

Afghanistan Digital Library Initiative: Revitalizing an Integrated Library System

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Abstract:

This paper describes an Afghanistan digital library initiative of building an Integrated Library System (ILS) for Afghanistan universities and colleges based on open source software. As one of the goals of the Afghan eQuality Digital Libraries Alliance, the authors applied systems analysis approach, evaluated different open source ILS, and customized the selected software to accommodate users' needs. Improvements include Arabic/Persian language support, user interface changes, call number label printing and new ISBN-13 support. To our knowledge, the ILS is the first big academic libraries in the the world running on open source software.

Keywords

Afghanistan, eQuality, Digital Libraries Alliance, open source, Integrated Library System, Koha, Farsi, Dari

1. AFGHAN HIGHER EDUCATION AND LIBRARIES

The last quarter-century has been devastating for Afghanistan with an uninterrupted period of invasions, civil wars and oppressive regimes. “Since 1979, the education system was virtually destroyed on all levels. Schools and colleges were closed, looted, or physically reduced; student bodies and faculties were emptied by war, migration, and economic hardship; and libraries were gutted”⁴. Kabul University (KU), for example, was largely demolished by 1994 and completely closed down in 1998. It is universally recognized that Afghanistan desperately needs trained faculty, teachers, librarians and staff. The current state of the higher education system is one of dramatic destruction and deterioration. Based on Rawan’s assessments of KU Library, most of its collections were damaged or destroyed. She found that there were approximately 60,000-70,000 books in English language, 2,000-3,000 books in Persian language, and 2,000 theses in Persian language. None of these collections have manual or online catalog records. The Library has 18 staff members and not all staff are fully trained in library activities³. Rebuilding the educational infrastructure in Afghanistan is essential.

2. AFGHAN EQUALITY DIGITAL LIBRARIES ALLIANCE

The University of Arizona (UA) Library has been involved in the rebuilding of academic libraries in Afghanistan since April 2002. In 2005 we were invited to be part of the Digital Libraries Alliance (DLA) as part of the Afghan eQuality Alliances: 21st century universities for Afghanistan initiative funded by the USAID/Washington State University. The goal of the Digital Libraries Alliance (DLA) is to build the capacity of Afghan libraries and librarians to work with open source digital libraries platforms; and to provide and enhance access to scholarly information resources and open content that all Afghanistan universities can share.

3. REVITALIZING THE AFGHAN ILS

An ILS usually includes several critical components such as acquisition, cataloging, catalog (search and find), circulation, and member management. Traditionally it has been the center of any library. Recent development in digital libraries results in distributed systems in libraries and an ILS is treated as one of digital library systems. It is still critical to have a centralized ILS to provide a primary way to access library-owned materials for Afghanistan universities and colleges. Other services such as inter library loan and other digital library systems can be further developed to extend libraries' services to users and communities.

The UA library is collaboratively working with other DLA members, including universities around the world and universities in Afghanistan. One of the goals is to develop a digital library environment, including a centralized integrated library system (ILS) for four academic universities in Kabul (Kabul University, Polytechnic University, Kabul Medical University, and Kabul Education University). In the future, the ILS will

be incorporated other regional institutions throughout Afghanistan. The ILS will support 30,000 students and 2,000 faculty in Afghan universities and colleges.

3.1 Overview of The ILS Market

Currently the ILS market is primarily dominated by commercial systems such as Innovative Interface, Endeavor, and Sirsi. Compared with other computing areas, open source systems in ILS are immature and limited, as there are only a few products available and most of the products do not have the full features of an ILS. However, they are providing a valuable alternative to those costly commercial systems.

Based on the availability of existing funding, experiences with commercial vendors, and consideration of vendor supports and future directions, the authors decided to build the Digital Library infrastructure with the "open" concept (open access, open source, and open standards). The decision is widely influenced by globalization, open access, open source, open standards, and increasing users expectations. At the same time, the decision gives us an opportunity to develop and integrate new tools and services for libraries as suggested by the University of California⁵.

Koha is probably the most renowned open source ILS. It is a full-featured ILS, developed in New Zealand and first deployed in Horowhenua Library Trust in 2000. So far Koha has been running in a few public and special libraries. The underlying architecture is Linux, Apache, MySQL, and Perl (LAMP) stack. Building on the similar LAMP (Linux, Apache, MySQL, and PHP) architecture, OpenBiblio has relatively short history by releasing its first beta 0.1.0 version in 2002 with current beta 0.5.1 version. WEBILS is an open source ILS based on UNESCO's CDS/ISIS database, developed by the Institute for Computer and Information Engineering in Poland. The software has some of ILS features, including cataloging, catalog(search and find), loan, and report modules. WEBLIS has to run on Windows, Window-based web servers such as Xitami/Microsoft IIS and ISIS database. GNUTECA, another open source ILS widely deployed in South America universities, was developed in Brazil. Like WEBILS, it has some ILS features such as cataloging, catalog and loan. However, the software interface is written in Portuguese, which presents a language barrier for us and Afghanistan users. The paper *Open Source Integrated Library Systems* provides a good overview of other systems¹.

3.2 Systems Analysis

The author adopted systems analysis by taking account of Afghan collections, users' needs, and systems functionality required to perform essential library operations. Koha was chosen as the base software due to its functionality, maturity and support. Some of the reasons are:

- The software architecture is open source LAMP, which is popular, stable, and predominant.
- Our staff have skills in these open software systems.
- It is a full-featured open source ILS. Certain components such as multiple branch support and users management are critical.

- Two big public libraries of serving population of 30,000 users in New Zealand and United States have been running their ILS on Koha for a few years. The software is stable and most of bugs have been fixed.
- Koha has a mailing list that is used by Koha developers and users as a communication tool to ask and answer questions.

Kabul Universities have computer science faculty and students, who have capacity to participate in the development. Due to working schedules and locations, we prefer to develop and maintain the system in UA Library. The technical project team is consisted of 3 people. Yan Han is responsible for managing the overall implementation and development in the open source ILS system. One part-time (20 hours per week) student developer, whose major task is to develop and manage source code. A temporary student (10 hours per week for two months) is responsible for translating English words to Farsi/Dari words. Testing tasks such as unit testing and system testing, are shared by all members of the team.

4. MAJOR CHALLENGES

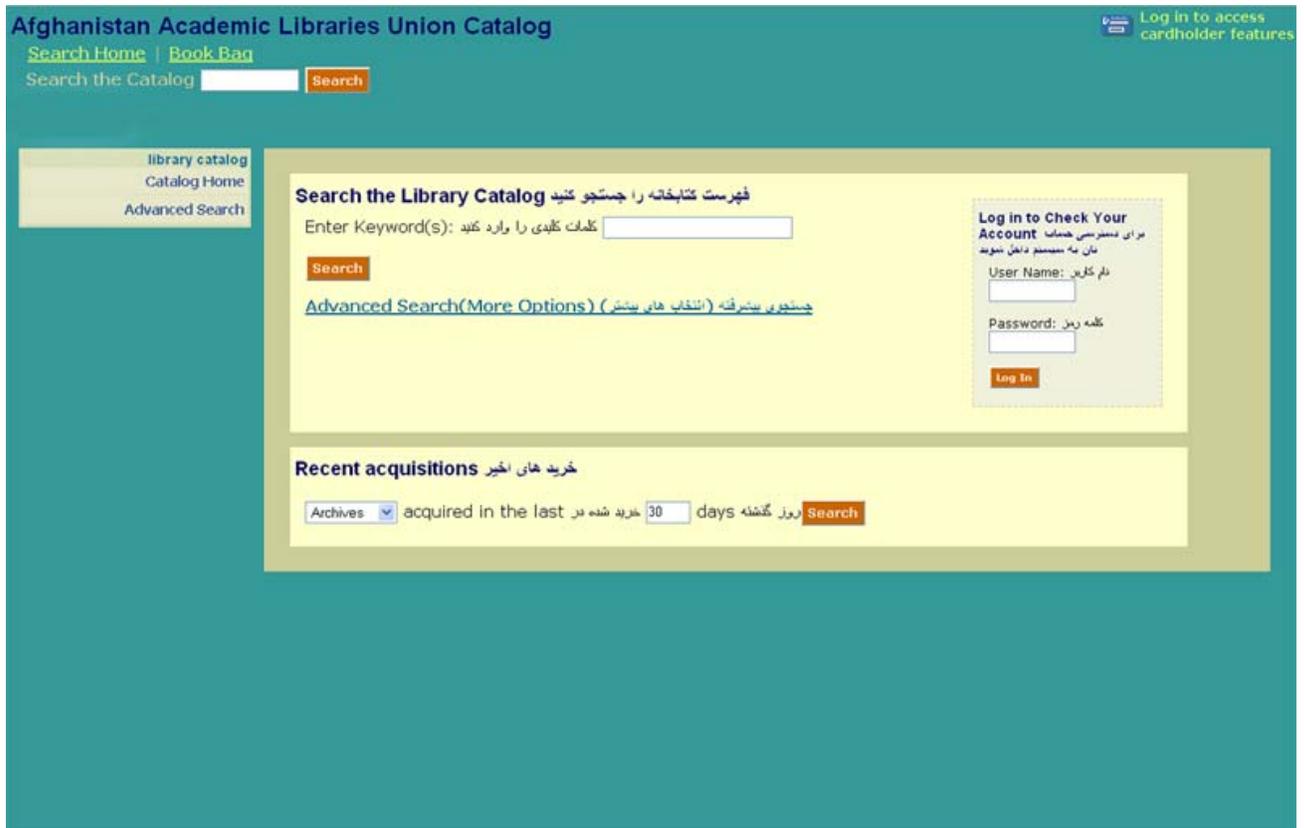
4.1 Farsi/Dari Languages Support

Koha version 2.2 cannot correctly handle East Asian language records including Farsi/Dari records. Supporting Persian/Farsi/Dari records is a very important requirement, as these Afghan Universities have quite a few Persian/Dari materials. As we look at the source code, Koha generates web-based Graphic User Interface (GUI) through Perl included templates, which use a HTML “meta” tag with Western character set (ISO-8559-1) to encode characters. Browsers such as Internet Explorer and Firefox use the "meta" tag to decode characters with predefined character set. Therefore, other characters such as Arabic/Persian and Chinese would not be displayed correctly. The Perl templates were identified and modified to allow characters to be encoded in Unicode and solved this problem. Persian/Dari characters can be entered into the cataloging module and displayed correctly in GUI. However, we should understand limitations of this approach when dealing with other East Asian character sets such as Chinese characters. Only frequently used characters can be represented. A project of Academia Sinica is one of the efforts to deal with 65,000 unique Chinese characters ².

4.2 Farsi/Dari GUI

As the project aims at local Afghanistan users, there is a need for a Farsi/Dari GUI. Current version of Koha does not have such interface, and we decided to create a new Farsi/Dari GUI for OPAC. The Koha system’s internal structure is logically arranged and therefore our development work in translation is not difficult to manage. The translation student translates English words in Perl template files into Farsi/Dari. At the same time he works with the developer to make sure the correctness of the display of OPAC. Figure 1 is the screenshot of the GUI

Figure 1: Afghanistan Academic Libraries Union Catalog in Farsi/Dari



4.3 Other Improvements

We further developed a spine label printing module and integrated the module into the ILS, since there is no such function provided. The module allows library staff to print one or more standardized labels (1 1/2H x 1"W) with OCLC formats on Gaylord LSL 01 paper, which has 56 labels per sheet. Library staff can select an appropriate label slot to start and print out his/her choices of total numbers of labels with web preview feature. This feature eases library staff operations and provides cost-savings for label papers.

As new ISBN-13 is going to replace ISBN-10 after January 1, 2007, any ILS has to be able to handle the new ISBN-13. Our ILS has been improved to handle both ISBN standards. Thanks to Koha's delegation of the GUI and major functionality, the interface such as fonts and web pages can be modified through the templates and CSS. Z39.50 service has been configured to allow users to search other libraries' catalogs.

4.4 Hardware and Software Support

Afghanistan is still in developing its fundamental infrastructure: electricity, transportation and communication. When considering buying hardware for the ILS, difficult issues such as server services, computer parts have to be solved. Even international IT companies

such as Dell, HP, and IBM have very limited services and support in Afghanistan.

Regarding software and system support, our strategies are:

- Maintaining and developing the open source software at the UA library by the project team.
- Running one server in Kabul, Afghanistan and the server will be administrated by local system administrator.
- Running one server in the library, United States and the server is administrated by the library's system administrator.

4.5 Cost

We estimated our overall cost for building the open source system is low and reasonable.

The system is currently running on a Dell 2800 server (\$5,000 for 3GHZ CPU, 4GB RAM, and five 73GB hard drives), kernel built Debian Linux (free), Apache 2 (free), MySQL (free), and Perl (free). I spend 4 hours per week for coordination, communication and management of the project. The student developer works 20 hours per week for development and maintenance, while the translation student is going to spend a total number of 100 hours for translation.

5. CONCLUSION

Revitalizing an Afghan ILS is the first important goal to build digital library initiatives for Afghanistan Higher Education system. By understanding Afghan university libraries, collections, and users, the UA library is working with other DLA members to build the open source ILS. The new Farsi/Dari user interface, language support and other improvements have been made to meet needs of Afghan universities and colleges. The cost of using and developing existing open source software is reasonable

6. ACKNOWLEDGMENTS

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Notes

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