Research on Construction of smart community Based on GIS

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Abstract. At present, the construction of smart city in China has become an upsurge. As the basic unit of smart city construction, smart community is also in full swing. Residents are in pursuit of better quality of life. Intelligent community makes government management easier. Comprehensive monitoring and intelligent access control ensure the safety of the community and help the construction of smart city.

1. Introduction
Smart community refers to the integrated application of the Internet, cloud data, 3S technology and other new generation information technology to provide a safe, comfortable and convenient modern and intelligent living environment for community residents, so as to form a new management form based on information and intelligent social management and service[1]. The construction of smart community is not only an important part of realizing the modernization of national governance system and governance capacity, but also the important content of intelligent urban social governance.

2. Development of smart community
The concept of "smart community" was first proposed by the communication international center of the University of San Diego. In 2008, IBM put forward the concept of "smart earth", and further proposed the concept of "smart city" in 2009. Later, with the continuous promotion of the practice of "smart city" throughout the world, community has appropriate spatial scale and relatively complete system Construction has gradually attracted more and more attention.

China's smart community development report points out that smart community construction takes urban community residents as the main service subjects, focusing on the realization of intelligent property services, intelligent home furnishings and intelligent community public services, so as to achieve the goal of" more harmonious society and better life " .The report directly affirmed the important position of smart community construction [2].

Zhu Hui and Ma Defeng believe that smart community is relative to the traditional community. It is a new community form based on the traditional community, using Internet, cloud computing and other high-tech means to facilitate community residents [3].

Shen Yue and others put forward the construction strategy of human-oriented smart community. Firstly, it is necessary to create community planning and life circle based on Residents' needs, and secondly, to provide personalized services for residents [4]. The important concept of "intelligence +" is put forward for the first time in the government work report in 2019. It is pointed out that we should deepen the research and application of big data and
artificial intelligence, build industrial Internet platform, expand "intelligence +" and enable the transformation and upgrading of manufacturing industry. This also marks the transformation from Internet plus intelligence to the era, and has laid the foundation for the establishment of a smart community[5-7].

Table 1. Singapore Community Service System

| Community service system in Singapore | E-commerce system | Commodity transaction |
|                                      | Service transaction |
| E-government system                  | Government services |
|                                      | Enterprise services |
|                                      | Citizen and resident services |
|                                      | Non citizen services |
| Community health care system         | Electronic medical record |
|                                      | Appointment with doctor |
|                                      | Online consultation |
| Community entertainment system       | Physical fitness |
|                                      | Folk customs |

3. Smart community construction scheme

3.1. Scheme study
By consulting the relevant domestic and foreign research on smart community, comparing the research methods of domestic and foreign, this paper analyzes the design of intelligent community platform based on GIS before investigation. This paper analyzes the current situation of the community, and concludes that there are some problems in the community construction, such as imperfect infrastructure, backward technology, personnel allocation and so on. By analyzing the current situation of the community, it is concluded that there are some problems in the community construction, such as imperfect infrastructure, backward technology and personnel allocation. And it completes the platform design requirements analysis. Based on the practical exploration of smart community construction, this paper summarizes the achievements and problems in the process of smart community construction, and analyzes the objective causes of the problems. At the same time, by comparing the typical experience of advanced areas at home and abroad, combined with relevant theories, the paper puts forward constructive opinions and suggestions.

Starting from the existing intelligent community platform to share and investigate the traditional community, the project implementation steps and implementation direction are formulated to realize the organic combination of traditional community and intelligent community in the era of Internet and big data. In view of the non-intelligence of the traditional community and the limitations of the existing intelligent community, combined with GIS for in-depth research, using online map combined with traditional intelligent community to develop solutions, the design of the platform is completed.

3.2. Construction scheme of smart community
According to the guidance of the national "smart community construction guide (Trial)", combined with the survey data and the current situation of the community, including location, area, population, cultural structure, age structure, household conditions, living conditions, residents' needs for spiritual life and material life, with the highest purpose of community residents service, the construction of smart community platform is carried out with the help of Internet and geographic information system. The scheme is as follows:

3.2.1. E-government construction.
It includes community introduction, community information management, administrative services, life information, through online and offline education and training for residents, commodity sales, home
appliances maintenance and other aspects. Life problems should be connected in the air and solved at home.

3.2.2. Medical and health construction.
It includes medical insurance, health examination, life guidance, daily care and so on.

3.2.3. Domestic services construction.
It includes elderly services and child care services.

3.2.4. Cultural and recreational Construction:
It includes tourism, learning, performance and so on.

3.2.5. Logistics Construction.
It includes distribution services, collective shopping and so on.

![Smart community construction scheme](image_url)

Figure1. Smart community construction scheme

3.3. scheme innovation

3.3.1. Technological innovation.
Different from the traditional community management, this study relies on the Internet platform, combined with GIS map visualization. It combines traditional information system with geography, making the designed platform more advanced and modern.

3.3.2. Big data sharing.
Using the map data provided by Google Earth to build a visual community platform can reduce the work of community map data collection. Direct use of Internet big data makes the platform more flexible.

3.3.3. Strong timeliness.
Geographic data information is constantly updated and changing, so platform information is required to adapt to various changes of information. The data of the platform is based on the network data, which can be flexibly changed and updated in real time. This ensures the timeliness of the smart community.
3.3.4. **Wide application scope.**
This research will realize the construction of smart community home page platform. The platform can not only provide a reference for the construction of smart community, but also be used for other aspects of smart community, such as the development of livelihood service system on the application platform interface, the improvement of web version and the production of corresponding app.

4. **Summary**
For community residents, combined with GIS map, it provides one-stop government, business and convenience services to realize the construction of smart community. By providing active, efficient and targeted services for the residents in the jurisdiction area, it can enrich the community public services and improve the efficiency of comprehensive services, so as to enhance the happiness of residents and help the construction of smart city.

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