Open Source Tools for Effective Resource Management and Services: A Descriptive Analysis

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Abstract

Nowadays Open Source Solution (OSS) is becoming the answer to every query to a librarian’s perspective. Based on the open source code concept, various tools are used for some specific job published openly its source code to the mass for use and modify according to their requirement with zero cost. These tools may use in the government sector, private sector, service sector etc. Modern libraries are one of the most absorbing organisms of the worthiness of these open source tools. Today’s libraries are not dominated by the library walls. It speared beyond any boundary whether political, economic, social or any other. Library resources are also not limited to the traditional objects. The technology factors affected upon the file-formats also. Again, internet added the feature of acquiring and sharing of files very fast. This paper deal with the modern open source tools/ software with an overview, features, benefits, required packages and the application for managing various resource and services with some practical examples.  

Keywords: Open Source Software, Open Source Tools, Library Management and Services, Resource Management, Library Technology.  

1. Introduction

The present technological era delivered almost all solution to any problem. From the professional life to personal, from the official need to daily need, while inside home or outside, whether staying somewhere or travelling it can sought your needs out anywhere, to anybody and anytime. Various services from the virtual world is not a need now, it becomes a habit. Library and Information Centers are one of the most dynamic examples of those service sectors providing versatile services to their users’. Again Open Source Solution (OSS) is becoming the back bone the said like centers due to the budget are still a major factor especially in the developing country like India. The open source code policy releases every restriction and allows the managers to use it as per their need.  

1.1 Objectives of the Study

Followings are the main objectives of this study-

- To have an overview on the relation of library and open source tools with some broad open source software category.
- To look over on some current open source tools libraries are using.
- A quick description and analysis on one of the popular open source tool from each category presently libraries are going for with its name, category type, components required license agreement and why/how it is useful for library operations.
1.2 Limitations and Methodology of the Study
This study is limited on how open source software/tools are performing an important part to provide effective library services to its various types of users'. Starting with an introduction, objectives and literature review this paper discusses various open source library software for managing resources as well as library services.

2. Literature Review
Lots of studies were done in open source solution in different areas, sections, divisions, categories etc. Some of them are referred here.

3. Open Source Software (OSS)
Open Source Software (OSS) (https://opensource.org/) is the solution developed by a community or a professional body/organisation for the betterment of society to share information. Fully control, customisable, interoperable, flexible, community support and development, reliable, open standard, frequent upgrade, cost efficiency and most important without interference of any third party is the key factor of using open source software (Amin, 2003). The below table shows a category wise list of software libraries are using these days.

<table>
<thead>
<tr>
<th>Open Source Software (OSS)</th>
<th>Applied Fields</th>
<th>Educational</th>
<th>Graphical User Interface</th>
<th>Hobby</th>
<th>Password Management</th>
<th>Screensavers</th>
<th>Typesetting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assistive Technology</td>
<td>File Managers</td>
<td>Games</td>
<td>Operating System</td>
<td>Media</td>
<td>Networking and Internet</td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td>Data Storage and Management</td>
<td>Games</td>
<td>Genealogy</td>
<td>Healthcare</td>
<td>Programming Language</td>
<td>Theology</td>
<td>Programming Language</td>
</tr>
</tbody>
</table>

Table 1: Category wise popular open source software (Wikipedia)

4. Software and Libraries
Software and libraries are the complementary to each other now a day's. Use of ICT based applications like automation, digitisation, CMS, discovery, android app, RFID, barcode, QR code, ERM, OS in the modern libraries are very common these days. The growth of production of the e-resources in various file-formats, accessibility of anytime/anywhere of the acquired materials, changing trends of resource sharing/inter library loan/consortia for maintaining the budgetary solution, changing the needs of the users’, to cope up with the modern trends etc. are the leading factors for adopting those e-resource management and service providing tools. Let’s have a look on the current trends on various library based OSS and from every category of them the most used one is described specifically.

4.1 Library Automation Software
Automation is the term used as this tool turned the entire library housekeeping works into automated mode. Form acquisition to technical, from circulation to catalogue, from serial management to reference each and every work can be done through automation software. Koha, Evergreen, NewGenLib, OpenBiblio, Liblime, are the most popular ILMS software.

<table>
<thead>
<tr>
<th>Name &amp; Type</th>
<th>Koha Integrated Library Management Software (ILMS) (<a href="https://koha-community.org/en/">https://koha-community.org/en/</a>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td><strong>Platform</strong>: Unix/Linux</td>
</tr>
</tbody>
</table>

Table 2: An Overview on Koha ILMS

4.1.1 Current Trends in Koha
Currently Koha is one of the leading popular and updated ILMS (current version 17.11.00). Libraries are adopting Koha as well as switching from other software for its tremendous fractures and user friendly nature. Both online/offline facilities are available with storage capacity in local servers or in the cloud.

4.2 Institutional Repository Software
Institutional repository is considered as the digital archive of the learning institutes mainly. Besides these, it is suitable for associations, govt. organisations, societies, NGOs and other bodies linked directly or indirectly to the educational sectors. IR is used to store all types of published digital contents to serve the internal /external masses. DSpace, EPrints, Fedora Common, DuraCloud, Institutional Repository, SWORD are the most popular IR software.

<table>
<thead>
<tr>
<th>Name &amp; Type</th>
<th>DSpace Institutional Digital Repository Software (IDR) (<a href="http://www.dspace.org/">www.dspace.org/</a>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>License</td>
<td>BSD License</td>
</tr>
<tr>
<td>Why DSpace</td>
<td>Completely customizable  Customisable search  RSS Feed  Supports all content type  Unicode facility</td>
</tr>
</tbody>
</table>

Table 3: An overview on DSpace IDR

4.2.1 Current Trends in DSpace
Currently DSpace is one of the most updated and user friendly IR (current version 6.2). Institutes are developing their IR to facilitate the in-house archive to its users’. They can facilitate on/ off campus their IR. One can hide his/her deposit for certain period by using Embargo facility. Presently National Digital Library (NDL) (https://ndl.iitkgp.ac.in/) is providing as the nation’s archive by harvesting all the repositories from various areas and incorporates in a single interface. If a library is planning to develop its IR, NDL is also providing support for that.

4.3 Content Management Software
Content management can be described as a mirror of library. It shows the overall picture. What is the library is all about, its objectives, vision-mission, what services it are providing, who and how users’ avail various services. Everything is organised in a well structure manner. Now a days almost every library is maintaining their website. It can be said that website is a single interface of the entire information source acquired by the library. Many open source CMS are available like- WordPress, Joomla, Drupal, Typo3, Plon, OpenCMS, dotCMS, Mambo etc.

<table>
<thead>
<tr>
<th>Name &amp; Type</th>
<th>WordPress Content Management Software (CMS) (<a href="http://www.wordpress.com/">www.wordpress.com/</a>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td>Platform: Linux / Windows  Database: MySQL, MariaDB  Sever: Apache, IIS</td>
</tr>
<tr>
<td>License</td>
<td>General Public Library (GPL)</td>
</tr>
<tr>
<td>Why WP</td>
<td>Website &amp; Blog  Multiuser &amp; multi blogging</td>
</tr>
</tbody>
</table>
**4.3.1 Current Trends in WordPress**
Currently WordPress is one of the most popular, user friendly and easier CMS (current version 4.9). WordPress is most popular for developing website as well as blog. Huge amount of plugins are available for different purpose on different variety from each type. Uses of the plugins are also easier. Both free and paid versions are available; again building website/blog is also done through offline/online. Library blogs can also be used as regular updater which is done through single/ multi-author.

**4.4 Electronic Resource Management**
The electronic resources or e-resources are a document type of very high demanding and useful because of its several reasons like; uptodateness, anywhere anytime access, time saver, space saver, easy to use and disseminate, easy retrieval and downloadable, portable, longevity, variable types of files and many others. It is also very flexible and mode of access and channels can also be changed according to the demand. That’s why most of the library and information centers today are going for e-resources besides the printed resources.

<table>
<thead>
<tr>
<th>Name &amp; Type</th>
<th>Coral Electronic Resource Management (ERM) (<a href="http://erm.library.nd.edu/">http://erm.library.nd.edu/</a>)</th>
</tr>
</thead>
</table>
| Components | **Platform**: Linux / Windows  
**Language**: PHP  
**Database**: MySQL  
**Server**: Apache |
| License | General Public Library (GPL) |
| Why Coral | Easy to work  
Fully customizable  
Usage statistics  
All types of e-resource management (including licensing, ordering, payment, activation)  
Centralised module facility |

**4.4.1 Current Trends in Coral**
CORAL was developed at the Hesburgh Libraries of the University of Notre Dame, and consists of four linked but independent modules: Organizations, Resources, Licensing, and Usage Statistics. Currently Coral is an updated and user friendly ERM (current version 4.0) (Coral).

**4.5 Discovery Search**
Discovery tools are considered as a single search interface which collaborate all piece of information from different information management tools. Some developed and well maintained libraries are acquiring huge amount of resources and managing them according wise. If a user wants to have a look on the same type of information from the entire library collection or from collaborative collections as well, discovery tool is the best practices there. These tools are importing metadata in a unified index and present all the outcomes in a single interface. After choosing the right information it takes users’ to the original place where the information belongs from actually. ABCD, LibreCat, LibreSource, VuFind are some of the popular open source discovery tools.

<table>
<thead>
<tr>
<th>Name &amp; Type</th>
<th>VuFind Discovery Software (<a href="https://vufind.org/">https://vufind.org/</a>)</th>
</tr>
</thead>
</table>
| Components | **Platform**: Linux / Windows / MAC  
**Language**: PHP  
**Database**: MySQL  
**Server**: Apache |
| License | General Public Library (GPL) |
| Why Vufind | Faceted search to narrow items  
Web 2.0  
Single search interface from all  
APA/MLA citation |
Currently VuFind is one of the most updated easier and user friendly discovery software (current version 4.1.1). Initially VuFind was developed to work with an ILMS only based on the ILMS’s driver system. VuFind offers flexible keyword searching with a single interface to retrieve metadata records from all information containers where library acquires resources including ILMS, digital archive, e-resource and any other resource manager libraries are using (Falvey Memorial Library, 2007).

**4.6 Subject Gateway**

Guided to search tools are used to help library users to find the resources they are seeking. Originally paper-based subject guides were the job of subject specialist librarians, but now, the technologies can assist this process. Subject guides can be both broad and specific as according to a librarian. Directing library patrons to useful resources in the electronic age is a much more difficult task, due to the sheer range and breadth of resources available. Some libraries have designed authoring environments that suit their needs in this area and then released them as open source software. Lib Data and Subjects Plus are two examples of open-source applications based on PHP and MySQL and need someone with expertise in these to configure and maintain them (Rahaman, Patra & Mondal, 2017).

<table>
<thead>
<tr>
<th>Name &amp; Type</th>
<th>SubjectsPlus Subject Gateway (<a href="http://www.subjectsplus.com/">www.subjectsplus.com/</a>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td><strong>Platform:</strong> Linux / Windows <strong>Language:</strong> PHP <strong>Database:</strong> MySQL <strong>Server:</strong> Apache</td>
</tr>
<tr>
<td>License</td>
<td>General Public Library (GPL)</td>
</tr>
<tr>
<td>Why SP</td>
<td>Drag &amp; drop research guide Staff list Database list</td>
</tr>
<tr>
<td></td>
<td>Completely customisable Multilingual Video management</td>
</tr>
<tr>
<td></td>
<td>Summon integration Feedback box</td>
</tr>
</tbody>
</table>

**Table 7: An overview on SubjectsPlus Gateway**

Currently SubjectsPlus is the most updated and user friendly Subject Gateway (current version 4.2.2). Subjects Plus is a free and open source tool that enables libraries to create and manage online research guides. Earlier it was developed by Ithaca College Library, USA but presently it is maintained by University of Miami Libraries. These guides can be in many forms with the software, sufficiently flexible to allow many different ways of presenting the guides and enabling users to access them like users may want to navigate by subject, by course, by the database or by the type of information they required.

**5. Some Other Useful OSS for Library**

There are some other open source software available which are very useful in library perspective.

<table>
<thead>
<tr>
<th>Operating System (OS)</th>
<th>Open Source Operating System (OS) can be categorised into mainly three types i.e. UNIX-like, Non-UNIX-like, DOS. In another way it can be categorised by kernel based i.e. Linux kernel, BSD kernel and others. Ubuntu, Debian, Fedora, BSD, FreeDOS, OpenSolaris, React are the popular example of open source OS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Journal System (OJS)</td>
<td>To manage peer-reviewed academic journals OJS is created</td>
</tr>
</tbody>
</table>
under Public Knowledge Project not only to present online journal article but to manage entire editorial workflow.

| Plagiarism Detection Tool | Plagiarism detection tools are used to check the originality of a scholarly writing from a professional on a particular discipline. Through the help of these tools duplicity of work and using others work without his/her prior permission can be restricted. Duplichecker, PlagiarismChecker, QueText, Viper, Noplag are some free plagiarism detection tools. |
| Reference Management Tool | To stay safe from various plagiarism issues, reference manager is used. Through this tool reference can be created in different styles where it needs. Zotero, Bibsonomy, Referencer, JabRef, RefDB are the examples of popular open source Reference management tools. |

Table 8: Other Open Source Tools for Libraries
Excluding all the above software, there are many software remains which are very helpful in day to day housekeeping works like- open browser, open office, open SQL, open pdf creator, open graphics/image editor etc.

6. Challenges & Solutions
Various challenges may have to be face by the professionals while using Open Source Software like; very frequent up to date, lack of awareness, fear, lack of interest etc. are some of the leading issues. But the solutions are also there to those challenges like; getting educated, start with small things, continuous experiment, grow your interest level and no give up (Salve, Lihitkar & Lihitkar, 2012).

7. Conclusion
Open Source Software are now very popular now a days in Library and Information Science discipline. Lots of commercial vendors are facilitating OSS by running A-Z modules successfully with a maintenance service at any time in a library by certain charge basis. But when budget matters, especially libraries in developing countries like India professionals should try themselves and should go for implementing to various OSS as per their needs. If they wish to go by self, many groups, forums, technical support facilities are available on net. Some professional experts are providing honorarium services for the betterment of library, professionals and for the society. Many workshops and short time courses are conducting by various institutes to coup with the modern trends and providing hands on training. So, thinking about ‘when there is a will there is a way’ and providing service with a smile is should be the new motto.

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