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Abstract

Drawing on experience in constructing HIV-specific information navigation for research users, this paper discusses the models and processes for establishing personalized information environments for research users, including establishing guiding principles for personalized information environment construction, determining service objectives, conducting needs assessments, performing system design, selecting technology platforms, designing content and planning platform columns, screening and organizing resources, and related issues concerning guarantee mechanisms for user personalized platform construction.

Keywords: personalized service; information environment; models and processes; guarantee mechanisms; subject librarian

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Full Text

Construction of Models and Processes for Research Users' Personalized Information Environment

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Abstract

Based on experience in developing an HIV thematic information navigation system for research users, this paper discusses the models and processes for

constructing personalized information environments for researchers. Key aspects include establishing the guiding ideology for construction, determining service objectives, investigating user needs, conducting system design, selecting appropriate technology platforms, planning content and platform structure, organizing resources, and implementing safeguard mechanisms.

Keywords: personalized services; information environment; models and processes; safeguard mechanism; subject librarian

In the network environment, both information needs and access methods are undergoing profound transformation. Confronted with massive and disordered online information resources, researchers often struggle to obtain timely and accurate resources relevant to their scientific work. Consequently, establishing personalized information environments that integrate multiple information resources and provide customized services represents a critical direction for future library services.

The purpose of building personalized information environments for research users is to better embed subject services into the research process. Through effective integration of user-specific information, libraries can create specialized, knowledge-based, personalized, and distinctive information resource environments that support users' effective discovery, convenient access, and timely tracking of domain-specific resources. Simultaneously, these environments provide platforms for the scientific management, exchange, sharing, and long-term preservation of research groups' own knowledge products. By engaging users in the construction process, such initiatives can enhance researchers' information literacy and provide sustained support for their innovative activities. Guided by the National Science Library of Chinese Academy of Sciences' philosophy of meeting user needs, we developed the HIV Thematic Research Information Navigation System in response to relevant user requirements.

1. Introduction to HIV Thematic Information Navigation

The HIV thematic information navigation system is a specialized navigation platform built according to the personalized information needs of a research group, representing both an experiment in personalized information environment construction and a deepening of subject librarian services. The technical support for the HIV navigation system is the Institute-level Information Portal (IIP) system developed by the National Science Library of Chinese Academy of Sciences.

Target users: Researchers and graduate students from the Center for Infection and Immunity at Guangzhou Institute of Biomedicine and Health, Chinese Academy of Sciences, as well as domestic and international researchers interested in HIV studies.

Functions and roles: The system integrates information resources related to

HIV research, including research developments in the field, specialized information resources (such as animal models, immunology research, virology research, and laboratory guidelines), specialized literature databases, relevant institutions, experts, conferences, funding sources, tools, web-based resources related to HIV research, and information about the research activities of the HIV research group at Guangzhou Institute of Biomedicine and Health. The platform effectively embeds various services and resources provided by the National Science Library, offering users one-stop information resources and services that serve as an important information support for HIV research.

The resource organization structure of the navigation system is illustrated below.

2. Models and Processes for User Personalized Information Environment Construction

Building a personalized information environment that meets user needs depends on several key factors: the guiding ideology for construction, identification of target users and understanding of their needs, technical support capabilities, and resource organization strategies.

2.1 Clear Guiding Ideology and Construction Goals Building personalized information environments for research users represents a new service model for libraries in the network environment, providing an excellent opportunity for subject librarians to gain in-depth understanding of user needs. By constructing such environments, subject librarians can fully leverage their expertise in resources and information services, transforming their individual skills into capabilities for research users through technical means. By excavating, integrating, and delivering resources and services required by specific user groups, libraries can ensure that researchers obtain needed information in a timely, accurate, convenient, and comprehensive manner with reliable service support. Therefore, user needs must serve as the guide, with meeting those needs as the ultimate goal.

2.2 How to Identify Target Users Constructing user personalized information environments requires clearly defined service targets—a factor that demands particular attention. Past experiences have shown that information portals requiring substantial investment in human, material, and financial resources sometimes failed to gain user acceptance, primarily due to the lack of clearly defined users. Without clear user identification, resource organization in terms of both content and delivery methods tends to be biased, reducing usage effectiveness and hindering future development. Consequently, thorough investigation must be conducted before constructing personalized information environments to enhance their relevance and practicality. Given the current capacity of subject librarians at the National Science Library, and to better realize the value of personalized information environments, target users in the near term should primarily focus on key research groups, leading experts, and major projects at

institutes, particularly research teams undertaking national “973” and “863” projects and other major national initiatives. Priority should be given to developing personalized information environments for teams with youth foundation grants, while also targeting newly established units with relatively weak resource foundations and insufficient service support.

2.3 How to Conduct User Needs Investigation To ensure that the information environment is truly personalized and distinctive, in-depth communication and exchange with users are required after target users are identified. It is essential to fully understand users’ research fields and priorities, their commonly used resource types, their current information resource support status, and major problems in information utilization. Most importantly, we must understand their personalized needs: how they use information to support their scientific research, what methods they prefer for obtaining, publishing, and exchanging information, and what functions they expect the platform to achieve. Do they primarily want to showcase their research activities and communicate with peers, or simply have a platform for obtaining information? What types of information do they most want integrated? Different priorities regarding these needs will result in different forms and content emphases for the personalized information environment. Simultaneously, we must inform users about what services we can provide, to what extent, what difficulties and obstacles we may encounter, and what support, assistance, or understanding we need from them. We must not blindly promise to meet all user demands, as this may backfire when results fall far short of goals.

2.4 How to Design Personalized Information Systems Suitable for User Needs Improving users’ resource utilization efficiency is our service tenet. Based on thorough understanding of user needs, flexible service mechanisms must be established. Building personalized information service systems is one type of service, but many web-based information service tools are also available for selection, such as specialized database construction, Wiki, Blog, personal information space, Facebook, and Endnote, all of which can integrate relevant information at different levels. In recent years, the National Science Library has built the IIP system and SPT portal, the Subject Knowledge Environment (SKE), and the Institutional Repository (IR) for users—all excellent technical platforms for constructing user information environments. For one-time or simple information needs, straightforward and easy-to-operate tools and methods can be used to achieve information integration. For comprehensive, dynamic, and long-term user information needs, establishing personalized integrated information systems is appropriate. We should not build platforms merely for the sake of building them, as such platforms will lack vitality. The establishment of the HIV thematic information navigation system has proven this to be a highly effective personalized service approach.

2.5 Selection of Technology Platform The technology platform is the foundation for building user personalized information environments. Without efficient, practical, stable, secure, and economical technical support, constructing user personalized service platforms cannot be guaranteed. When building the HIV thematic research information navigation system, we selected the IIP system after careful investigation and screening of relevant systems.

The IIP system is an “Institute-level Information Platform” software developed by the National Science Library of Chinese Academy of Sciences. Practice has proven that this system can serve as the technical backend for building personalized information environments for research groups or individuals. The institute-level integrated information platform is a portal system software based on Portal and CMS content management, employing multiple advanced technologies with various functions: it helps users quickly build personalized information portals; rapidly achieves integration and navigation of the National Science Library’s network databases; enables quick construction of specialized information databases; provides convenient online information interaction functions; allows users to independently complete platform layout, page adjustment, column addition and deletion; and enables nesting of personal pages within research group platforms, allowing users to establish their own personalized information spaces according to personal preferences. The system is highly suitable for small and medium-sized libraries to integrate digital resources and services, and for building personalized information environments for research groups. Experienced subject librarians can build a thematically distinctive, fully functional, and aesthetically pleasing user personalized information platform in just half a day.

2.6 How to Conduct Content Design and Platform Column Planning Column design for user personalized information environment construction affects platform usage effectiveness. Platform content must be discipline-related and closely connected to users’ research activities. Column planning must fully reflect user needs, page layout must consider users’ information acquisition habits, and color schemes must align with disciplinary characteristics. During platform design, we must fully consider users’ intentions while leveraging subject librarians’ guiding role in information services. Our position cannot be limited to basic user requirements; we must proactively design and integrate enhancement of users’ information capabilities into platform design and service work. Through the platform design and construction process, users can learn more about information services, the service environment provided by the National Science Library, and the deepening work content of subject librarians, thereby promoting improvement of users’ information utilization capabilities and research literacy. Platform construction requires repeated communication with users, involving simultaneous communication, construction, adjustment, and service until user needs are met.

2.7 How to Organize Resources Platforms need to integrate substantial information resources in relevant fields—a process of information discovery, ex-

cavation, reorganization, and service delivery. To effectively organize resources, we must first have clear understanding of the structure and overall layout of relevant disciplinary resources, as well as the structural forms and acquisition methods of various resources. This requires continuous learning and accumulation, often achieved through the service process itself—an essential skill for subject librarians. We can also actively learn from users, as most researchers have their own information sources and target literature that require our careful excavation. Only by organically integrating the information resources we master with those of users can we ensure relative completeness of resources. Resources in user personalized information environments also require long-term accumulation; only when specific resources reach scale can they function as knowledge bases. The HIV navigation platform primarily obtained and organized information from commercial databases, government agency websites, open resources, free resources, specialized information portals, professional websites, and professional forums. Resources were published through columns such as RSS disciplinary news aggregation, disciplinary developments, specialized information databases, professional institutions, experts and scholars, funding sources, conferences, and tools. The platform also provided information about the research group's scientific activities, including introductions to group leaders, research fields, team composition, and research achievements such as papers, patents, and honors, serving to showcase the research group and facilitate peer exchange.

3. Safeguard Mechanisms for User Personalized Environment Construction

To smoothly build personalized information service environments for users and ensure the sustainable development of this service model as user needs deepen and expand, establishing corresponding safeguard mechanisms is essential.

3.1 User Participation as Prerequisite and Basic Guarantee User participation runs through the entire process of building personalized information environments, from identifying target users and designing personalized information environments to obtaining user feedback and maintaining and developing the platform—all reflecting the guiding principle of user-first and user participation. User participation in platform construction and maintenance is a crucial factor for the platform's vitality and sustainable development. User involvement should not be limited to service targets; we must also seek support from institute network technology departments, institute libraries, and institute leadership. Research group information environments require hardware and network technology support, necessitating communication with institute network technology departments to gain their understanding and support. Institute libraries bear the responsibility of providing information services to their researchers, and personalized information environment construction represents a way to deepen information services. We need to obtain institute libraries' understanding and support to integrate their resources and services into user personalized information environments, leveraging their role to form multiple guarantees for in-

formation resources. Institute leadership is critical—we must employ effective methods to help them understand the functions and roles of personalized service platforms serving their institute's users, thereby securing support for library development.

3.2 Subject Librarians as the Backbone Force Subject librarians, who work at the forefront of scientific research year-round, have deeper understanding of users and their needs and are familiar with the skills and methods for organizing, investigating, serving, and satisfying users. Therefore, subject librarians should become the main force in this activity. Their primary tasks include identifying target users, understanding user needs, screening technology platforms, undertaking or assisting technical departments in building platforms, conducting column planning and design, selecting and organizing resources, and conducting user training. We advocate user-managed personalized information environments. Faced with an increasing number of users, subject librarians need to play more roles in discovering, guiding, organizing, training, and consulting for personalized information environment construction, ultimately improving users' ability to manage and utilize resources.

3.3 Establishing a Multi-Party Collaborative Work Mechanism User personalized information environment construction involves extensive work content and must rely on a team collaborative work mechanism for support. This collaboration primarily comes from three aspects: First, collaboration between subject librarians and network technology departments, which need to provide relevant software, including appropriate adjustments and upgrades, platform installation, testing, and technical consultation. Subject librarians can also complete system software installation and debugging with technical departments' assistance. Second, collaboration and mutual support among subject librarian peers. Subject librarians have different strengths—some are technically proficient, some have comprehensive resource knowledge, some excel at capturing user needs and conducting effective needs surveys, some are skilled at organizing users, and some have strong aesthetic abilities. If team members can fully leverage their collaborative spirit to jointly face problems and overcome difficulties, this service can be carried out vigorously. Third, collaboration between subject librarians and research institutes. In summary, collaborative power will certainly exceed individual power, greatly benefiting the accomplishment of work and careers.

3.4 Establishing Assessment, Evaluation, and Incentive Mechanisms For leadership and management departments, building user personalized information environments is an important component of deepening services at the National Science Library and enhancing library information service capabilities. Therefore, it has always received high attention from library leadership. Under effective organization by the National Science Library's management department, we believe a batch of personalized information environments for

frontline research users will soon emerge, including environments for research groups, national major projects, and individual experts, forming a landscape of personalized information services for frontline users provided by the National Science Library. To ensure sustainable development of this work, corresponding assessment, evaluation, and incentive mechanisms must be established, such as developing relevant assessment regulations and evaluation methods, organizing regular assessments, focusing on user usage effects and evaluations, organizing design competitions, and providing encouragement to personalized information environments with good service effects and high user evaluations, thereby promoting smooth development of user personalized information environment construction.

In conclusion, building personalized information environments for research users represents a beneficial attempt to deepen library subject services. It will enhance libraries' service capabilities, value, and development space in the network information society, making it a highly worthwhile endeavor to explore.

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

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