Article

Increasing Library Usage Through Free Open Source Software (FOSS) Solutions: Two Case Studies From Zimbabwe

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Abstract

This article provides an overview of free and open source software (FOSS) and the variety of solutions that libraries are implementing in order to better serve their patrons and more efficiently manage their collections. In addition, two case studies from academic libraries in Zimbabwe demonstrate how librarians implemented FOSS solutions that allowed these libraries to meet patrons' needs and increased library usage.

Libraries across the world are being asked to provide more for less. At the same time, the expectations and needs of library patrons are changing and evolving, and libraries must stay up-to-date with technology to meet those demands. Free and open source software (FOSS) provides up-to-date, adaptable solutions that help libraries meet today's challenges and stay on budget by investing in staff skills rather than in commercial products. FOSS is software released under licenses that ensure users always have (1) the freedom to run the program for any purpose; (2) the freedom to study how the program works and adapt it to their needs; (3) the freedom to redistribute copies of the program to others; and (4) the freedom to improve the program and release those improvements to the wider community. "Free" here refers to the freedom of how the software is used and not necessarily to the price of the software, although FOSS is usually available for download at no cost. Because FOSS is generally available at no cost, it means that with some technical knowledge, a library can implement software that would otherwise cost money. Well-known examples include the Apache Web server, on which the vast majority of websites in the world reside, the Firefox Web browser, the OpenOffice suite, and the Linux Operating System.[1]

Comprehensive information is readily available regarding FOSS tools. Traditionally, there has been a focus on FOSS tools for integrated library systems (ILS) and content management systems (CMS). Payne and Singh (2010) provide a comprehensive survey of these tools. In this article we will focus on FOSS solutions that go beyond library catalogs and increase awareness of, interest in, and access to e-resources. These solutions help librarians better serve their patrons and manage their collections more efficiently. We will then highlight two case studies from Zimbabwe where user demand led to solutions that met patrons' needs and resulted in increased library usage.

Libraries across the world are using FOSS solutions to provide a wide variety of services for their library patrons. There are FOSS tools to support nearly everything that happens in a library (see: http://www.eifl.net/A-Z-Glossary-of-FOSS-for-libraries and http://www.foss4lib.org/). For example, library systems tools allow patrons to search library catalogs online. There are also tools which allow libraries to put their digital collections (such as articles, digital archives, and datasets) online for users to search, browse, and read, as well as tools that help users to easily discover and use online materials. Appendix A provides a subset of FOSS solutions that improve access to e-resources. This is not a definitive or comprehensive list, but rather examples highlighting the breadth and range of FOSS solutions for libraries (http://www.eifl.net/foss).

EIFL-FOSS

Based in Europe, Electronic Information for Libraries (EIFL) is an international not-for-profit organization working in collaboration with libraries in more than 60 developing and transition countries in Africa, Asia, Europe, and Latin America. EIFL enables access to

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[1] The FOSS Wiki contains many examples: http://freeopensoftware.org/index.php?title=Main_Page

knowledge for education, learning, research, and sustainable community development (http://www.eifl.net/).

EIFL-FOSS (http://www.eifl.net/foss) is one of EIFL's programs and its goal is to create and share knowledge about FOSS library tools. It aims to raise awareness and understanding of FOSS options for a variety of library processes, facilitate EIFL member engagement with FOSS development communities, and undertake projects of special significance to EIFL members. Working closely with a network of EIFL-FOSS country coordinators, the program builds FOSS capacity in libraries, shares experiences and expertise, and develops support material for the evaluation of and migration to FOSS library software.

EIFL-FOSS Pilot Project Program

EIFL-FOSS encourages the implementation of FOSS solutions in libraries through its pilot project program. Following a successful program of ILS pilots in 2008-2009, five additional pilot projects were initiated in three countries (Armenia, Nepal, and Zimbabwe) in 2011 to demonstrate the implementation of a service that addressed local needs (http://www.eifl.net/foss-projects-tools). The pilot programs addressed a range of challenges facing libraries, from creating tools to support users by enhancing access to library resources, such as guided searching software or disability aids, to using existing ILS software to facilitate virtual union catalogues, to implementing an easy-to-use ILS in small and rural libraries. We will focus on two of these projects in Zimbabwe, both of which are now beyond pilot stage and in full operation. At the National University of Science and Technology (NUST) in Bulawayo, they launched a website tool that provides users with an easy-to-use interface for finding e-resources. Librarians were also given a tool for managing these resources. At University of Zimbabwe (UZ) in Harare, they have used FOSS tools to significantly improve services for students with visual impairments and reading difficulties.

National University of Science and Technology project[2].

The National University of Science and Technology (NUST) Library in Bulawayo, Zimbabwe provides services to approximately 6,500 students and 750 staff. NUST subscribes to a broad range of e-resources primarily through the Zimbabwe University Libraries Consortium (http://uzweb.uz.ac.zw/library/zulc/), the national library consortium serving 18 colleges and universities across Zimbabwe.

Although the library was providing access to a rich set of e-resources, usage of these resources by students remained low. Among the reasons identified was that users were unable to successfully navigate the library site in order to find relevant resources. In addition, if students became lost, they did not know where to turn for help. On the

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[2] Details and reports of the project can be found at http://www.eifl.net/subjectsplus-guided-search-bringing-e-resources-an

administration side, librarians were faced with the challenge of efficiently managing an increasing number of e-resources.

The solution would need to address both sides of the problem: simplify access for students and improve management for librarians. In addition, due to financial constraints the solution had to be accomplished for a low cost, and it had to be easy to implement and maintain. SubjectsPlus (http://www.subjectsplus.com/) proved to be that solution. SubjectsPlus is a FOSS tool (developed at Ithaca College Library in the USA by Andrew Darby) that enables libraries to easily provide online access to e-resources through tools that create and display subject guides, A-Z e-resource lists, staff lists, and FAQs. In addition, SubjectsPlus supports the ability to easily add modules such as Google custom search and online reference.

A typical software installation takes just a few minutes. Detailed requirements and installation instructions are available on the SubjectsPlus site[3]. SubjectsPlus supports customization options for managing the look and feel of the interface, as well as for adding custom features (see Figure 1). For example, at NUST they also chose to implement Meebo[4], which provides online chat services, and also Google Custom Search so users can now search as well as browse e-resources.

"What I liked about SubjectsPlus is that it is not time consuming for someone doing research. Every area of study is categorized so there is no way you can get lost. And also within that area of study there are contact details for subject librarians who can help you."

Computer science student, NUST

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[3] An installation case study is provided here: Blackburn, G. & Walker, M. (2010). Subject Guides & More: Creatively Transforming an Open Source Management System. *Code4Lib Journal,12*. Retrieved from: http://journal.code4lib.org/articles/4161

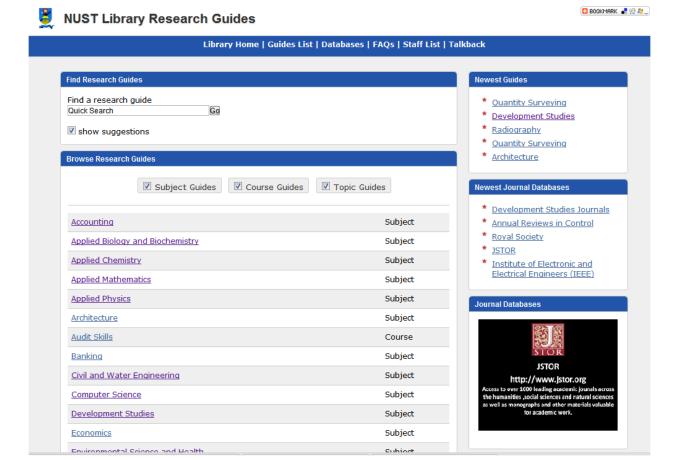[4] Meebo has since been purchased by Google and is no longer available as an open source added feature.

Figure 1. The NUST Library Guides List Page: http://library.nust.ac.zw/sp/subjects/

To ensure the success of the NUST project, the implementation team held a series of training workshops with librarians to introduce the tool and provide a hands-on opportunity to learn SubjectsPlus. The team also provided post-training support on a one-to-one basis as needed. Soon after the completion of the workshop, librarians transferred their paper-based guides online, then began editing them and creating new guides.

There are over 25 subject guides now available, arranged by department, and integrating access to both licensed and open access e-resources. Since its release, there has been a dramatic improvement (more than 500%) in the usage for some of the Library's most popular databases. In addition, librarians are empowered to create and update their webpages without consulting with technical staff, thereby allowing them to be more responsive to user needs and new developments because they can now make additions and edits quickly.

University of Zimbabwe project[5].

The University of Zimbabwe (UZ) is located in the country's capital city of Harare. UZ's library is the oldest and largest academic library in Zimbabwe and serves more than 12,000 students and staff. As a key contributor to the university's success, the UZ's Library has fully embraced information communication technologies (ICT) to maximize access to information resources in support of teaching, learning, and research. The UZ library provides an online catalog, electronic theses and dissertations, and a wealth of other e-resources including e-journals and e-books.

UZ librarians realized that their online services had not been adapted to meet the needs of their disabled students, many of whom were visually impaired. There are a limited number of commercial tools within the library for visually impaired users, but these software tools are proprietary and cannot be shared widely due to the prohibitive costs. UZ library therefore choose to explore Free and Open Source Software (FOSS) solutions. Selected as one of the EIFL-FOSS pilot projects, the focus at UZ was on tools that would provide students with visual disabilities enhanced access to the wealth of e-resources available through the library and online.

The focus was on the implementation of two tools:
- Virtual Magnifying Glass (VMG, http://magnifier.sourceforge.net/) is a screen magnification tool that allows users to simply place a virtual magnifier over any item on the screen to enlarge it. Using the mouse or the keyboard, the user can determine the shape and size of the magnified area and the strength of the magnification.
- Balabolka (http://www.opensourcedownload.net/windows/audio-multimedia/speech/balabolka/) is a text-to-speech tool that reads text aloud from the screen to aid people who have reading difficulties, whether due to vision impairments or other reading difficulties (e.g., dyslexia).

Additional disability tools were provided by the EIFL-FOSS program manager, Simon Ball, with support from Jisc TechDis, a UK advisory service that provides advice and guidance on accessibility and technology (http://www.jisctechdis.ac.uk/techdis/home). Jisc TechDis supplied USB sticks with AccessApps (http://eduapps.org/?page_id=52), a suite of more than 60 free and open source accessibility tools, including VMG and Balabolka, to support writing and reading as well as specific visual and reading disabilities.

Balabolka and VMG were uploaded onto the computers at the UZ Disability Resource Centre (DRC) as well as onto computers in the library, thereby giving the visually impaired students another place to study and feel welcome. They were also uploaded onto students' laptops upon request.

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[5] Details and reports of the project can be found at: http://www.eifl.net/disability-tools

The strategic partnerships formed by library staff in order to spread the word about the project and to demonstrate its value to key stakeholders proved to be a critical factor to their success. At the beginning of the project, UZ Library formed a strategic partnership with the UZ Disability Resource Centre (DRC) so they could reach students more effectively. The DRC installed the FOSS accessibility tools in its computer lab. The partnership with the DRC also included training by the library on FOSS accessibility software for visually impaired students as a permanent feature of orientation for new students.

The project was fully embraced by the university administration, which shared information about the project at the Zimbabwe International Trade Fair in May 2011. At this event, the project attracted the attention of the Ministry of Public Affairs who in turn presented the project at the United Nations & Africa Public Service Day in Tanzania in June 2011 where it was nominated for a United Nations Award.

Online resources have opened up a new world for students, but without the necessary tools this new world remains as inaccessible as the analog one to students with visual and reading disabilities. At UZ, students with disabilities now have the tools they need to take full advantage of these e-resources. In addition, librarians have been trained to load the tools on student computers and support students in how to use these tools. The librarians were extremely supportive of the project and appreciated learning a new skill that would allow them to better serve a new audience.

When asked about their experience with the tools, students were quick to point out the benefits. For example, one student pursuing a Bachelor of Administration degree expressed his appreciation of the library staff's efforts, "I am now able to read for myself because of the virtual magnifying glass, thanks to you." Another student expressed appreciation for these tools in the following manner, "I now enjoy my studies just like any other student. I no longer feel segregated."

A lecturer in the department of Adult Education, who is visually impaired due to complications with diabetes, was introduced to the tools. After using the virtual magnifying glass, he said "Ah!! Now I can read my document without problems."

> "It is extremely gratifying to be able to help the visually impaired students who before did not even come into the library and now they are in the library and are able to use the online resources."
>
> *Yeukai Chimuka, Head of Reader Services*

Conclusion

This article highlights two examples from a wide range of case studies of libraries using FOSS to meet patron needs in their particular context. In both cases, proprietary software was not a viable option, and so the only way of resolving these issues was to explore and utilize FOSS solutions. That these libraries

achieved such important changes in their services to users in a relatively short time (the two case studies described took place in less than 10 months) demonstrates the power of FOSS, when combined with commitment and determination, to change lives.

Reference

Payne, A., & Singh, V. (2010). Open source software use in libraries. *Library Review, 59*(9), 708-717.

Links for SubjectsPlus

Homepage: http://www.subjectsplus.com

Download page: http://www.subjectsplus.com/download.php

User community: http://groups.google.com/group/subjectsplus

EIFL-FOSS page: http://www.eifl.net/subjectsplus-guided-search-bringing-e-

resources-an

Links for Accessibility Tools

Homepage: http://www.jisctechdis.ac.uk/techdis/technologymatters/assistivetech

Download pages:

AccessApps http://eduapps.org/?page_id=52

Balabolka http://www.opensourcedownload.net/windows/audio-multimedia/speech/balabolka/

Virtual Magnifying Glass (VMG) http://magnifier.sourceforge.net/

User community: http://www.jisctechdis.ac.uk/techdis/aboutus/keeptouch

EIFL-FOSS page: http://www.eifl.net/university-zimbabwe-foss-disability-tools-project

Appendix A

A Sampling of FOSS Solutions for Libraries

Accessibility Tools	
Balabolka	Balabolka is a cross-platform text-to-speech tool. It reads text aloud from the screen to aid people who have difficulties reading, whether due to vision impairments or reading difficulties (including dyslexia). Additional information available here: http://www.eifl.net/disability-tools
Virtual Magnifying Glass	Virtual Magnifying Glass is a cross-platform screen magnification tool available on a GNU General Public License. Additional information available here: http://www.eifl.net/disability-tools
Search and Display Tools	
Apache Solr	Apache Solr (also known as Lucene/Solr after the merger of the two projects) is an enterprise search platform written in Java often used to enable faceted searching and resource discovery. Additional information available here: http://www.eifl.net/faceted-search
SubjectsPlus	SubjectsPlus is a tool for creating and managing online research guides. Additional information available here: http://www.eifl.net/subjectsplus-guided-search-bringing-e-resources-an
Electronic Resource Management	
CUFTS	CUFTS is an electronic resource management tool that, along with GODOT and dbWiz, makes up the reSearcher suite of tools. Additional information available here: http://www.eifl.net/cufts
GODOT	GODOT, included in the reSearcher suite of tools, provides direct links to full-text collections via the CUFTS KnowledgeBase. Additional information available here: http://www.eifl.net/cufts
Digital Asset Management	
Fedora	Fedora is an architecture for Digital Asset Management upon which many types of digital libraries, institutional repositories, and digital archives can be built. Additional information available here: http://www.eifl.net/fedora

Islandora	The Islandora module allows Drupal users the ability to view and manage digital objects stored in Fedora. Additional information available here: https://wiki.duraspace.org/display/ISLANDORA/Islandora
Institutional Repositories	
EPrints	EPrints is a repository software tool. Additional information available here: http://www.eifl.net/eprints-creating-open-access-repositories
DSpace	DSpace is a digital asset management tool, commonly used as the basis for institutional repositories. Additional information available here: http://www.eifl.net/dspace
Invenio	Invenio enables the user to run a Web-enabled digital library or repository. Additional information available here: http://www.eifl.net/foss-tools#Invenio
Integrated Library Systems	
Evergreen	Evergreen is an Integrated Library System that is highly scalable and compatible with OpenSRF. Additional information available here: http://evergreen-ils.org/
Koha	Koha is an Integrated Library System that will work on Linux or Windows. Additional information available here: http://koha-community.org
OpenBiblio	OpenBiblio is a modular ILS designed specifically for small to medium sized libraries, written in PHP. Additional information available here: http://sourceforge.net/projects/obiblio/
Open Publishing	
Open Journal Systems (OJS)	Open Journal Systems (OJS), created by the Public Knowledge Project, is software for the management of peer-review journals. Additional information available here: http://www.eifl.net/open-journal-systems
Content Management Systems (CMS)/Web Portals	
Drupal	Drupal is a Content Management System (CMS) that provides common CMS including user account registration and maintenance, menu management, RSS feeds, page layout customization, and system administration. Additional information available here: http://www.eifl.net/drupal

VuFind	VuFind is an Open Source (GNU GPL) library resource portal designed and developed for libraries by libraries. Additional information available here: http://www.eifl.net/vufind-search-engine-and-portal-software
Learning Management Systems (LMS)	
ILIAS	ILIAS is an LMS for developing and delivering Web-based e-learning and is published under the GNU General Public License. Additional information available here: http://www.campussource.de/org/software/ilias/
Moodle	Moodle is an LMS or a Virtual Learning Environment (VLE) for creating effective online learning sites. Additional information available here: http://www.moodle.org
Authentication	
Raptor	Raptor is a software suite primarily designed to assist organizations to account for e-resource usage. It works with systems that handle authentication events such as Shibboleth, OpenAthens, and EZProxy. Additional information available here: http://iam.cf.ac.uk/trac/RAPTOR
Shibboleth	Shibboleth is a means of delivering federated identity-based authentication and authorization based on SAML. Additional information available here: http://www.eifl.net/federated-access
Simple SAMLphp	SimpleSAMLphp is a means of delivering authentication and authorization. It is based on SAML and written in PHP. Additional information available here: http://www.eifl.net/simplesamlphp