

Selection and Management of Open Source Software in Libraries.

Vimal kumar V.

Asian School of Business
Padmanabha Building
Technopark, Trivandrum-695 581
vimal0212@yahoo.com

Abstract

Open source software was a revolutionary concept among computer programmers and users. To a certain extent open source solutions could provide an alternative solution to costly commercial software. Open source software is, software that users have the ability to run, copy, distribute, study, change, share and improve for any purpose. Open source library software's does not need the initial cost of commercial software and enables libraries to have greater control over their working environment. Library professionals should be aware of the advantages of open source software and should involve in their development. They should have basic knowledge about the selection, installation and maintenance. Open source software requires a greater degree of computing responsibility than commercial software. Library professionals do not think seriously about the advantages of open source software for automation and hence are reluctant to use it. They do not have the expertise to support open source software. Paper highlights problems of selection, installation and maintenance of open source library software.

Keywords: open source software, open source movement, Library automation systems, Library technology, Information technology

1 Introduction

The software world is enjoying the advantages of collaboration and cooperation in software development and use with the advent of open source software movement. Open source softwares are gaining much popularity among developers and user community throughout the world. It's free of cost availability and the freedom given to run and distribute the software without any restriction has opened up a new experience to both developers and users. Educational institutions, research organizations, government enterprises, NGOs and libraries have just started using operating system, web server, library management system, institutional repositories, course management system, content management system and many more belonging to the category of open source software for their automation purposes. But small and medium libraries face a difficult situation in the adoption of open source software for automation purposes due to the non-conventional selection criteria, availability of wide range/multiple instances of software, lack of awareness and technical skills. If libraries can overcome these barriers, they can possibly automate its services without much financial burden.

2 Open source software movement

The history of open source software began with the early stages of computer and software development. At that time programmers and developers frequently shared their software freely. Advent of companies in software development with the aim of profit making restricted the culture of sharing source code of software. Milestones in the history of open source software are:

- 1983 - Richard Stallman formed GNU project.
- 1985 – Creation of Free Software Foundation.
- 1991 – Development of Linux kernel by Linus Torvalds.
- 1998 – Open Source Initiative (OSI) formed by Eric Raymond.

The two terms, “free” and “open source” are used synonymous for free distribution of softwares. Popular licenses used for this purpose are the GNU General Public License (GPL), BSD license, GNU Lesser General Public License, MIT License, Mozilla Public License and Apache License. All these licenses have some differences in their terms and conditions; they ensure users freedom to use, copying, distribution and improvement of software. Fundamentals of these licenses are similar to the philosophy of Free Software Foundation. “Free software is a matter of the users’ freedom to run, copy, distribute, study, change and improve the software” [1]. According to Free Software Foundation users can enjoy the following freedom with free softwares:

- The freedom to run the program for any purpose.

- The freedom to study and modify the program
- The freedom to copy the program.
- The freedom to improve the program.

3 Reasons for choosing open source software

Organisations like libraries are likely to choose open source softwares for automation purposes because it is free. Price of library software's are very high, most of the libraries are not in a position to buy high priced proprietary softwares due to severe budget cuts. IDAB (Interoperable Delivery of European eGovernment Services to public Administrations) of European commission sums up the reasons for choosing open source softwares in various organizations [2].

3.1 Political aspects: Open source softwares allow everyone to use , study, modify and distribute the software, regardless of a person's status, wealth, social background etc.

3.2 Economical aspects: Upfront costs of commercial softwares not included in the open source software cost. With open source software, users get full version of the product, no time limited trials [3]. Commercial softwares require huge investment at the initial stage and additional payment needs if the user wishes to update the software and users have no ownership on the software, it only allows work with the application.

3.3 Social aspects: Development and maintenance of open source software is a community based activity; anybody can join and contribute the social group. Through this, open source software projects encourage innovation and collaboration of community members.

3.4 Technical aspects: In the case of reliability and functions, it is proved that open source software can compete their proprietary software rivals. In addition open source software is interoperable, customizable according to the needs and fulfills the software industry standards.

3.5 Legal aspects: Open source software licenses are copyright protected, they strictly ensure the users freedom to use, modify and distribute the programs.

4 Selection criteria of open source software

Evaluation of open source software is different from proprietary programs. A key difference for evaluation is that the information available for open source programs is usually different than for proprietary programs; source code, analysis by others of the program design, discussion between users and developers on how well it is working, and so on [4]. Often proprietary programs always hide all information from users and only allow running the software. Following criteria's can be adopted for open source software selection.

4.1 Finding of open source softwares

Most convenient option to identify a particular software for your library need is to ask professional friends who have experience in using open source softwares. You can directly contact other libraries in your locality or post a message in any popular email discussion forum of librarians. Certain open source softwares are highly popular among librarians community, for example Greenstone digital library software is a favorite candidate for the libraries who make use it for the collection and organization of digital materials. Librarians can select the software without much effort, if more popular software's are available for various library purposes.

All activities of open source softwares are centered on project website, which often consist information regarding features of software, developers, major users, documentation, demonstration, discussion forums etc.

Websites which provide detailed listing of open source software are,

1. Free Software Foundations software directory (www.fsf.org)
2. UNESCO Free & Open Source Software Portal (www.unesco.org)
3. SourceForge (<http://sourceforge.net/>)
4. Freshmeat (<http://freshmeat.net/>)

Popularity indicators of softwares are also available in these services and it helps users to identify the right candidate.

4.2 Open source licenses

Open source licenses assure users freedom to use, copy, improve and distribution of software. GPL is the most popular license for free and open source software and provides feasible terms of use. Using GPL license, a user can modify the software without the permission of its creator. At the same time BSD license impose certain restrictions on modification of software without the permission of its developer. If you have decided to choose the software with non General Public License, check the license if it contains any un- acceptable clauses.

4.3 Functional modules

Certain features or modules essential for day to day work may not be available with the initial development stages of open source softwares. In such cases, libraries have to purchase additional modules from open source service providers or make use the in-house expertise to build the required features. Functional modules essential for library management systems (ILS) are cataloguing, circulation, OPAC, serial control and acquisition. It is essential to read release notes of latest version and software roadmap to know which features are already available and are expected in future. Ensure the availability of standards like MARC, Z39.50, and Dublin Core which are essential for exchange of bibliographic information in library softwares.

4.4 Stable releases

Stable release of open source software shows its developer's ability to fix and correct bugs along with new features. Version history of open source software is often available from project websites or any other project repositories like Source Forge (www.sourceforge.net), Savannah (savannah.net) and Free Software Foundations software directory (www.fsf.org). These services help users to check the information regarding software origin, releasing history, version numbering scheme, developers details etc. Actively maintained open source projects mention even the releasing dates of forthcoming versions.

4.5 Developers and user community

The development and maintenance of open source software is a social collaborative activity. Open source software is actively developed on a 24-hour basis by a large number of programmers from all over the world. Depending on the success of a certain open source software project, this results in a development process that outpaces that of many competitors. Another aspect of open source software is that, many different people and organisations look at the software from a different perspective. This leads to invaluable discussions on what direction the development should be taken. Many IT experts claim that, it is this multi-cultural and multi-organisational influence that, combined with the global spreading and fast development pace, makes open source software more innovative than closed software [5]. Active projects usually have regularly updated web pages and busy development email lists. They usually encourage the participation of those who use the software in its further development. If everything is quiet on the development front, it might be that work has been suspended or even stopped [6].

4.6 User interface

Most of the open source library softwares are available with web interface. Software with web interface is easier to learn and use. Graphical templates of open source softwares are possible to customize and users can add new design. Through redesigning the templates and style sheets open source software can easily integrate with library/institutional websites. Separate administrative and user interface is essential for remote access and maintaining security.

4.7 Documentation

So users are mainly responsible for the deployment of open source software; detailed and up-to-date documentation is a prerequisite for successful installation and maintenance. Open source software documentation is available through project websites, wikis, blogs and email lists. They give information of software installation in various operating systems, software architecture, database structure, history of bug fixes, changes in new release, road map (wish list) of future releases etc. Installation details and information for users are also available with the installation package. Individual documentation for developers, administrator and users is another advantage of open source software documentation. Software community incessantly updates the online documentation and it is better to make use the online wiki or email lists for error fixing and clearing doubts. Case studies of enterprises and experiences of individuals with software are often available in online documentation.

The most important aspect of documentation in software engineering is listening to end-users' questions and problems. End-users are the best (and in many cases only) form of feedback that many projects get. Documentation can be improved by first answering end-users' immediate questions and then stepping back to examine and address the underlying causes of the problems [7].

5 Installation and maintenance

Installation and maintenance of open source software is another hurdle to be overcome by libraries if they wish to install themselves. Many open source softwares are genuinely developed for Linux environment. Libraries without in house computer professional's support can approach open source service providers for installation and maintenance.

Users can download the binary and source code of open source software from the website or other open source software repositories like Source Forge (www.sourceforge.net) and Savannah (<http://savannah.gnu.org/>). Ensure the compatibility of the software with the destined operating system before installation. For example CDSware digital library software installation package is not suitable for Redhat/Fedora, but the installation of CDSware is easier in Debian and BSD Linux. Open source software can update with new releases either using binary distribution package or using Concurrent Versions System (CVS) without any payment. Remember to keep the back up copy of database and other necessary files before starting the software update.

Open source software requires a greater degree of computing responsibility than commercial software. Libraries need to have a greater degree of computing knowledge, but no one is expecting every librarian to become a computer programmer [8]. Installation of software with web interface is not easy as like Microsoft Windows applications; technical expertise requires installing and configuring the software for ready to use. Basic knowledge in maintain web server (Apache) and database management system (MySQL or PostgreSQL) is essential to deploy open source software in libraries. Popular open source software useful in libraries are,

Koha, PMB, PhpMyLibrary, OpenBiblio- Library management systems
Greenstone- Digital library software
Mambo, eZ publish , Plone- Content Management System
Moodle, Spaghettilearning, Claroline- Courseware tools
Open Journal System- Online journal publishing software
Eprints, Dspace- Institutional archiving software

Most of the popular open source softwares suitable for library applications support Windows, Linux and Mac operating systems.

6 Challenges

Library professionals do not seriously think about the advantages of open source software for automation purposes. Many people do not understand the concept of open source; much less have a practical idea of how it could be used. Of the few people who are familiar with open source, many are frightened by its reputation for being difficult to use [9].

Implementation of open source software is now more reliable and affordable in the case of functional features, usability and cost than before. Most of the libraries use Windows operating system and related applications due to its user friendliness and that it requires no technical knowledge to work. Many libraries simply do not have the in-house expertise to support open source software development, and also don't have the ability to train staff on the use of the new technologies [10]. In such situations libraries can hire the services of open source software support vendors.

Data migration from Windows to Linux is another messing problem for libraries. Plenty of proprietary library softwares are available in the market and most of them have no industry standards helpful for bibliographic information exchange. Open source softwares fulfill library standards like z39.50, Dublin Core metadata and MARC formats; these features ensure the interoperability. The many risk factors associated with a deployment have to be scrutinized carefully. These include parameters such as availability of required skill-sets or support for the application, possible standardization or interoperability issues with existing or planned systems, ease of use, security issues, ongoing costs, cost effectiveness and service levels [11].

7 Conclusion

Principle and practices of open source software are very similar to the principles and practices of modern librarianship. Both value free and equal access to data, information and knowledge. Both strive to promote human understand and to make our lives better. Both make efforts to improve society as a whole [12]. Open source movement ensures software availability free of charge and encourage community participation in software development. The new model of software use and development can cut cost and enhance the efficiency of software replacing the traditional proprietary software. The primary reasons of libraries not implementing open source solutions for their automation purposes are lack of awareness, training and absence of encouraging government policies. Training programmes for working information professionals and inclusion of open source software in library science curriculum will help to tackle the situation properly. Government and professional organizations can act a critical role in designing policies to encourage the use of open source software in libraries.

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