following enlightenment:

4.1 Focus on top-level design and long-term planning

A smart society can improve the efficiency of resource utilization, save resources, reduce economic operating costs, improve the quality of public services, improve people's living standards, protect the environment to a higher degree, and build a smart society is an inevitable requirement for social development. Informatization construction can not be accomplished overnight. In the early stage, it is necessary to devote more energy to formulate long-term plans, build data infrastructure purposefully, collect and store data, and lay the foundation for the later use of data resources. And the government should formulate unified standards of data collection and storage to ensure the sharing of data and information. Focus on top-level design and long-term planning to lay the foundation for reforms in the future and even longer in the future.

4.2 Participate in the promotion of the construction of a smart society with the whole people-"Strong to one place"

A smart society is a society with high intelligent, a system with high functional, and its service targets cover all sectors of society. Therefore, in the process of building a smart society, it is necessary to promote the participation of all people, a special public opinion advisory committee should be set up, and adopt the opinions of the public widely. Make "strength go to one place." At the same time, it is necessary to emphasize the organic combination of technology and people, and gradually eliminate the "digital divide", that is, the gap in information acquisition between people. The construction of a smart society is closely integrated with informatization. If the application of science and technology is separated from the integration of people and surpasses the ability of most people to apply science and technology, then the construction of a smart society will be useless. Compared with Singapore's, the level of education of Chinese citizens still has a considerable gap. The construction of a smart society should pay more attention to practicality and take into account the ability of most people to obtain information and use information software. Especially with the rapid development of information technology, some accept Groups with slower abilities, such as the elderly. If not, there will continue to be "digital divide" problems such as migrant workers not being able to book tickets online, elderly people not using taxi-hailing software, elderly people unable to pass without a health code during the epidemic, and difficulties in registering.

4.3 Cultivate and absorb professional talents and improve the incentive mechanism

Talent is the key to the construction of a smart society. At present, china is vigorously developing the information and communication industry and cultivating a large number of technical workers. However, there is

still a lack of professional talents who understand both technology and the construction of a smart society, and there is a lack of training and incentives for such professional talents. The government should establish talent cultivation and incentive mechanisms to provide technical support for the construction of a smart society in china.

4.4 The government itself should pay attention to a high degree of electronic and intelligent

In recent years, the Chinese government has been continuously transforming into a service-oriented government, improving government efficiency and providing more convenient services to residents. To solve this problem, the Singapore government vigorously promotes e-government and has shaped an "innovative leading government." Singapore first launched the public service computerization project in the 1980s. In 2006, it proposed a new e-government development concept of "Integrated Government 2010". Singapore ' s e-government system has effectively improved the public service Provide methods and means as well as interactive communication methods between the government and the public to improve the efficiency and service capabilities of the government

5 Conclusion

Singapore and China are different in terms of national systems, technological development levels, economic and social development, etc., and their national strategic priorities are also different. The study found that although the construction plans of different countries are not the same, in general, a lot of experience is worth learning, and the basic starting point is also to achieve a higher level of social development and bring more benefits to the public. For China, although the smart society has the foundation for the development of digital economy, digital government and smart city, it has deeper connotation, broader scope, higher status, higher pursuit of integrated development, greater difficulty in realization, and greater emphasis on " people oriented". In order to accelerate the development of a smart society in China, it is necessary to formulate development strategies and related policies for the development of a smart society based on Singapore's experience in building a smart country and combining with china's national conditions.As the urban population continues to grow, the demand for infrastructure is also increasing, and resources will become more scarce. Singapore launched the "Smart Nation 2025 Plan" to make the government's policies more forward-looking on the basis of information integration. To respond to these challenges better, this information should be used to serve the people better. Learning from Singapore's advanced experience in building a smart country could provide new development ideas for the building of a smart society in china.

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