

The construction principle and innovation of Intelligent Library Service

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Abstract—Internet of things technology is constantly upgrading and widely used in various fields of society. The application of Internet of things in library management will play an important role in promoting the development of intelligent library. In the management of intelligent library, the intelligent and humanized management is realized, and the service centered on user service is provided. This paper discusses the service and management of the intelligent library Based on the Internet of things. On the basis of expounding the concept and characteristics of the intelligent library, it discusses the principles and service innovation of building the intelligent library.

Index Terms—Intelligent library; intelligent construction; intelligent service; Internet of things; cloud computing.

I. INTRODUCTION

With the rise of Internet of things and cloud computing technology, the construction of smart city and smart earth has developed rapidly. The field of library and information has set off an upsurge of exploring and studying the new development path of library under the environment of Internet of things, which makes the development of library constantly present a new trend [1]. After the compound library and digital library, the intelligent library Based on information technology and marked by digitalization, networking and intellectualization is gradually coming into people's vision. At the same time, the library intelligent service also came into being.

The construction of intelligent library has developed rapidly in recent years. It is based on rich collection resources and digital resources, and relying on advanced information technology and equipment [2-5]. The construction of the intelligent library embodies the service concept of "people-oriented" of the library, aiming at the diversified needs of different readers, and striving to provide readers with a more convenient, efficient and comfortable reading environment. In the operation of the intelligent library, the application of digital technology and network technology to realize the intelligence of library services, to provide literature services for readers, can fully meet the needs of readers. The development of Internet of things technology realizes the individual interconnection between the library and users, which is the outstanding performance of the

intelligent development of the library at present. Carrying out intelligent service is the main means to improve the important position of the library. Intelligent library makes the library service more colorful.

II. THE CONCEPT AND CHARACTERISTICS OF INTELLIGENT LIBRARY

A. The concept of Intelligent Library

Intelligent library is a kind of mode that applies intelligent technology to library construction, and it is a kind of integration and innovation to realize intelligent building and automatic digital library management. From the perspective of intelligent computing, intelligent library is a combination of Internet, library, cloud computing and intelligent equipment, which can provide services and intelligent management for people through the Internet of things; from the perspective of perception, intelligent library service is a comprehensive product of intelligence and perception intelligence; from the perspective of library, the book of intelligent library Quality is to provide reading services for people. It refers to a digital library that makes full use of intelligent technology to provide services such as reading books, booking seats and so on. In a word, the digital library is based on the Internet of things and digital library, with the theory of digitalization and intelligence, with the service core of people and things interconnection, so as to realize the transformation from knowledge service to intelligent service.

B. Characteristics of Intelligent Library

The intelligent library has the characteristics of progressiveness, interconnectedness, knowledge sharing, high efficiency and convenience.

1) Progressiveness

Intelligent library is an advanced library, which is a comprehensive intelligent system based on advanced technology and advanced service concept. On the one hand, intelligent library has advanced technology. Its Internet of things technology, communication technology, wireless network technology, virtual technology, cloud computing technology are new generation of information technology that has been researched and applied in recent years, and its

advanced technology is self-evident. On the other hand, intelligent library has advanced service concept. The advanced nature of intelligent library is also reflected in the service innovation. The form of service has risen from passive service to active service. The content of service has changed from simplification to diversification, and service management has developed from automation to intellectualization and intelligence.

2) Interconnectedness

The intelligent library is an interconnected library, and the interconnection is the most remarkable feature of the intelligent library. The intelligent library not only collects data anytime and anywhere through the Internet, but also connects the data collection end through the Internet, transmits the collected data information to the library data center, and constructs an intelligent system through the network. In the environment of Internet of things, intelligent library realizes the connection between all objects (including things and things, things and people) and network. Due to the progress and application of Internet of things technology, all parts of modern library are endowed with "wisdom", realizing interaction and multi-party sharing. The interconnection makes resources searching, positioning and other services more convenient.

3) Knowledge sharing

Intelligent library has the external characteristics of network, digitalization and intelligence. It can use the network technology to realize the interconnection between readers, books, documents and librarians, and realize the internal intelligent interconnection before and after the library in the form of digitalization of information, so as to show the characteristics of knowledge sharing.

4) High efficiency

The paper library in the past has many obvious defects, such as difficult management and so on. It is not suitable for the development of modern society. Modern library service and management put forward efficient, convenient, sensitive, integration and other requirements, and the emergence of intelligent library, perfect to meet these requirements, greatly improve the efficiency of library management and service efficiency. Nowadays, the building area of the library is showing a growing trend of development, and the construction, service and management of infrastructure are becoming increasingly difficult. Once these heavy workload is flawed, it will have a serious impact on the development of the library. The application of advanced intelligent technology and the establishment of information-based service platform and management platform play an important role in the daily operation of the library. In the face of the current information society development trend, the library can only speed up the construction of intelligent information service system and management system to provide better service for readers.

5) Convenience

The convenience of intelligent library mainly refers to that Internet technology and Internet of things technology have greatly improved the service efficiency of library. With the main development goal of "facilitating the people and benefiting the people", intelligent library is a smart building for all citizens to enhance quality education, read and learn together. Through the guidance of information technology, the transformation of library management mode, and the continuous improvement of users' information literacy, intelligent library will create a new learning and working environment for users and librarians, and provide users with convenient and fast services. What is presented to users is the wireless universal library, the nearest integrated library, and the personalized interactive library. The establishment and development of intelligent library is to provide readers and librarians with more convenient and comfortable reading and working environment. Therefore, the convenience of the intelligent library is mainly reflected in two aspects: on the one hand, it provides readers with more convenient services such as bibliographic query and reading, as well as a comfortable reading environment; on the other hand, it provides librarians with an intelligent and digital management platform to improve the efficiency and quality of book management.

III. THE CONSTRUCTION PRINCIPLE OF LIBRARY INTELLIGENT SERVICE PLATFORM

The core of the intelligent library is the intelligent service platform of the library. From the perspective of information management, the construction of the intelligent library needs to follow the principles of people-oriented, service guidance and resource integration.

A. People oriented principle

The construction of Intelligent Library in China needs to follow the principle of people-oriented, and realize the service characteristics of people-oriented through the interaction among resources, readers and librarians. The characteristic collection service, information consultation service, self-service and other modes carried out by the intelligent library are to realize the interconnection among librarians, resources and users through the information integrated management system of the front and back of the library, so as to meet the needs of readers and promote the transformation of the library from book centered to reader centered. In addition, the principle of people-oriented is also reflected in the construction of library environment. The construction of intelligent library shows that more attention is paid to the construction of leisure reading space, such as adding readers' coffee house and activity room, which creates a comfortable reading space for readers.

B. Service leading principle

The development of intelligent library is a mode to realize the development and expansion of library by connecting information technology, book resources and services. Among them, information technology is the means, collection resources and digital resources are the foundation, and service is the final result. In the development of Internet and the environment of cloud computing, it can be seen that better use of information technology for the management of book resources, so as to achieve the optimization of services is an important goal. Therefore, it is very important to take service leading as the goal of intelligent library construction and development.

C. Principles of resource integration

The basic purpose of intelligent library is to provide readers with rich library resources (including paper resources, digital resources of cloud network and resources in various network carriers). Resource integration is the technical basis of service and management of intelligent library. The library needs to establish a literature perception service system and integrated cluster management with the help of cloud computing technology and Internet of things technology Management system. The principle of resource integration means that the intelligent library should establish a cross system, cross department and cross network service and management mode with each resource source website carrier.

IV. INNOVATION OF INTELLIGENT LIBRARY SERVICE

A. The realization of library intelligent service is not limited by time and space

Intelligent library can not only provide readers with rich paper library resources, but also provide readers with extended space and time book services through "three networks integration", so that readers can access books online anytime and anywhere without the limitation of time, space and region, and can not enjoy the leisure reading service. With the rapid increase of digital resources, digital resources are increasingly becoming the main carrier of future knowledge. The application of self-service library, online library, mobile library, mobile library, voice phone and other service modes can improve the efficiency of library resource management and resource utilization, reduce the workload of librarians, and bring a lot of convenience to readers, which is beneficial to the whole people Quality growth. Therefore, the library should strengthen the construction of intelligent library.

B. Highly intelligent library service

If the intelligent library wants to be widely used, it must pay attention to the construction of highly intelligent library services. Extract valuable data information from readers' age

information, education level information, regional information, reading frequency information, reading amount information, etc., meanwhile, push similar information to the user's desktop according to users' behavior preferences, accurately grasp it, build a comprehensive, real and personalized model that can reflect the needs of readers, and realize intelligent resource promotion and determination Bit and management. For example, by understanding the intelligent library account with the reader's mobile phone, iPad and other mobile devices, real-time record the search content, APP download and application of the reader, and customize personalized services for the reader's book search, query and reading, so as to make the intelligent library more personalized and visual. The rapid development of science and technology promotes the rise and wide application of mobile networks, and the emergence of 4G networks goes deep into all aspects of people's lives. In the future, the highly intelligent self-service library and wireless mobile digital library will be applied by more and more libraries to make their services more close to the needs of users and become the most popular book service mode. This kind of intelligent service mode has played a good role in optimizing the allocation of library resources, reducing management costs and eliminating security risks.

C. Ability cultivation of Intelligent Librarians

Intelligent library and smart service bring more new experience and sense of gain to users. According to the research, from the perspective of the evolution and development of the library, the intelligent librarian is the main body to implement the intelligent service. Without the intelligent librarian, it is difficult to realize the rapid development of the intelligent library. Therefore, the library should highlight the idea of people-oriented, not blindly pursue "technology first" and deviate from the core competence of "wisdom" and "intelligent Librarians". In the future, the construction of intelligent library puts forward new requirements for librarians. The library should take advantage of the situation, transform and develop from mainly relying on space and hardware investment to mainly relying on science and technology, intelligent librarians, user literacy improvement and other elements, pay attention to the cultivation of intelligent librarians, strengthen their information literacy, data literacy, technical literacy, and improve their new service ability and innovation ability. Efforts should be made to build a people-oriented, interconnected and open access smart service environment, and enhance the recognition and dependence of users on smart libraries.

D. Developing collection resources and paying attention to providing excellent knowledge

In today's world, with the rapid development of science

and technology, and the rapid development of libraries, library services should not only make good use of the existing collection resources, but also excavate, process, refine and reorganize the existing collection resources, and finally push them to the majority of users to learn to use knowledge and wisdom to create cost value. The content and structure of knowledge are unchangeable. We should transform knowledge into value and realize the transformation from knowledge to value-added products. Only when knowledge is processed and refined and used by people can it be realized. The distinguishing feature of library intelligent service from traditional service is that it reveals the essence of knowledge and its relationship in an orderly way, analyzes and reorganizes knowledge units, and provides users with processed "quality knowledge". In this process, the library has experienced a series of work processes, such as knowledge production, knowledge organization, knowledge dissemination, knowledge utilization, etc. Therefore, the library plays two roles. It is not only the storage place of knowledge, but also the processing factory of knowledge.

E. Pay attention to technology driving and realize the leapfrog development of intelligent service

The library should attach great importance to the driving role of technology. At present, the domestic library and information industry is in an important transformation period. The fundamental driving force of this transformation comes from the driving and leading of technology. The traditional library's information service and knowledge service with document retrieval and transmission as the core are driven by automation system, while the intelligent service under the condition of intelligent library needs a new technology infrastructure, network environment and platform architecture. Therefore, the library must attach great importance to the application of modern information technology and network technology in the library service, give full play to the driving role of technology, and use the ubiquitous and ever-changing network technology as a strong support, which will give strong impetus to the construction and development of the intelligent library and the implementation of the intelligent service, and also make the library service realize a new leap.

V. SUMMARY

Intelligent library is the advanced stage of library development, and intelligent service is the latest change of library service. Relying on cloud computing, Internet of things and other advanced technologies, intelligent library

provides ubiquitous intelligent services with users as the core, and becomes a more advanced form of library development. The construction of the intelligent library is in full swing in the process of construction. The intelligent library takes information technology as the main means, rich resources as the main content basis, and services to achieve the readers' fast, comfortable and convenient reading, so as to bring more new and wonderful experience to the readers' reading. In the process of the development of intelligent library services, we need to pay attention to the personalized needs of readers, and provide readers with a safe and comfortable reading environment through the active integration of "three networks" resources. With the wide application of Internet of things technology, cloud computing and network technology in the construction and development of the library, with the continuous improvement of people's requirements for knowledge application, knowledge production, knowledge innovation and knowledge transformation, and with the continuous innovation, practice and exploration of the library's intelligent service concept, the intelligent library and its intelligent service will leap to a new stage and usher in a new development period.

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