

## Case Study: Mali Koha ILS pilot

### Project overview

The eIFL-FOSS ILS project provides an opportunity for evaluation of and possible migration to a free and open source software (FOSS) integrated library system (ILS). It promotes direct engagement with the FOSS communities of a chosen ILS. And it lays the groundwork for a mutual support network across eIFL.net for further libraries investigating migration to a FOSS ILS. The project focused on evaluating two FOSS ILSs with robust and open development and support communities: Koha (<http://www.koha.org/>) and Evergreen (<http://www.open-ils.org/>). Following a general call for participation in early 2008, libraries from 12 countries representing 11 language groups submitted applications to become pilot sites. From these, 7 sites were selected that represented a wide range of libraries and regions. All applicants joined an email discussion list in order to follow the progress of the pilot sites. The 7 pilot sites are: Fundamental Scientific Library of the National Academy of Sciences, **Armenia**; National Scientific Library, **Georgia**; Mzuzu University, **Malawi**; Library of the Faculty of Medicine Pharmacy and Dentistry, University of Bamako, **Mali**; Madan Puraskar Pustakalaya, **Nepal**; Midlands State University Library, **Zimbabwe**; and An-Najah National University Library, **Palestine** (West Bank). Each pilot library participating in the project was invited to participate in an intensive technical training workshop in Yerevan, Armenia, in June 2008. Case studies of each pilot draw out learning points for other libraries seeking to move to a FOSS ILS.

### Pilot library

The **Library of the Faculty of Medicine, Pharmacy and Dentistry at the University of Bamako, Mali** (Bibliothèque de la Faculté de Médecine de Pharmacie et d'Odonto-Stomatologie <http://www.keneya.net/fmpos/>) is the principal medical library in Mali. Its primary users are medical students, pharmacy doctors, and pharmacists as well as foreign researchers in the field of health transition in Bamako. The library caters to more than 3500 students, 107 faculty, and 16 administrative and technical staff as well as medical practitioners. The library holds more than 10000 monographs, and 100 journal subscriptions. But perhaps it is the collection of more than 9000 medical-related dissertations that attract the most attention of users. Readers are able to investigate the holdings through the use of a card catalogue or, with staff assistance, via a WinISIS database interface. There is also limited access to bibliographic databases, again with staff assistance.

It is worthwhile remarking on the importance of theses within this library. There are very limited funds available for the purchase of externally published scientific texts. By contrast, more than 200 theses are deposited with the library each year. These in turn have become primary research material for current students and foreign researchers, especially in the field of local medicines. Recognizing the significance of this resource, the library initiated a scheme to create a full-text digital repository of its theses. This repository is intimately connected to the library's ongoing explorations of a FOSS ILS which will provide an accessible interface to this resource.

The Mali library consortium, Consortium Malien des Bibliothèques (COMBI), consists primarily of the libraries of the various faculties of the University of Bamako, although there are also many extra-consortium partnerships, for example with the Association Malienne des Utilisateurs des Logiciels Libres (AMULL) and the Réseau Malien de Documentation (REMADOC). The Library of the Faculty of Medicine, Pharmacy and Dentistry is acknowledged as the most technologically advanced of the university's faculty libraries. This is due largely to the expertise of Abdrahamane Anne who is the technical lead for this pilot. He is supported in his work by the other members of

the consortium including its Chair, Cheick Oumar Diawara, with whom he shares an office.

### **Motivation for exploring a FOSS ILS**

Prior to embarking on this pilot, the Library of the Faculty of Medicine, Pharmacy and Dentistry did not employ an integrated library system. The holdings are catalogued using CDS/ISIS for Windows and thus the database uses an ISIS database format, access to which is through WWWISIS. Since there are (or were) no public access terminals providing access to the database, the primary access point to search the holdings for users is a printed card catalogue. When required, users may request that staff perform searches of the database.

Exploring the possibility of a FOSS ILS is part of a concurrent effort within the library to modernise its offering to users. Other aspects of this modernisation include the development of a digital repository of theses deposited with the library, and, importantly, an effort to create a set of terminals to provide web access to the library's catalogue including this repository of theses.

***Learning point: motivations for investigating a FOSS ILS may be part of a larger project within a library and therefore its success may in part depend upon these other objectives.***

It would be fair to observe as well that only a FOSS ILS that could be obtained and deployed without accruing non-staff costs for the library could be a viable option for this library. Fortunately the library had the advantage of having a staff member with significant technical skills, a resource that cannot be underestimated as vital to the success of this pilot.

***Learning point: a single highly skilled staff member can be instrumental in the success of a substantive technological migration; but the converse is that this increases the risks in the future unless there is an effort to distribute that knowledge across a wider team.***

### **FOSS ILS choice**

The Library of the Faculty of Medicine, Pharmacy and Dentistry opted to pilot Koha (<http://www.koha.org/>). This was a significant decision because this may be the first installation of Koha at a university library in French-speaking West Africa. Many institutions in the region use the CDS/ISIS database. Many also employ PMB (<http://www.sigb.net/>), an ILS in wide use in French-speaking Africa. The decision therefore to opt for Koha might be seen as challenging the status quo. However, two significant points tell against such a conclusion. The first is that although Koha is not yet in widespread use in West Africa, it does have a robust and long-standing history of use in French speaking countries. Indeed there is a distinct French-language support network for Koha (<http://www.koha-fr.org/>). The second is that the technical lead for the pilot had significant Linux systems administration experience and especially familiarity with the MySQL database server. Since Koha uses MySQL as its database (whereas Evergreen uses PostgreSQL), there would be one less new application that would need to be learned. This can be a significant consideration when staff support for this new system is limited, or as in this case, entirely in the hands of a single individual.

***Learning point: try to match the current skills of technical staff to those that will be required with the new software in order to minimise the initial challenge for deployment.***

### **Initial Installation**

There were no significant challenges installing Koha for this pilot. This is entirely due to the experience of the staff member leading the effort. A background in Linux systems administration

and use of MySQL made the difference. For example, during the installation when a particular Perl module downloaded but did not install automatically, Anne knew enough to be able to install that Perl module manually. This is a basic skill in Linux systems administration that might not ever be covered in a training session on how to install Koha. It demonstrates the value of constantly working to improve the base level skills and knowledge of tools of library IT staff.

***Learning point: you cannot always anticipate which particular skill will be needed during an installation; a broad base of systems administration skills is essential.***

Prior to the first installation, Anne made a point of checking the Koha email discussion list to see what types of questions were showing up that related to the particular Linux environment in which he intended to install Koha. It also helped that Anne was comfortable with Internet Relay Chat (IRC), a communications tool commonly used within FOSS communities to facilitate synchronous communication. At one point in the installation Anne needed a very quick response to a technical question; IRC was the solution.

***Learning point: prepare to take advantage of any and all support channels provided by your application's FOSS community.***

At one point Anne notice a possible problem with the Zebra indexing documentation. In this case, turning Zebra on or off requires both an action in the Koha configuration interface as well as a command to be run on the command line (and thus requiring systems access). Conceivably a librarian might have received training as a Koha administrator and not have this systems access. It is a small point, but one that might stymie someone new to the deployment and use of complex FOSS system on Linux servers.

In the end Anne made two complete trial installations of Koha, the first using Koha 3.0 beta and the second using the Koha 3.0 stable. Even experienced systems administrators will undertake multiple trial installations of a complex system in order to ensure that they are fully comfortable with all of the steps involved, as well as to be able to note down for purposes of local documentation any oddities in the procedure. After each installation Anne created a number of new catalogue records in order to ensure that the installation had been successful, but also in order to investigate the cataloguing interface more closely. The latter work moved him to develop a more simplified interface for data input later for those who might not be familiar with the full set of MARC fields.

***Learning point: multiple installations of complex systems for purposes of familiarizing oneself with all of the relevant components and the steps of the installation process is a necessary precaution before embarking on more substantive data migrations.***

## **Data migration**

As noted, the Library of the Faculty of Medicine, Pharmacy and Dentistry at the University of Bamako has a legacy CDS/ISIS database. In this case, although the dataset is not especially large there is no prospect of re-cataloguing the entire collection as the Malawi Koha pilot is doing. Here the technical lead is largely on his own and must find technical solutions where possible which will avoid the need for significant staff-hours. Nor is there any prospect of paying a third party to undertake the migration of the data; there are simply no funds for that. And this leaves only one option – undertaking the task of migration directly.

In many cases the migration of data from one database to another is a straightforward task for a database administrator. However, when the data is in a non-standardized format to begin with, it requires significant 'cleaning' to make it fit for import into the new system. But what is the best way to go about this technical effort?

Experienced administrators of Koha will tend to opt for a Perl scripting solution to these types of text manipulation challenges. Data would initially be exported from the legacy database to a text file and then acted upon to create a modified text file which would then be ingested by the new database. Perl was designed for such work and since Koha consists in part of a large number of Perl modules, this is often a readily available skill that can be exploited.

In this case, Anne did not feel that his Perl expertise would be up to the task. And even though Anne was connected to wide range of local FOSS users through the Linux User Group (LUG) in his area, he was convinced that the experienced Perl experts there would not have had the time to help with this. This also did not seem to be the time to undertake an effort to substantially upgrade his own Perl skills. Instead he decided to stay within the skills he already had and use those to manipulate the dataset.

***Learning point: sometimes you simply need to work within the limitations of your personal skill set, even if this will not allow you to pursue the most elegant solution to a technical challenge.***

The actual solution that Anne employed was to move the data from WinISIS into CISIS via the id2i.exe tool that had been developed by Bireme some time ago. And from there out to a form that Koha would see as MARC, a standardized library database format. The process of developing this solution was time consuming but because all of the steps stayed within Anne's skill set he remained confident throughout that he would reach his desired goal. Anne estimates that approximately 50% of the time spent on this pilot has been in working out the data migration issues.

***Learning point: expect at least one technical pinch-point in any ILS migration which will absorb the majority of the effort.***

## Access

A FOSS ILS such as Koha can provide numerous benefits to library, if it can take advantage of them. Certainly the administrative tasks of the systems librarian will be streamlined. But equally important is how the new system affects users of the library. And this, unfortunately, is not something that can be solved solely through software. Without public access computers, the users of the Library of the Faculty of Medicine, Pharmacy and Dentistry at the University of Bamako would remain dependent upon a paper-based card catalogue. Or they would continue to need to call upon library staff to undertake searches of the database on staff computers.

The solution came in two parts. First the library received a donation of approximately 20 used computers from France. These computers were beyond their useful lifecycle in France but with a bit of ingenuity Anne knew that he would be able to put them to good use. The second part of the solution was the vivid example of another library doing just that – breathing new life into otherwise obsolete hardware through a Linux Terminal Server Project (LTSP) installation.

The reason why desktop computers become obsolete is, surprisingly enough, due to software. An adequate software solution at one point in time would still be an adequate solution later. But the software applications continue to develop (and improve) as does the operating system on which

these applications run. Each upgrade will tend to demand more resources of the hardware – more hard drive space, more RAM, more processing power, etc. Eventually the hardware will not be able to sustain the next advance in the software. In order to break free of this cycle one needs to remove the software from the computer, so to speak. And that, in reality, is just what LTSP does. In an LTSP installation, no software is installed on the terminal computers, which allows them to be comparatively modest machines. Instead, they draw all of their computational capacity from a single more powerful machine that acts as a server to the terminals.

Just such an arrangement was set up at the main library of Birzeit University in Palestine. Anne learned of this through a eIFL.net Spotlight article and contacted Dr. Wasel Ghanem who undertook that installation<sup>1</sup>. Within a short time Anne had a network of terminals that could be used to access his new Koha Online Public Access Catalogue (OPAC).

***Learning point: a FOSS ILS by itself will not resolve all of the challenges in your library, but it can be the starting point in a process whereby innovative new solutions are discovered.***

### **Next steps**

The many interrelated library projects (ILS, LTSP, digital repository, etc.) continue to develop according to their own timelines. As ever, it is not usually software that creates the most challenges. For example, there is a clear need for a bar code reader to facilitate loans from the collection. There are other challenges with the Internet connectivity available to Anne's library and the other libraries in the COMBI library consortium. There is little doubt, however, that with dedicated staff like Abdrahamane Anne the Library of the Faculty of Medicine, Pharmacy and Dentistry at the University of Bamako will continue to meet whatever challenges arise.

### **Learning Points from the pilot**

There have been numerous learning points from this pilot. A few may be unique to Library of the Faculty of Medicine, Pharmacy and Dentistry at the University of Bamako, but most have wider application. They will inform our future efforts in promoting FOSS in libraries.

- Motivations for investigating a FOSS ILS may be part of a larger project within a library and therefore its success may in part depend upon these other objectives.
- A single highly skilled staff member can be instrumental in the success of a substantive technological migration; but the converse is that this increases the risks in the future unless there is an effort to distribute that knowledge across a wider team.
- Try to match the current skills of technical staff to those that will be required with the new software in order to minimise the initial challenge for deployment.
- You cannot always anticipate which particular skill will be needed during an installation; a broad base of systems administration skills is essential.
- Prepare to take advantage of any and all support channels provided by your application's FOSS community.
- Multiple installations of complex systems for purposes of familiarizing oneself with all of the relevant components and the steps of the installation process is a necessary precaution before embarking on more substantive data migrations.
- Sometimes you simply need to work within the limitations of your personal skill set, even if this will not allow you to pursue the most elegant solution to a technical challenge.

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<sup>1</sup> The Birzeit University experience has been turned in to a HowTo Guide for others which is available in English, Arabic, French, Russian, and Portuguese <http://www.eifl.net/cps/sections/services/eifl-foss/ltsp>

- Expect at least one technical pinch-point in any ILS migration which will absorb the majority of the effort.
- A FOSS ILS by itself will not resolve all of the challenges in your library, but it can be the starting point in a process whereby innovative new solutions are discovered.

For further information on Bibliothèque de la Faculte de Médecinede Pharmacie et d'Odonto-Stomatologie's Koha activities, please contact Abdrahamane Anne [anne@mrtcbko.org](mailto:anne@mrtcbko.org).

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