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Expansion of Virtual Collection of University libraries based on CALIS Cloud Platform

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Abstract: The objective conditions and the obstacles of collection resources construction in present college libraries are analyzed in this paper. The overview of CALIS and its third-phase project is introduced. The approach of virtual library collection construction of university libraries by using CALIS cloud platform is explored.

Keywords: CALIS; university libraries; virtual library collection; resource sharing

Currently, China attaches great importance to informationization. The network infrastructure has been improved gradually. Electronic information resources has become a highly important resource because of its diversified and digital storage form, high level of communication, convenient usage, rich content and strong carrier capacity. As the college literature information center, university libraries do not limit the collection resources construction to entity documents collection. All kinds of electronic books, electronic journals, online information and database have also become important components of the library. But in face of new digital resources emerging endlessly, university library collection development becomes insufficient with a number of difficulties. CALIS (China Academic Library & Information System) brings well-being for general University. It can construct platform for online information resources built by University library and create a superior development environment for virtual collection construction of University library. In order to expand and perfect collection resources, general college libraries should make full use of high quality network information resources of CALIS, combined with local school features to construct good virtual collection, and shorten their gap with top University libraries.

1. VIRTUAL COLLECTIONS AND THE CONSTRUCTION OF LIBRARY RESOURCES

1.1 Virtual collections

Virtual collection is the network electronic information resources collected and acquired through the network for use after analysis and preserved outside libraries, that is, the sum of all useful network information resources that can be used through Internet outside the real library collections.^[1] Virtual collections can be divided into two parts: One is the online information resources with using rights purchased by Libraries. Such as the Chongqing VIP's "Chinese scientific journals database", Tsinghua Tong Fang's "China Academic Journal" and the "Articles Resource System" of Wanfang. The other is a variety of online information resources with free access. It is the online information resources collected and sorted out by Libraries to provide services for library readers such as bibliography, title catalogues, professional dynamic information, etc.

The biggest difference between virtual and physical collections is: in a network environment, the digitalized virtual collections can be shared, while the physical ones can not. Therefore, virtual collections can fully complement the physical collections, greatly improving the ability of library services. Virtual collection together with physical collections of traditional libraries constitutes the sum of library information resources.

1.2 The difficulties of individual library resource construction in college

1.2.1 Inadequate funding broadens the gap between the big and small Libraries

Funding shortage in general college libraries is serious. There is not nearly enough money for yearly books acquisition, much less the funds for the electronic resource construction, mostly only hundreds of thousands of inputs. Meanwhile the gradually increasing prices of database make small libraries "hard-pressed". Compared with "211 Project Universities", this gap between the rich and the poor has been broadened and the fact of unfair reader's sharing in resources is even more prominent.

1.2.2 Insufficient procurement capacity prompts unreasonable collection structure

Although the basic construction principles of virtual library collection is consistent with the entity one, but due to the limited purchasing capacity, it is difficult to make precise purchase of electronic resources, which makes the collection structure not scientific enough to meet all teaching and research needs of readers.

2. CALIS AND ITS THIRD-STAGE PROJECT

2.1 Introduction

CALIS, namely, China Academic Library and Information System, is one of the public service systems in general construction plan for higher education "211 Project" approved by the State Council of China.^[2]

More than 10 years so far from 1998, CALIS Center "has organized hundreds of libraries to participate into the program with the national centers and regional centers. It has taken the lead to get practice on building and sharing resources together under the network environment, and gradually established an open framework of digital library in China's higher education with advanced world standard, based on digital scholar information resources, with advanced technology of digital library as a means, relying on The China Education and Research Network (CERNET). It has played an important supporting role in achievement of overall construction target of 211 Project, and promotion of education informationization as well as education modernization. It has also play a leading role in the modernization of Chinese University library and became one of the important components of the national information infrastructure."^[3]

2.2 Philosophy of equality and sharing of CALIS

The objective of CALIS is: "Led by Ministry of education, Ministry of Treasury, and Development and Reform Commission, integrating national investment, modern library concept, advanced technology means, and rich literature resources and human resources of universities, construct an education literature joint protection system with China higher education digital library as the core, implement building, knowing and sharing together the information resources to yield maximum social and economic returns, to serve for China higher education"^[4]

2.2.1 No threshold, no high and low

Although CALIS is one program in the "211 Project", it will not only benefit the "211 Project" universities. Without any threshold, every general college libraries and even technical secondary schools can be a node on the network structure of CALIS, enjoying the various services provided by them. "CALIS has clearly stipulated in the service opened, for universities outside the '211 Project', they are equal in treatment as '211 Project' universities except for the special subsidies for '211 Project' universities."^[5]

According to statistics, by far, there are 1005 member libraries in CALIS, most of which are undergraduate-course colleges, general colleges and non-Universities, apart from only 111 "211 Project" colleges. These member libraries have taken advantage of and benefited from a wide range of services provided by CALIS according to their own needs. It can be seen that there are no distinctions between general colleges and "211 Project" universities in the enjoyment of CALIS resources and services, which greatly narrowing the gap of resources and services between them.

In order to guarantee the common interests of member libraries and CALIS, CALIS developed a CALIS service agreement and CALIS group purchase Commission agreement, to guarantee the service provided by

means of signing service agreement with service object.

2.2.2 A free lunch

Beginning in 2010, CALIS signed with the member libraries “CALIS Union Catalog Services Agreement”, changing bibliographic data download charges for free online. In addition, CALIS signed with member libraries and provincial centers a tripartite agreement, launching a range of free services. Without server, technical workers, installation and system maintenance, only a PC connected to World Wide Web and Services Librarian can entitle readers free access to many electronic resources and services. For colleges, this is undoubtedly a tasty free lunch.

2.3 Third-stage project of CALIS

Third-stage Project of CALIS is a new project after the construction of "the ninth five-year" and "tenth five-year" plan. According to the development trend of international and domestic libraries, aiming at different demands of 1800 colleges, based on three-level guarantee system framework of “national center—regional center—libraries” and advanced cloud computing technology and digital library information technology, the original CALIS service and domestic library resources and service have been comprehensively integrated and upgraded to realize the service mode of "one account, national acquisition". Particularly, seven large service systems will be constructed including cooperative cataloging and bibliographic distribution, coordinated procurement and resource development, public retrieval and resource navigation, document delivery and the original acquisition, literature searching and special consulting, software sharing and technical support, business training and qualification attestation. These systems will provide services to university libraries in different patterns such as central service systems, interface customization and embedment, shared software renting. They can provide standardized, low-cost, adaptive, scalable digital library solution for digital libraries to help libraries break through the limits of capital, resources, technology, and quickly build personalized service platform.^[6]

The goal of the third-stage project is to tap and integrate the resources and services of domestic university libraries as well as other various type of literature information service mechanism, to focus on integration of various information resources and services of the relevant international agencies, to improve the overall protection rate of university library's literature resources, to promote modernized service ability of university libraries. While fully tapping research and service ability of large libraries, third-stage project of CALIS will guide the broad participation of small and medium libraries, thus narrowing the gap between “211 Project” university libraries and international first-class University libraries, ordinary college libraries and “211 Project” university libraries, the developed areas and Western underdeveloped regions, promoting the level of overall information service of university libraries in China.

3. EXPANSION OF VIRTUAL COLLECTION WITH THE HELP OF CALIS CLOUD PLATFORM

For general universities, obtaining high quality virtual resources will greatly improve the inadequate and unreasonable collections. CALIS now provides a cloud platform, on which common University libraries can obtain equal resources with “211 Project” university libraries. Because the information resources of CALIS comes mainly from the national “211 Project” University libraries, the content, scope and type of information resources are closely connected with need of the construction of disciplines and the teaching and research in higher education development. The system environment is stable; the information quality is reliable, the information resources are rich and developing sustainably and dynamically. All these provide a reliable guarantee for the virtual library collection construction of university libraries, and provide an important information resource to protect the smooth progress of the construction and development of higher education in our country. We should rely on ourselves in pursuit of the resource sharing concept of “do not seek to own, just to get”^[7], using CALIS cloud platform to expand the virtual collection. These can be achieved from the

following aspects:

3.1 Participate in joint procurement of CALIS provincial center database

The databases introduced by CALIS are mostly purchased in group, with generally larger discounts than each purchase separately. Joint procurement can give full play to the effectiveness of available resources and expand the electronic to a full extent. CALIS group purchasing can not only assure the domestic database product at the lowest price, but also get foreign databases and electronic documents introduced. Since 1998, CALIS has introduced more than 100 kinds of foreign database. Group purchasing can be balanced on limited funds to exert the greatest effectiveness.

3.2 Integrate library resources and expand virtual collections based on CALIS cloud platform

The third-stage project of CALIS adopts cloud computing technology to build a new generation of Chinese higher education digital library, aiming to provide standardized, low-cost, adaptive, scalable digital library cloud service platform for nearly 2000 member libraries throughout China, as well as provide overall literature services, consulting services, e-commerce and personalized services. The third-stage project of CALIS launches cloud services series including "e-reading, foreign language journal network, united catalog, e-acquisition, e-question."

3.2.1 Open e-reading, connect seamlessly with the collections, become a big integration of different library collections

E-reading builds a one-station resources retrieving platform, providing conditions for large-scale resources sharing among universities. It can seamlessly connect with member libraries OPAC, integrate collection books with more than 3 million books carefully selected from over 600 university libraries. Not only the collections of this library but also the collections from other libraries can be retrieved. The full text of e-books bought by the library can be read directly through network, fully revealing the OPAC resources of the library. Besides, CALIS provides full text of over 360,000 volumes of Chinese electronic books and over 3,000 volumes of foreign eBook, largely solving the problem of collection shortage. This can be said to be more consolidation and sharing of many university libraries collection. CALIS is designed to provide high quality of searching results, and provide full-text academic resources for university teachers and students on the basis of respect for intellectual property rights.

3.2.2 Open foreign periodicals network to get rich database resources of foreign periodicals

Opening of foreign periodicals network can obtain over 36,000,000 papers and 700,000 Chinese and Western degree papers selected carefully by CALIS. Other functions like full text linkage to collection periodicals OPAC and e-periodicals, and various statistical analysis features are perfect. Ordinary libraries can hardly afford to buy such large numbers of foreign journal database, all of which now they can get for free.

3.2.3 Open e-acquisition shared systems, interlibrary loan and document delivery become easier

Since 2008, CALIS has marketed of a new generation of interlibrary and document delivery system sharing edition (SaaS Edition) supporting SaaS (Software as a Service). This edition supports CALIS cloud platforms of distributed "cloud" services and other clouding application systems. Through e-searching, readers can find the resources they need at a glance and directly achieve interlibrary and document delivery by cloud platform. Currently, 539 university libraries have leased interlibrary and document delivery system shared edition.

3.3 Strengthen discipline information resources navigation construction through CALIS navigation database

Subject information resources navigation is an important component of virtual library collection construction in colleges and universities. Key subject navigation database constructed by CALIS is a joint project of "211 Project" university libraries, aiming to collect network resources for relevant key subject to serve for these important disciplines. Teachers and students in these subject fields can learn the frontier research

trends and international development trends at a faster rate. "CALIS navigation database is a collection of excellent network resources different from search engines. It plays an irreplaceable role in the teaching and scientific research in colleges and universities."^[8] CALIS network navigation database does not just simply link to some relevant sites, more importantly, it reflects the types, content and features of sites, scientifically organizes and profoundly reveals as well as appropriately comments on network information resources, and recommends itself to the users through the library web site.

The sites to be linked are accessed and evaluated, academically valuable information resources are chosen and reliable linkage is set up to ensure a real function of network navigation. The navigation database construction of CALIS provides a direct reference for general college libraries to develop on-line information resources navigation database combining the school discipline construction. As long as they need, General college libraries can directly refer to related content of CALIS key subject navigation database, make screening and complement based on major features. On the one hand, it guarantees the reliability and authority of subject navigation information; on other hand, it avoids a lot of duplication of work, improves the working efficiency and provides timely and efficiently navigation services to meet the information needs of teachers and students.

3.4 Construct featured database

University thematically featured database is also one of the sub-projects in CALIS "tenth five-year plan", following the principle of "dispersed construction, unified retrieval, and resources shared"^[9]. Featured database construction is an important component of optimizing construction of literature information resources under network environment. Its purpose is to reveal characteristic literature collected by different Universities in an intensive and deep level. This featured database should be based on library collections and comprehensively report around a specific subject systematically with diversified form such as multi-media, full text and abstract, and characterized by disciplinary knowledge database. The featured database can make up for the deficiency of databases like joint catalogue and current publication contents, and enrich information resources on the Web.

The construction of featured database should be considered in line with CALIS uniform standards and systems for later access to demonstration and integration of CALIS thematic library. Featured thematic database are the emphases and difficulties of the construction of library network resources. It contributes to university library readers throughout the country, and is the most valuable electronic resources.

4. CONCLUSION

"Resource construction and service programs developed by CALIS, such as online cataloging, foreign periodicals processing, document delivery and interlibrary loan, the introduction of resource procurement, cooperation in construction of digital resources, joint virtual reference and inquiries, have effectively integrated the construction and service of colleges and universities in China."^[10]

Undoubtedly, CALIS cloud platform is the best choice for expansion of virtual collections in university libraries. It can make sure that every university libraries can obtain collections from all university libraries throughout the country. It has expanded usage space and service mode of library information resources. Therefore, ordinary university library should actively take the initiative to converge with the CALIS, in order to get a large number of free virtual resources. Meanwhile, as an information sharing mechanism, CALIS will have faster, more comprehensive development with joint participation and construction of all colleges and universities. Currently, most college libraries just simply make use of it. It is certain that more and more general university libraries will join in the construction of CALIS third-stage project.

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