

## Chapter 7

# Technology Innovations in Academic Libraries in China

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### ABSTRACT

*This chapter summarizes the application of new technologies to promote development and innovation in academic libraries in China. It is composed of four parts: 1) an introduction to the system platforms used to realize the new services; 2) an introduction to the progress made in constructing digital library (D-Lib) systems in recent years; 3) a summary showing how library space management and self-service burgeoned in recent years, such as with entrance guard and access systems, self-help circulation systems, RFID application, self-help printing and payment services, and library space and facility management; and 4) an example of the application of mobile technologies, including SMS (short message service), mobile library websites, etc., in libraries. Through analyzing the wide range of the application of information technology in library resources management, user services, and the library business process, the authors reveal that libraries have been advancing and how they keep pursuing innovative development to meet user demands in the new information environment.*

### LIBRARY SERVICE INNOVATION DRIVEN BY NEW TECHNOLOGIES

#### Library Website and Homepage

In the context of a networked society, websites play a key role for libraries. As a portal of information service, a library website is the main center from which users get to know, use, and enjoy library resources and services. A useful library website organizes and presents library information resources, facilitates interactions with users, and helps users conveniently access their target resources.

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Most academic libraries have their own websites or portals consisting of one-stop retrieval, resource and service navigation, consultation and assistance, news bulletins, and personalized service. According to a survey of 24 top ranking universities in China, 79.17% of libraries used unified retrieval that integrates OPAC, discovery systems, database, journal, and book navigation, and other searching functions in the most conspicuous location on the homepage, embodying a “reader-oriented” strategy (Deng, 2015). It is also trendy to use large amounts of multimedia information (picture, poster, video, flash, etc.) on the library homepage, to present information in a vigorous manner. Social networking services, such as Sina Microblog or Renren, are integrated into the site, and other social tools such as tags are embedded in a prominent location on the homepage to provide library users with a familiar network environment.

From a technical perspective, library websites have experienced three development stages: static website, dynamic website, and content management system. Prior to 2000, Front Page and Dream Weaver were used to generate static website HTML code; later, with the development of ASP, JSP, PHP, and Asp.net, dynamic webpages became ubiquitous and solve the difficulties of static website maintenance. In modern webpages, an increasing number of libraries use Content Management System (CMS) to build their own library websites. Unlike the inflexibility of traditional dynamic websites, CMS is based on dynamic web technology that allows for full control of content. Libraries can have customized websites with page layout, color matching, and navigation to the specific contents of each page. Peking University, Tsinghua University, Harbin Institute of Technology, and Yunnan University use Drupal, an open source content management system, to build their library portal. The University of Electronic Science and Technology, Southwest Jiaotong University, Qinghai University, and Tianjin Library use Tsinghua Tongfang CCMS system to construct their library portal. Other universities, including the National University of Defense Technology and Hunan University, use TRS system to construct their library portal. There are other libraries that use different additional CMS systems.

The rapid development of tablets and smartphones has generated increasing demand for mobile websites. Libraries typically take one of the following two approaches to meet the challenges. With the first approach, libraries build a mobile website different from their regular site; this is the method adopted by most libraries. With the second approach, libraries choose to build a responsive website that adaptively displays web content according to mainstream terminal types. At present, responsive websites are found in very few institutions, though one such is the Yunnan University Library (Bi et al., 2015).

## **INTEGRATED LIBRARY SYSTEM**

Since the beginning of 1990s, some academic libraries started thinking about developing automated library management systems with minicomputers. Some examples of this include Peking University, which initiated the Peking University Library Automation Integrated System (PULAIS) in 1990 (Sun, 1993), and Tsinghua University, Southwest Jiaotong University, East China Normal University, and ten other colleges and universities, which introduced the minicomputer K and the corresponding software ILIS provided by Fujitsu. Library automation management systems (LAMS) of this period, also known as integrated library systems, were the first generation of their kind to play a vital role in the development of automation in academic libraries.

After decades of development, LAMS have become primary tools for supporting daily library operations, including acquisition, cataloging, periodicals, circulation, online public access, and system management modules that are all used to support relevant business management. Currently, more than

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