Creating a New Academic Library: Reform Trends in the Libraries of the Chinese Academy of Sciences

新型研究圖書館的創建：論中國科學院圖書館系統改革態勢

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INTRODUCTION TO THE LIBRARIES OF THE CHINESE ACADEMY OF SCIENCES

The Libraries of the Chinese Academy of Sciences (LCAS) belong to a supporting unit of the Chinese Academy of Sciences (CAS). CAS is a leading academic institution and comprehensive research and development center in natural science and technology, which includes high-tech innovations in China. It has 90 institutes and 39,000 scientists.

The mission of CAS is to conduct research in basic and technological sciences; to undertake nationwide integrated surveys on natural resources and the ecological environment; to provide the country with scientific data and advice for governmental decision-making; and to undertake government-sponsored projects with regard to key science and technology (S&T) problems in the process of social and economic development.

According to the CAS’s strategic plan, by 2010, CAS will have about 80 national institutes noted for their powerful capacities in S&T innovation and sustainable development or with distinctive features; thirty of them will become internationally recognized, high-level research institutions, and three to five will be world-class.

To assist CAS in achieving its strategic goals, it is the mission of LCAS to provide S&T information support for the national knowledge innovation system, which include service methods to meet the needs of first-class scientific researchers.

LCAS mainly consists of four branch libraries. Their locations, collection sizes and subject focus and staffing are summarized in Table I.

NEW TRENDS IN SCIENCE RESEARCH AND LIBRARY SERVICES

Like most other research libraries around the world, LCAS is also facing the changes and challenges related to digitization and networking. In particular, LCAS’s service targets the scientists and researchers of CAS. These users are very different from the large public user group that
public libraries have or the many students and faculty that university libraries have.

Technology has significantly changed the information needs and access methods of scientists with very few scientists now walking in the library door. But, does that mean scientists do not need information services anymore? The answer is no. A simple principle: first-class scientific research always needs the support of first-class information services.

Research library directors or staff members, can no longer be satisfied with what they have done or how well they are doing only within the physical library building. Instead, true librarians should look beyond the walls of the library to see what’s happening in the world of researchers. In recent years, scientific discovery and innovation are forming a new system—combining e-Science, e-Learning, and e-Management—which is called the e-Knowledge system.

E-knowledge is creating a digital and integrated research space that supports knowledge expression, integrated retrieval, open cross linking and dynamic citation to different content, environments, groups, processes of scientific research. It provides data mining capability, logic organization and dynamic analysis of knowledge and its complex relationships. It supports in-depth content analyses and an individualized knowledge map that enables scientists to organize their own knowledge system.

Research library directors should regularly review the need to change service methods to support the trends in scientific research. Through a comprehensive analysis, LCAS concluded that there are three major problems in providing services that meet the needs of research scientists:

The first problem is that the resources of LCAS cannot satisfy the service needs of first-class research for guaranteed and integrated documents. Compared to more advanced national and international organizations, LCAS’s capacity to provide guaranteed documents is still limited. One important reason is acquisitions budgets can’t always keep up with the price increases in books or journals, and this situation seems particularly serious in a developing country like China. But on the other hand, in the e-Knowledge environment, the flexibility and convenience of being able to acquire and use information resources through every means of access is more important. That means research libraries should improve the capacity of integrated information services to locate and integrate information, forming a seamless service chain of distributed and heterogeneous information resources and services. In this chain, users can organize and use existing information resources, and they can investigate, explore, and correlate analyses through distributed and complex contents.

The second problem is that LCAS still can not meet the needs for in-depth information services for scientific innovation. The transformation in knowledge production is leading to significant transition in information requirements for users. Information support has changed from getting documents to resource investigation, deep analysis, and knowledge discovery. Furthermore, research libraries should be able to provide analysis services on research projects, scientific development planning, and decision-making support. Information services of LCAS still have not yet broken through the traditional model of concentration on literature searching and delivery. The integrated and knowledge service capability of institutes lags far behind. LCAS urgently needs to exploit brand-new service methods that merge into the scientific research process. These methods must be in-depth and individualized.

The third problem is that resources integration capability of LCAS still can not match the developments in the environment of scientific information. Information services need to adapt to changes in scientific innovation and organically integrate into the systems platform different objects, resources, tools, activities and procedures.

LCAS still does not do well in integrating domestic and foreign scientific information resources. Resources such as literature, data, organization, facilities, personnel, projects and intercommunication must be organized, linked

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with, and dynamically integrated more effectively. This will enable scientists to construct an information platform depending on the specific research process.

**REFORMING GOALS AND METHODS**

The overall goal of LCAS reform is to transform a traditional, resource-based collection into a unified scientific research environment that focuses on knowledge organization, knowledge exchange, and knowledge management. What LCAS will build is a system that enables knowledge discovery by data mining tools embedded in the research process and user service systems; a customizable, expandable, transplantable knowledge management platform that directly supports various knowledge objects such as personnel, research teams, and institute; and finally, a new knowledge service method based on the e-knowledge system.

From the perspective of the LCAS, a new academic library would be:

- A platform that integrates various resources and information;
- A partner that works closely with scientists;
- A think tank that supports scientific decision-making.

Accordingly, LCAS has decided to take the following three major steps to accomplish these goals:

- **Focus on Construction of an Integrated Information Service Platform**

First, in addition to increasing investment in literature resources, LCAS will focus on construction of an integrated information service platform. This platform will seamlessly integrate existing service processes and comprehensive resources, effortlessly bringing about integrated search, seamless linking, dynamic expansion and united services, which support individualized service, based on the user’s research needs.

The characteristics of an integrated platform are as follows: it brings in the existing services and third party’s resources and services, forming an open service system. It is user customized and expandable. According to user need, data links and the user environment, this platform can seamlessly link ID authentication, integrated searching, integrated browsing, interlibrary loan, and reference consulting. A user can come in through any access point, and through one-time authentication, one-time input, get what he or she wants in a single work-flow and logic system.

- **Establish an In-depth Information Service System**

Second, to establish an in-depth information service system, LCAS will fully enhance individualized service capability to address the needs of the institutes of CAS. The goal is to improve the ability to acquire and utilize information, and create very close relationships with institutes, research teams and projects, or other types of research organizations. This system will also integrate various resources and services.

As one of the measures for achieving this goal, LCAS established a subject librarian team to closely track individual demands in research, to help research teams analyze their needs, to organize resources, to design services and to provide consulting, training, and other related responsibilities. A subject librarian must have a background in a related field and a Masters degree.

Meanwhile, LCAS will actively participate in construction of an information network to build a specific virtual information platform for institutes. This platform will provide a field information guide, featured information resources, as well as research information exchange, and analysis tools.

The following is an example of in-depth information service. CAS is preparing to establish a new institute of nanotechnology and nanobionics. To cooperate in the establishment of the institute, the subject librarian team at the Wuhan Library of CAS did comprehensive information collection
analysis, released a survey report on field planning of the institute, and established six databases. The team also investigated about 200 nanotechnology related firms, and periodically collects and publishes information on international research progress and industry news.

- Develop Strategic Information Research

Third, LCAS decided to develop strategic information research that aims to support the CAS’s scientific decision-making activities. An information research department was established across all branch libraries. Its mission is to analyze trends in different fields of science and collect information on new ideals, new concepts, and new thoughts in social, economic and scientific progress using information science tools and methods including keyword frequency analysis, paper and patent statistics, research budget statistics, citation analysis, visual map analysis, as well as statistics on personnel, projects, grants, and awards. The research objects are important research organizations such as institutes, universities, enterprises and R&D units around world.

The three goals build upon early LCAS initiatives and projects launched since the beginning of this century. As part of the efforts to establish integrated information platform, in 2001 LCAS launched “The Chinese National Science Digital Library” project, which aims to create and maintain a scientific information service environment. Scientists can use a cross-database search engine to browse 128 online databases. Online services such as document delivery, virtual reference, and user training are also available.

To provide more convenient information access, LCAS also developed several information portals to assist in different research areas. These portals are well-organized, web-based, comprehensive information sites that contain a vast collection of resources including news, events, articles, journals, books, frequently asked questions, and links related to a specific field. Important portals include: Physics and Mathematics; Chemistry; Biological Sciences; Natural Resources and the Environment; and Library and Information Sciences.

LCAS has constructed specialized databases according to different needs. These databases are bibliographic, full text, multimedia, or mixed. The contents are usually focused on a relatively narrow field. In addition, LCAS has developed a desktop information tool. With this software application, users can search catalogs, databases, Google, dictionaries, maps, and so on, without leaving work environment tasks such as word processing and email writing.

CONCLUSIONS

According to CAS’s knowledge innovation program pilot project, LCAS is working hard to turn itself into a world-class academic library and build an open and integrated information service system to support scientific research and the construction of a innovative national system by making available such services as one-stop searching, virtual reference, pushing information, and so forth. LCAS services will inter-link with the main domestic and foreign libraries and information institutions to provide a distributive and worldwide, accessible networked information environment for the scientific community and contribute to China’s increasing ability in innovation and competitiveness in international S&T.

REFERENCES


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