Research and Practice on New Media Technology Services for Central State Organs: A Case Study of the Construction of the National Library's Legislative Decision-Making Touch Screen System (Postprint)

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Abstract

[Purpose/Significance] The "National Library Legislative Decision-Making Touch Screen System" integrates digital collection resources with new media technology, becoming one of the important methods through which the National Library serves central state leadership organs. [Method/Process] Taking the construction of the "National Library Legislative Decision-Making Touch Screen System" as an example, this paper reviews and summarizes the experiences and design principles in the system development process, and provides a systematic description and analysis of the system's service status, research status, development status, existing problems, and improvement plans. [Results/Conclusion] Driven by new media technology, the application of the touch screen system in daily services for users from central state organs not only expands the means of legislative decision-making services but also improves service efficiency and quality, offering valuable insights for the library sector to develop similar services for central state organs in the future.

Full Text

Preamble

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Abstract

[**Purpose/Significance**] The "National Library Legislative Decision-Making Touch Screen System" integrates the library's digital collection resources with new media technology, becoming one of the important methods through which the National Library serves the leading organs of the central state. [**Method/Process**] Taking the construction of the "National Library Legislative Decision-Making Touch Screen System" as a case study, this paper systematically describes and analyzes the system's service conditions, research status, construction situation, existing problems, and improvement plans, while summarizing experiences and design principles from the construction process. [**Result/Conclusion**] With the boost of new media technology, applying touch screen systems to daily services for central state organ users not only expands legislative decision-making service methods but also improves service efficiency and quality, providing valuable reference for the library industry to conduct similar services for central state organs in the future.

Keywords: National Library of China; touch screen system; new media technology
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1 Introduction

The earliest human-computer interactions were conducted through external physical media such as keyboards, mice, and buttons. With the development of computer technology, touch screen technology emerged to meet the needs of non-professional computer users to operate computers. In the 1990s, touch screen devices began to enter the mass market, primarily applied in mobile terminals such as mobile phones and tablets. Based on the technological accumulation of the 20th century, the first decade of the 21st century became the true flourishing period for touch technology, with touch devices increasingly accepted and favored by the public. Touch screen technology has transformed the traditional way of inputting information through physical media, allowing direct command transmission from human hands to input devices. With intuitive interfaces and simple operation, it has made human-computer interaction more rapid and fundamentally changed interaction methods. Today, various intelligent terminal devices basically rely on touch technology, which has become an indispensable part of life with applications covering all industries, libraries being no exception.

2.1 National Library's Touch Screen Services for In-Person Readers

With the development of multimedia technology, information display methods have been greatly enriched. Touch screens in the library field have evolved from single-function devices such as queuing machines, digital kiosks, and fingerprint attendance machines to comprehensive touch devices for service promotion and resource introduction. The construction of the National Digital Library Touch Screen Experience System has expanded the application scope of touch screens, integrating more dynamic resources such as collection resources, electronic newspapers and periodicals, lectures and exhibitions, service introductions, and the China Government Public Information Integration Service Platform into touch screens, increasing interaction between touch screens and users. The National Library also launched the touch screen version of the Guizhou Government Public Information Integration Service System on its local area network. For the first time, electronic touch screens rich in information and literature resources entered the service at the CPPCC members' 驻地, indicating that the National Library's "Two Sessions" service achieved new breakthroughs in service models and methods.

The National Library of China Classics Museum, located in the main library's south area, provides a new form of book reading through touch devices. The museum has made significant efforts in reader interaction, placing an Oracle bone script interactive writing device in the exhibition hall. The device's touch screen displays Oracle bone script copybooks, allowing users to select a character and trace it with their fingers before printing it out. Additionally, the museum uses touch devices to make reading ancient books possible, combining microwave sensing with electronic classics through transparent LCD screens, enabling users to easily read the content of ancient books while viewing the real artifacts in display cases. This approach both protects ancient books and satisfies readers' reading needs.

2.2 National Library's Touch Screen Services for Central State Organs

In addition to providing touch screen guidance and reading services for in-person readers, the National Library has, in recent years, developed a series of touch screen systems such as the "National Library Two Sessions Information Gas Station," "NPC News Center," and "National Library Legislative Decision-Making Service Platform Touch Screen" based on digital resources and information topics, combined with users' urgent needs for new media such as electronic touch screens. With the boost of new media technology, applying touch screen systems to daily services for central state organ users not only expands legislative decision-making service methods but also improves service efficiency and quality.

During the 2010 "Two Sessions," the National Library provided "National Li-

brary · Information Gas Station" electronic touch screens at all seven CPPCC member 驻地 s, and in 2011, also provided services at the NPC News Center. The first-generation electronic touch screens centered on user experience, providing services to delegates through digital means with a friendly interactive interface. Delegates could browse all text, images, audio, and video content with a simple touch. The electronic touch screen content is shown in [Figure 1: see original paper], including sections such as "Two Sessions Special Newspaper," "Two Sessions Hot Topics," "Real-time Newspapers," "Legislative Decision-Making Services," "National Library Treasures," "Lectures and Exhibitions," and "Wenjin Book Award." Through touch screens, delegates could browse domestic major newspaper news in real-time, synchronously read the "National Library 'Two Sessions' Special Information Bulletin" and "Compilation of 'Two Sessions' Special and Hot Issues," and access some of the National Library's collection highlights, timely understanding news reports about the "Two Sessions," major domestic and international events, and introductions to the National Library's characteristic digital collections and legislative decision-making services, thereby enjoying the National Library's services.

2.2.2 Ministry Branch Library Services

Providing literature and information support and guarantee for legislation and decision-making of central state leading organs is the primary task and function of the National Library. With the rapid development of information technology, the National Library has entered the digital and network era. Users are no longer satisfied with simply obtaining literature information but have also raised corresponding requirements for information acquisition methods, channels, and external presentation forms. Based on this, the National Library has timely launched multimedia electronic touch screen services with distinctive features in its ministry branch libraries using digital library technology and resource organization methods. The user information for the National Library's legislative decision-making touch screens is shown in .

**** National Library Legislative Decision-Making Touch Screen User Information Overview

Branch Library	Touch Screen Deployment Time
Central Institute of Socialism Branch	2010 Two Sessions 驻地 Touch Screen Version
Central Compilation and Translation Bureau Branch	2011 Two Sessions 驻地 Touch Screen Version
NPC Library	2012 Two Sessions 驻地 Touch Screen Version
National Academy of Governance Branch	2011 NPC News Center Touch Screen Version
CPPCC Organ Branch	2012 NPC News Center Touch Screen Version

Branch Library	Touch Screen Deployment Time
Central Political and Legal Affairs Commission	Central Socialist College Branch
Ministry of Water Resources Branch	Central Compilation and Translation Bureau Branch
Central Committee of the Communist Youth League Branch	NPC Library
Centennial Library Celebration Touch Screen	National Academy of Governance Branch
Central Institute of Socialism Branch	CPPCC Organ Branch
Legislative Decision-Making Service Achievement Exhibition	Central Political and Legal Affairs Commission
Central Compilation and Translation Bureau Branch	Ministry of Water Resources Branch
NPC Library	Central Committee of the Communist Youth League Branch
National Academy of Governance Branch	Hubei Provincial People's Congress General Office
CPPCC Organ Branch	National Library · Hubei Provincial People's Congress Touch Screen
Central Political and Legal Affairs Commission	
Central Committee of the Communist Youth League Branch	
Hubei Provincial People's Congress General Office	

2.3 Touch Screen Services Provided by Local Libraries

In addition to the National Library, some local libraries also provide information services in the form of touch screens for local "Two Sessions." For example, the Guangxi Zhuang Autonomous Region Library provides services such as "Special Data Compilation," "Information Consultation and Retrieval," "Digital Resource Browsing," "Library Card Application and Book Borrowing," and "New Media Library Information Application" for the Guangxi People's Hall and delegates' 驻地 s through touch screens. The Jilin Provincial Library's digital reading information service touch screen allows delegates to understand conference-related information through the touch screen while providing digital reading of local party newspapers and information services for performing duties. Delegates can also interact with the website of the Standing Committee of the

Jilin Provincial People's Congress through the touch screen. During the Jiangsu Provincial "Two Sessions," the Nanjing Library opened a touch screen newspaper reading system, providing touch screen services to nearly 2,000 person-times of in-hall users. This high-tech and efficient information service method was highly praised by leaders and delegates.

Many more local libraries have invested touch screen services into daily reader services. The Chongqing Library's touch screen mainly involves library introduction, reader guidelines, library usage guides, electronic newspapers, and electronic newspaper reading columns, providing readers with 40 kinds of the latest domestic newspapers, more than 1,800 popular journals with over 30,000 volumes, and 300 brand magazines. The library also introduced a customized "electronic picture album" of virtual books from Chongqing Surveying Institute and Chongqing Digital City Technology Co., Ltd., which uses optical projection to display book content, can detect and recognize readers' page-turning actions for automatic page turning, and is accompanied by the sound of paper book page turning, fully utilizing the combination of sound, light, and electricity technology to provide readers with a novel reading experience. The Fujian Provincial Library also introduced a touch screen newspaper system, allowing readers to freely browse more than 200 newspapers from across the country on the same day through touch operations. In addition to the aforementioned touch screen services for local "Two Sessions," the Nanjing Library also provides readers with a multimedia guidance system integrating "Library History and Collection," "Organizational Structure," "Reader Services," and "Library Knowledge." The Sichuan Provincial Library's touch screen system includes ancient books and rare editions, celebrity manuscripts, old photos, New Year pictures, Republican period books and periodicals, academic lectures, and electronic newspapers. The Ningxia Library's touch screen mainly involves library introduction, reader guidelines, library usage guides, electronic newspapers, and electronic newspaper reading columns, providing readers with 40 kinds of the latest domestic newspapers, more than 1,800 popular journals with over 30,000 volumes, and 300 brand magazines. The Shandong Library's large-scale exhibition commemorating the 70th anniversary of the victory of the Anti-Japanese War also featured touch screen services, displaying anti-Japanese war comic books published from 1931 to the present in the form of "exhibition boards + physical books + touch screens," "telling the magnificent history of the Chinese People's War of Resistance Against Japanese Aggression and the World People's Anti-Fascist War from the perspective of comic art works." Additionally, the Tianjin Library has also used touch screen services in nationwide digital reading promotion and training activities, creating new service forms that similarly refreshed readers.

4 Current Construction Status of the National Library's Legislative Decision-Making Touch Screen System

The "Legislative Decision-Making Touch Screen System" is a system that combines the National Library's collection resources and the digital resources of the Legislative Decision-Making Service Department with emerging media delivery methods to provide convenient and efficient information services to central state organ users.

4.1 Data Sources

As the national repository library, the National Library has a rich and comprehensive collection. The system relies on the National Library's precious collection resources and independently developed digital resources from the Legislative Decision-Making Service Department, supported by consultation services, and based on library resource construction, service standards, and norms to provide customized personalized touch screen services for users. The system provides a new way for users to access collection resources. The displayed National Library treasures include ancient books and rare editions, Republican period books and periodicals, celebrity manuscripts, New Year pictures, old photos, and other collection contents. Accessing collection resources through the touch experience system both protects collection treasures and realizes cultural inheritance. The system also provides users with more than 100 real-time electronic newspapers from domestic newspaper offices, offering one month of back issues. Additionally, the touch screen includes introductions to various services specially provided by the National Library for central state organs, as well as special databases and lecture video libraries on national conditions, provincial conditions, and parliaments of various countries, and can display personalized content according to user needs.

4.2 Application Services

Since 2010, when the National Library first provided information query services in the form of electronic touch screens at CPPCC member 驻地 s, it has received active responses from CPPCC members. During the 2011 "Two Sessions," while continuing and improving 驻地 electronic touch screen query services, the National Library also installed electronic touch screen equipment at the NPC News Center to provide the latest conference information and related materials in real-time to news media covering the "Two Sessions." Subsequently, touch screen services were provided in the legislative decision-making work for ministry branch libraries such as the Central Institute of Socialism Branch, Central Compilation and Translation Bureau Branch, and National Academy of Governance Branch.

The first-generation "Legislative Decision-Making Touch Screen System" has achieved remarkable results since its deployment, greatly improving staff work efficiency and enriching the ways the National Library provides information services to ministry branch library users. During the "Two Sessions" services, it

received positive feedback from users. At the same time, leaders of the NPC and CPPCC, ministry branch library users, and provincial public libraries cooperating closely with the National Library raised new demands regarding the touch screen product's backend management, interface display, response speed, and software compatibility, especially expressing higher expectations for the system's backend remote monitoring and management capabilities.

4.3 System Functions

To this end, after the 2013 "Two Sessions," the National Library's Legislative Decision-Making Service Department sorted out matters related to further improving the first-generation touch screen product and formulated a second-generation touch screen project plan to further enhance product performance based on multiple communications with users. To enable the touch screen product to better serve "Two Sessions" delegates, provincial library colleagues, and ministry branch library users, and to continuously expand the influence of the National Library, the Legislative Decision-Making Service Department specially applied to launch the construction of the second-generation legislative decision-making touch screen system project, which was launched and put into use the following year.

When designing the second-generation touch screen, considering the disadvantage of slow information updates in the touch screen system, the system creatively improved upon the first-generation touch screen system by introducing a B/S mode to separate the front and back ends, facilitating maintenance and real-time updates of touch screen information. Based on the first-generation touch screen system that focused on front-end display and oriented by user needs, the second-generation touch screen system added a backend management system that allows users to self-manage front-end terminals. Specifically, this includes: (1) Through the management system, system administrator users can select different sub-user backends to enable, disable, visually edit, and adjust the order of columns displayed on their touch screen terminals. The content management granularity of the touch screen system is refined to the data level, enabling operations such as adding, deleting, and previewing relevant data in columns. (2) The backend management system should also have user management functions, allowing the addition of administrators and ordinary users, and authorizing roles for users in the system. Different role permissions correspond to different operations on backend data. When there are insufficient staff but many devices, hierarchical management can ensure the smooth execution of information release management. (3) In addition to management functions, grasping user access data and analyzing user behavior to adjust touch screen resource content is also an essential function in daily user services. (4) To ensure the operation of the touch screen system front-end and the security of interactive information, two major functions have been added: message management and touch screen system status monitoring management. Administrators can review message content in the backend through the message management function,

delete inappropriate content, and ensure the standardization and correctness of information release. The operation status of device terminals, such as power on/off and normal operation, can be monitored through the touch screen system status monitoring management function. (5) Additionally, there are some auxiliary functions, such as interface skin-changing function, where users can replace the touch screen system background image and corresponding module icons according to the needs of the touch screen theme to highlight personalized needs; screen saver function, which returns to the system main interface after a set time when the device is not clicked; and device grouping function, which allows grouping management of devices within each institution to more clearly grasp the usage of each touch screen in the institution.

Overall, the system needs to achieve mutual collaboration between the National Library and provincial public libraries and ministry branch libraries to jointly build a service collaboration network for leading organs at all levels. Through shared resource construction, users can discover and obtain decision-making consultation information resources in a one-stop manner and receive related services.

5 Problem Improvement Strategies for the National Library's Legislative Decision-Making Touch Screen System

5.1 System Problems

Although the second-generation touch screen system can provide more convenient services compared to the first-generation display system, ministry branch libraries and provincial library users have found that the second-generation touch screen system still has many issues that need to be resolved and improved in terms of system functions, demand satisfaction, resource content, and reading effects. (1) In terms of system functions, the operational complexity of data updates and multi-system configuration management still needs to be optimized to simplify the workload of backend maintainers. (2) In terms of demand satisfaction, the diversity and convenience of touch screen service methods need to keep pace with the times. Personalized services should be provided to customers according to the characteristics of the mobile Internet era and the gradually increasing number of intranet users to enhance user stickiness. (3) In terms of touch screen resources, richness and professionalism also urgently need to be improved. Due to limited resource construction, the existing system has the problem of content that cannot be updated for a long time, thereby reducing user usage frequency. (4) The transmission and dissemination channels of the touch screen system are also issues that cannot be ignored. In the new media era, information dissemination and acquisition methods need to break through face-to-face service methods and provide user services through various terminal devices, enabling users to fully experience modern information service achievements. However, under conditions lacking a good network environment, the dissemination of electronic documents will encounter obstacles, affecting digital

reading effects to a certain extent.

In addition to the aforementioned user feedback issues during the touch screen service process, some ministry branch library users have also raised opinions on the touch screen system from other perspectives. For example, some users feedback that touch terminals are too expensive with limited choices, and compared to PC terminals, the purchase quantity of touch screens is relatively small, limiting the range of people who can experience touch screen services at the same time. Due to budget constraints and other reasons, it is impossible to balance this issue through large-scale equipment purchases, or even to regularly replace the latest touch screen hardware devices to enjoy the latest technological achievements. Based on procurement cost considerations, touch screen all-in-one machines have certain disadvantages compared to other terminals, and users hope to extend touch screen services to mobile clients to reduce hardware costs.

5.2 Upgrade Plan

In response to current touch screen system technology and functions, and using successful experiences from other libraries as improvement references, the National Library's Legislative Decision-Making Service Department actively explores the application of new media touch screen technology in library services, proposes system improvement strategies, and further solves existing problems and enhances system service capabilities, striving to upgrade and transform into a touch screen system that integrates electronic resource reading and borrowing, library service stations, and information release.

5.2.1 Device Hardware The original legislative decision-making touch screen system used classic horizontal touch screens, which are ideal choices for newspaper reading machines and query machines. In recent years, vertical floor-standing single-screen touch screens and vertical floor-standing dual-screen touch screens have become deeply favored by library, government agency, university, and other enterprise users due to their simple, elegant, and versatile design features. Especially the dual-screen interactive digital signage, with touch on the left and display on the right (the left side is a touchable interactive screen, and the right side is a non-touchable display screen), this type of touch screen can be used for exhibition display, building navigation, newspaper reading, information query, and interactive entertainment. Additionally, the built-in LED scrolling bar at the top can be used to implement notification and announcement functions. Therefore, the third-generation touch screen system will select vertical floor-standing screen touch all-in-one machines as hardware and conduct software system development based on this.

5.2.2 System Functions The upgraded third-generation touch screen system needs to support both traditional horizontal screen devices and new vertical and dual-vertical screen devices for front-end display. It retains classic columns such

as departmental self-built resource display, collection resource integration display, and departmental product introduction display, while optimizing the overall page style design. The new user interface design is simple, clear, beautiful, and fashionable, reducing reading fatigue and providing users with a brand-new reading experience.

The reading function of the touch screen system is an organic component of the library's digital construction. It not only realizes the integrated service of digital reading resources but also provides a comfortable, efficient, fashionable, and environmentally friendly reading experience, demonstrating advantages of reading convenience, content completeness, and precise retrieval, achieving rational allocation and optimized integration of paper and digital resources and endowing library reading services with new connotations. Therefore, for the electronic newspaper function with the highest user demand, key optimization and adjustment are needed to add more electronic newspaper reading modes. In response to the characteristics of fragmented and instant reading habits of users in the new media era, QR code scanning and reading functions can be added to achieve resource downloading on mobile devices. The upgraded touch screen system can also use cloud synchronization to meet users' cross-platform reading needs, using touch screen technology to break through the temporal and spatial limitations of traditional library services, allowing readers to obtain resources conveniently and quickly.

Considering the nature of some units, some data and materials involved by such touch screen users must be in a secure state with complete isolation between internal and external networks, prohibiting access to the Internet. Therefore, it is necessary to establish an internal network working environment physically isolated from the Internet. The physically isolated office environment of intranet users affects the convenience of resource acquisition, but certain data interactions are needed within the internal network office system. Libraries in the all-media era pay more attention to users' personalized needs and strive to provide services that meet their personalized functions. The ability to achieve human-resource interaction in the internal network environment is also a highlight of this touch screen system improvement strategy. Through technical means to achieve WIFI hotspot coverage in the internal network environment, services can be both confidential and extendable, while personalized service content is also a significant characteristic of the digital library era.

Optimizing the touch screen system backend functions is the focus of this system problem improvement. The backend should be clearer, more explicit, and easier to operate in implementing editing, publishing, and management functions to reduce the workload of maintainers. Through the touch screen system backend, maintainers can quickly and efficiently edit and publish text, images, video, and other materials to touch screen terminals. The management dimensions include users, data, and terminals. Terminal management should be refined to the column and template level. At the same time, access statistics functions should be added to analyze user behavior and preferences based on access data,

further grasping users' actual needs and improving service accuracy and quality. The current ideological field is facing severe situations and challenges. As touch devices mainly for publicity and display, users should focus on strengthening the management of ideological positions before releasing resources, adding review units to ensure that resource content is reviewed and approved before release. The new functions of the front and back ends of the legislative decision-making touch screen system are shown in [Figure 2: see original paper].

[**Figure 2: see original paper**] Front and Back End Functions of the National Library Legislative Decision-Making Touch Screen System

In addition to focusing on optimizing touch screen system functions, the overall page style also needs to be optimized and designed to support both the horizontal touch screen devices used by the original system and the vertical and dual-vertical screen devices adopted by the new system. The front-end display effect of the legislative decision-making touch screen system is shown in [Figure 3: see original paper].

[**Figure 3: see original paper**] Front-End Conceptual Diagram of the National Library Third-Generation Legislative Decision-Making Touch Screen System

(1) **Scan-to-Read:** In response to the gradual shift of mass user reading habits toward mobile devices, develop a multi-terminal integrated self-service e-book, newspaper, and periodical borrowing function. Users can scan QR codes with mobile phones, tablets, and other mobile devices to download and install the preset reading APP in the touch screen system, select required books, scan corresponding QR codes to download to their phones, and read anytime, thereby expanding service types, improving service quality, and expanding the library's service and influence scope.

(2) **Intranet WIFI Hotspot:** In the internal network environment, connect hardware devices to provide independent WIFI coverage services, which can push information and installation packages to mobile devices using WIFI, automatically popping up bound websites for users to access through mobile devices. After connecting to WIFI, clients can download corresponding resources by scanning codes, ensuring data security and internal network data interaction.

(3) **Electronic Newspapers:** On the basis of the previous generation's newspaper reading display effects, add original layout display effects for various newspapers. Hot word search functions can also be added as needed to understand user behavior based on statistics of user-input search keywords and make hot word recommendations through statistics. Add a bullet comment function to display news headlines from any newspaper of the day in bullet comments. Touching and clicking on news headlines can directly enter the reading page of that newspaper and news headline, enhancing interaction with users.

(4) **LED Notification Display:** The LED screen above the touch screen scrolls to display announcement information and news, which can be updated in real-time to provide users with the latest information promptly, playing a role in publicity or reminders. In addition, dual-screen touch screens can be supplemented with rich media such as images, text, and videos to package activities, making activity publicity more attractive.

(5) **Column Management:** Add a review mechanism. Resources in the system need to go through steps such as operation, preview, review, and release before they can finally be presented on the front-end display system, ensuring the quality and security of resource content.

(6) **Template Management:** Enhance usability and portability. For column groups that do not need structural changes but only content changes, the first-produced columns can be saved as templates for future reuse, enabling rapid completion, review, and release of new columns.

(7) **Terminal Management:** System administrators can view the history of columns played on each terminal, currently displayed content, and real-time information such as CPU, memory, and processes of that terminal. They can set timed power on/off times, volume, screen brightness, and other information for each terminal, and even require specific columns to be played at specific times. When terminal devices are powered on, the terminal management function can automatically record the operation status of terminal devices and automatically restore abnormal terminal content, reducing human maintenance costs.

(8) **System Statistics:** Users' browsing, querying, QR code scanning, and other operations on the touch screen system all have data statistics in the backend. The data can reflect the search, click, and scan volumes of all books, newspapers, and magazines over a period of time. Based on this data, the popularity of books, newspapers, and magazines can be more quickly determined, and market and user attention situations can be analyzed. The corresponding display effects can be changed and adjusted at any time according to the data to improve user experience and enhance the effectiveness of interactive touch screens.

5.2.3 Resource Construction The reasons for the lack of rich and professional content in the touch screen system are mainly twofold. One part is that the possibility of sharing resources across multiple terminals was not considered during the resource construction process, so there are situations where resources built for PC and mobile device terminals cannot be diversely published. In repetitive construction, it was discovered that some databases are unsuitable or cannot be ported to touch screen devices due to interactivity and applicability issues, resulting in few available resources and the inability to regularly update resources or the need for repetitive construction of resources suitable for touch screens. The other part is the lack of a database construction team that is both

reasonably structured and capable of long-term sustainable production. Most library touch screens are outsourced to third-party companies. These outsourcing companies can meet the external needs of the system in terms of technology, hardware, and page design, but cannot meet the internal needs of data content as the soul of the system. Due to short production cycles, production personnel cannot fully understand the connotation of collections and culture, resulting in empty content and poor information volume, which cannot attract users' interest or capture their hearts, thus unable to maintain user usage frequency long-term and stably, ultimately leading to the bleak outcome of system idleness.

Information resources are the foundation of serving users. Therefore, to achieve diversification of touch screen resource content and periodic updates, it is urgently necessary to cultivate a professional database construction team, form a storage pattern centered on digital information technology, and strengthen software and hardware configuration guarantees to meet database development and operation and maintenance needs. Information resources in the new media environment are rich and diverse, with selectable categories including not only purchased resources, self-built resources, and alliance-shared resources but also open access resources from the Internet. Any accessible resources can be selected into the scope of touch screen resources. Libraries should also break the previous model of 各部门各自为战 in database construction, implementing unified arrangement, coordinated management, joint database construction, resource complementarity, and achievement sharing from top to bottom to avoid repetition, waste, and gaps as much as possible.

On the basis of strengthening data resource construction, it is also necessary to gradually develop toward productization, standardization, commercialization, and branding.

5.2.4 User Services People-oriented, selecting touch screen system content based on users' concerns and interests, and achieving the organic combination of characteristic data resources and specific users' reading habits. Based on the characteristics of resources and services provided by the library and the focus of future publicity work, adopt models that cater to readers' reading habits while reflecting the library's characteristics, and plan and organize content settings based on the attention and interest of served users. The department has established a special working group responsible for equipment content production, regularly collecting user experience evaluations and opinions and suggestions. It is also necessary to change the current situation where libraries do not fully recognize the role of touch screens and improve librarians' understanding of touch screen systems. As venues with special cultural attributes, library touch screen systems should not only have guidance and navigation functions. Scientific and effective use of touch screen devices can enable users to understand the connotation of collections and their culture and history in the fastest and most direct way.

6 Conclusion

Based on the service methods of touch screens, the National Library has excavated and utilized touch screen technology to transform information organization and system management modes. The upgraded touch screen system has achieved the improvement and strengthening of service functions, optimized the configuration management of data and columns, and enhanced terminal management functions to strengthen remote monitoring and management of distributed touch screens in different locations. The WIFI hotspot function provided in the internal network environment will break the barriers formed by the physically isolated office environment of service objects, increasing the convenience of resource acquisition for intranet users. Real-time capture of user interaction information and access data, while better achieving resource integration and allocation, deeply understands users' concerned information points, timely adjusts resource provision strategies, and makes touch screens an important service method for the library to serve central state organs. In the future, it is hoped that by cultivating a professional database construction team, the richness and professionalism of touch screen resources can be improved and enhanced. A database construction team that is both reasonably structured and capable of long-term sustainable production will ensure that the touch screen system is no longer a resource carrier whose content is no longer updated after one-time delivery and use, but a growing organism that can continuously deliver high-quality touch screen resources that meet user needs on a regular basis. In addition to the database content itself, touch screen system construction personnel also need to enhance the possibility of sharing resources across multiple terminals, reducing development costs of resource repetitive construction on the one hand, and increasing interaction between users and mobile clients on the other hand.

As touch operation methods are accepted by more and more people, the usage rate of touch screens is increasing daily, with increasingly broad market prospects. To adapt to changes in users' reading habits and information acquisition habits, libraries should continuously devote themselves to the digital exploration of touch screen systems. With the development of touch screen technology and the birth of 5G and other technologies, problems such as blocked electronic document dissemination and difficulties in providing user services through multiple terminal devices caused by poor network environments will also be gradually solved and improved. Touch screens will surely bring broader application space to libraries and richer reading experiences to users. However, libraries driven by new technologies should also pay attention to the integration of traditional models and new media technologies, combining traditional library business with new media technologies while emphasizing the application of new media technologies to promote the more long-term development of library undertakings.

References

[1] Wang Zhigeng, Feng Hongjuan. Overview of the National Digital Library Touch Screen Experience System [J]. Library Theory and Practice, 2011(6):94-96.
[2] "China Government Public Information Integration Service Platform" Launched [J]. Guizhou Library Journal, 2012(1):75.
[3] Ge Yancong, Bai Yunfeng. Construction and Development of Ministry Branch Libraries of the National Library—Reference Consultation Services for Specific Institutional Users [J]. Journal of the National Library of China, 2014(1):33-37.
[4] Information [J]. National New Book List, 2010(2):1.
[5] Peng Kangtong. Analysis on Service Innovation and Development Model of Public Electronic Reading Rooms [J]. Library and Information Forum, 2014(6):10-12, 18.
[6] Guo Lijuan. Analysis of Public Library Reader Services Based on New Media [J]. Inner Mongolia Science, Technology and Economy, 2018(12):155-156.
[7] Huang Ming. Introduction to the Multimedia Guidance System of Guangxi Library [J]. Library World, 1999(1):56-57.
[8] Opening Ceremony of "Comic Books on the Great Anti-Japanese War" East China Region Tour Exhibition Held at Shandong Provincial Library Nishan Academy [J]. Shandong Library Journal, 2015(5):120.
[9] Pan Yanxi. National Library: Two Sessions Services Fully Launched [N]. People's Daily Overseas Edition, 2011-03-04(11).

Note: Figure translations are in progress. See original paper for figures.