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Article *in* DESIDOC Journal of Library & Information Technology · September 2012

DOI: 10.14429/djlit.32.5.2649

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DESIDOC Journal of Library & Information Technology, Vol. 32, No. 5, September 2012, pp. 401-408

Open Source Software for Library Services

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ABSTRACT

Information and communications technology has played a major role in libraries. Libraries have now been completely dependent on providing new services to its users based on computer applications. Different computer programs are available for libraries to provide range of services from library automation, library website management, knowledge management, digital library management to document editing. To manage vast amount of digital information, libraries need some computer applications which takes care of their requirements. These applications are generally developed by commercial vendors or are available under open source license terms and conditions. In the present paper, an overview of range of open source software available for various library services. Library professionals can effectively use these software to provide innovative services to their users and without involvement of any of large budgets.

Keywords: Open source software, library services

1. INTRODUCTION

Information and communications technology (ICT) is a buzz word in library science today. The ICT has been taught and discussed at a great length in library schools as well as in library professionals community. Library schools still lack providing practical knowledge to students while teaching the ICT related areas. Same is the case with library professionals where many library professionals depend completely on computer applications which are available in the market and supported by commercial vendors. Once any commercial software is purchased for the library, library has to depend on their terms and conditions and keep paying their AMC costs yearly. Since libraries lack in technical experience, vendors try to put their own terms and conditions while purchasing any software. While supplying any commercial software, the vendors do not supply the same with its full functionality and proper training of all modules. For every new small feature they demand heavily from the customers and still there is lack of dissatisfaction among the library community while using any commercial software.

One of the main reasons given by the library community to use commercial software is 'support' provided by the commercial vendors. It is observed many times that though the AMCs are paid, still the commercial vendors lack providing proper support for libraries which include support for installation/re-installation of the software, solving any issues while using the software, upgrade of the software, providing new features in the software, import/export/migration of data in standard library format for future preservation, easy documentation manuals, data entry support with library standards (such as MARC-21, AACR-II, etc.), interoperability support of data for exchange between libraries, email server support, multilingual support, etc. Many such issues are not handled properly by commercial vendors and open source software (OSS) stands out best.

Several OSS are available today for libraries to provide new value added services to end-users while handling large volumes of library data. Many of the professionals are either unaware of these software or due to insufficient technical expertise they do not intend to implement these software in their organisations.

In the present paper, some popular OSS which can be effectively used in libraries for providing new services are listed which are heavily used OSS from different categories. These software are regularly upgraded and

Received 14 May 2012, accepted 14 May 2012, online published 7 September 2012

have a strong user community across the world. Many of these software run on Linux as well as Windows operating systems.

2. OPEN SOURCE SOFTWARE

Since 1997, OSS have taken up a good market in computer industry. Large number of OSS are available today on internet. The world's largest OSS development website is http://sourceforge.net.

This site provide free hosting for all OSS-related projects where actual programs, source code, statistics related to OSS and other details about those projects are available. Source Forge provides a platform for the developers to create powerful software. Currently, it is hosting 3,24,000 projects with more than 46 million users who are using these software and there are more than 4,000,000 downloads a day[1]. According to Raymond[2], the definition of OSS is software that is freely redistributable and can readily be evolved and modified to fit changing needs.

The OSS is a collaborative programming development which releases its source code freely to the general public for any use, modifications and redistribution without any licensing restrictions. The source code refers to instructions written by humans in a computer programming language to be compiled into a binary format that can run on a computer, carrying out the tasks outlined in the source code[3]. Instructions to computers are normally written by programmers in programming languages like – C, C++, Java, Perl, Python, etc. These instructions are readable by humans and referred to as source code.

There is a general confusion, among the users about OSS, free-ware, shareware and public domain software licenses. Free-ware is a software that is released free of cost in binary format only, which generally does not allow any modifications and redistribution of the software. Shareware is a software that is released free of cost in binary format only and allowed for the use on a trial basis and then insist end users to purchase the software. Public domain is a software whose copyrights has expired or has been released from copyright obligations by the author(s), rendering it free of restrictions on usage and redistribution.

The OSS are becoming increasingly popular software development method. It is a term to describe the tradition of open standards, shared source code, and collaborative development. The OSS programs are available for any user for use. In case of proprietary software, the software is not free nor the source code of the software is available to the end user.

There have been many successful open-source projects e.g. Linux operating system, Apache web server, MySQL, PHP, Sendmail, Bind, Tcl/Tk, Python, etc. Firefox web browser has recently surpassed Microsoft's Internet Explorer due to its quality. Google, is currently investing money into open source development, with its own browser Chrome, and two operating systems, Android for mobile phones and Chrome for computers.

All the OSS software are copyrighted and distributed with license terms and conditions designed to ensure that the source code is always available. The most popular open source license is GPL, i.e., GNU Public License. Generally, value of any OSS is measured in terms of its simplicity and connectivity.

3. BENEFITS AND DRAWBACKS

Following are some of the benefits of using OSS

- Software does not depend on any specific hardware or operating system platform to function.
- With OSS, people can have any number of copies of programs on their machines, at home or at work.
- Since source code is available one can customise the software as per the requirements.
- It is possible to incorporate the software into the another program to perform new functions.
- If the user base of open source is large, it can sustain in the market for long time.
- Since developers working for open source are spread across the world its development does not depend on any single person/community. Hence, new release versions can frequently be made available to the community.
- There is large community of people who work on popular open source hence regularly new versions of the OSS are available to the community.
- There is a group of community who can provide support through mailing lists, internet relay chat centers to get quick answer to any of problem/query.
- Since it is open source, there is no data loss as well as with open standards/formats, hence it is easy to retrieve data for future.

Following are some of the drawbacks of using OSS

- Lack of formal support and training that a commercial software package offer.
- Often software support is provided only through mailing lists and discussion forums.
- Installing and maintaining OSS generally requires a technical knowledge than that required for commercial software.
- OSS are also not known for ease of use as the focus is usually on functionality.

- With no vendor responsible for the software, support for the OSS applications can vary and often depend on the user/developer's communities commitment to the project.
- Documentation manuals of OSS are not very simple.

4. STATE OF OSS IN LIBRARIES

Daniel Chudnov has done a lot to raise the awareness of OSS in libraries[4]. The OSS4libsite (http://www.oss4.lib.org) now available as OSS in libraries (http://foss4lib.org/) provides categorisation and listing of library-related OSS applications including applications for document delivery, Z39.50 clients and servers, systems to manage collections, MARC record readers and writers, integrated library system applications, digital library software, digital archiving software, next generation OPAC software, electronic journal archiving, etc.

The open source movement and libraries have a common factor such as free and equal access to information[5]. Libraries have highly specialised software needs because the library community have developed its own complex standards to share information. Until recently libraries relied on the commercial solutions for all their requirements due to unavailability of skilled IT staff as well as unavailability of user friendly open source solutions. Hence, open source solutions were not considered in libraries as a scalable or feature-rich solutions to handle most of the library requirements.

Today several companies/organisations all over the world are committed to support and develop solutions based on OSS for libraries as well as in other areas. They offer services including hosting, installation to support, and development services[6]. With these new options, libraries don't need an IT staff to deploy software or advice on development of new features. The OSS provides an opportunity for libraries to take control of library services and collections relying on available hardware with libraries. The time, effort, and money spent on buying commercial solution can be diverted to provide training existing staff on teaching OSS application as well as hiring additional customers to customise OSS as per specific requirements.

The OSS generally provide more functions quickly than commercial solutions as they are developed by the users of the software who are spread across world and keep developing small pieces of the software regularly. In commercial software development, vendors priority is in profit generation that may not be in line with the needs of users[7]. Even with commercial vendors, number of developers who work for developing a particular software is a small group which is not the case with open source.

Many OSS tools are now available for use in libraries. The development of digital library initiative is mainly driven by using OSS tools. For creating digital libraries, libraries relied on OSS tools as an alternative instead of any commercial digital library systems mainly due to dissatisfaction with functionality[8].

The OSS resources for libraries is vast and are increasing at an exponential rate[9], These software can be used in libraries to provide new value added services to end users without any requirements of large budgets. The following sections provide list of different open source applications which are available from different categories and which can be effectively used to provide new services to end users with successful implementation without relying on any commercial vendors.

4.1 Library Automation Software

There are range of open source library automation software available. Out of the available open source software very few are updated/upgraded regularly and has a large user base. The CDS/ISIS, is first information storage and retrieval system developed by UNESCO available free but not under open source license terms and conditions and is heavily used only to uncatalogued library collections. Koha, Evergreen, Invenio, Senayan Library Management System, NewGenLib, E-Granthalaya (not open source but available free after filling up the form), OPALS-Library Automation Software, ABCD, Glibms (not updated after 2002), Emilda (not updated after 2005), OpenBiblio (not updated after 2008) are some of the software available free to end users for library automation.

Out of these available software Koha has been installed widely across world and has a large user base from developed countries to developing countries hence it can be used in all types of libraries such as from School to National library. Many countries have used Koha effectively to complete their automation and bring their OPACs on the web. Recently during 2011, Breeding carried out a survey of automation software used in US academic and public libraries and it was found that many libraries in US continue to opt for open source ILSs rather than proprietary products. Evergreen and Koha ILS have become mainstream[10] in libraries from USA.

4.1.1 Koha (http://koha-community.org)

It is 100 per cent open source integrated library automation software. New versions of Koha are released every fortnightly. It has a global community of its developers and has a large user-base across world (approximately more than 2000 installations). Many government organisations across world have officially decided to use Koha to support open source technology.

Koha supports all modules of library applications as well as has support for Z39.50 server, multilingual support, supports library standards such as MARC-21/UNIMARC,

OAI-PMH, ISO2709 as well as support several next generation OPAC features.

Koha community has been providing excellent support through its mailing lists and IRC rooms. Software has detailed online documentation manual and there are several power-point presentations available on various modules of Koha on internet. Many commercial vendors provide support for koha. In India OSS, Labs, Mumbai and Anant Corporation, Mumbai are the main commercial players who provide support for Koha. The software can handle millions of records and transactions.

Koha can be a best option for libraries to bring their OPACs on the web from school libraries to national libraries. Libraries have to make sure that their OPACs are available on the web. Online book stores provide details about any book published in any language but availability of a particular book can only be known if library catalogs are available on the web and can be Z39.50 compliant for searching and retrieving data.

4.2 Digital Library Software

Digital libraries (DLs)/institutional repositories (IRs)/ digital archives are been discussed heavily since 2000. Under open source license terms and conditions range of digital library software are available especially CDS-Invenio, DoKS, DSpace, Eprints, FEDORA, Greenstone, MyCoRe, etc. Each of these software has its own advantages and disadvantages. DSpace and EPrints are the most popular software used across world for building digital repositories as per the statistics from Registry of Open Access Repositories (ROAR)/Directory of Open Access Repositories (DOAR).

4.2.1 DSpace (http://dspace.org)

It provides tools for management of digital assets, and is commonly used for building institutional repositories. It was basically designed to manage, host, preserve and enable distribution of the scholarly output of MIT's faculty. In India, many institutions have taken steps to use DSpace for building digital repositories/institutional repositories. DSpace has more number of features over EPrints hence is heavily used across world. Prominent features of DSpace are that it supports unique identification number for every digital document that is added into DSpace repository, provides digital preservation support, has excellent work-flow management, has access control privacy and management, support authentication and authorisation policies at all levels.

4.2.2 EPrints (http://www.eprints.org)

It is a generic archive software developed by University of Southampton. When first version of EPrints was released it became the erst and one of the most widely used free open access, institutional repository software for archiving preprints and post-prints of faculty members. Due to simple installation process, EPrints has been used by many libraries.

4.2.3 CDS-Invenio (http://invenio-software.org/)

CDS-Invenio is web-based integrated digital library software developed by CERN. It is a powerful, flexible digital library system suitable to handle very large collections of full-text documents. It tries to combine the best of the traditional library world and modern information retrieval technology. It has an excellent authentication and authorisation policy support. CDS-Invenio has grown into a large software suite intended to cope with large collections (almost 1 million records at CERN), and with advanced library-type functionalities. CDS-Invenio allow to catalogue print as well as digital documents with several advance features. It uses MARC-21 bibliographic standard. CDS-Invenio though supports very good functionality, due to its small user-base it is not used by many libraries across world.

4.3 AUDIO/VIDEO RECORDINGS OF TALKS

4.3.1 OpenEyA (http://www.openeya.org)

In every organisations, talks are delivered by faculty members, invited speakers and students. Many of these talks are not recorded due to non availability of the software to record and archive these talks. Libraries can now take a leading role in recording these talks, archiving and delivering using open source software called as OpenEyA which is an easy to implement technology. This can be one of the value added service from the library. This technology is simple to use and can be implemented without any need of high-end hardware. OpenEyA is a linux-based automated lecture capture system developed by the ICTP Science Dissemination Unit (SDU), Italy. The software integrates different technologies under Ubuntu operating system to synchronise:

- Video in Flash format (to see whatever happens in front of a classroom)
- Slides from screen captures or any USB webcam (to zoom specific areas of the classroom podium, blackboard and/or projector screen) and
- Classroom audio (without the need to wear a microphone)

OpenEyA allows to archive (in Flash format) and share (via web, zip) traditional scientific lectures and talks carried out using chalkboards in classrooms and/or using modern presentations (PPT, PDF, animations, etc.)

After the recording the software generates one html file which integrates audio/video and classroom or PPT in one single html file. As soon as html is opened the flash

format video starts running and acts as a streaming server. This is one of the important feature of 'OpenEyA' as well as each file occupy very less space hence to deliver these contents over web does not have any constraints.

4.4 Library Website/Content Management/ Knowledge Management Software

Library website maintenance is one of primary activity of any library. So far, most of the libraries are creating only html pages of information available in their libraries and publish this information from the organisational websites. Some libraries use free web logs to create blog of their library and disseminate information about their services. Creating blog is an easy way of publishing information about library, services provided by library and any other useful information about the library. There are certain limitations to either use html or blog services.

A web presence is critical for almost every library, but creating websites can be daunting. It can take a lot of time, money and technical expertise, which are often in short supply. It is difficult to maintain library websites with updates and with new desirable features demand from user community. Here, an open source content management system (CMS) can help. The CMS tools allow to easily create complex library websites with lot of new features.

The CMS is a software program that makes building and maintaining websites faster and easier. The CMS lets one build a website that can be quickly and easily updated by non-technical staff members. These open source systems are created and supported by a community of developers, and can be downloaded without cost. Both their feature sets and their price tags make open source systems particularly attractive to libraries. CMS stores actual content (text and images) on a back end database. The system then automatically pulls the content out and show it on the appropriate pages.

There are several free OSS available which are heavily used all over the world to maintain institutions web sites hence same can be used for managing library websites as well. The well known among these software are Drupal, Plone, Joomla, WordPress (http://wordpress.org), etc. These software also can be used to play a key role in 'Knowledge Management' projects. Using Joomla, Plone, Drupal or WordPress is very easy and these software can handle large volumes of data and can provide several Web 2.0 services.

Plone is difficult system to learn and install. WordPress, Joomla, and Drupal are fairly easy systems to get installation done and build library web sites. Among these three WordPress is the easiest to learn and implement but can be used for small website management.

4.4.1 Drupal (http://drupal.org)

It can be a great choice for libraries for building their websites and handling complex volume of data. Along with publishing information about library, Drupal also allows to support creating blogs for every user, handling of thousands of pages, storing formatted bibliographic information, automatically building site map from menus and content categories, providing tags to every content, providing social bookmarking support, photo/video sharing, RSS feeds support, faceted search feature, maintaining user profiles, taking user polls, etc. Several Web 2.0 features are supported in drupal. Drupal also allow to create a library catalog by importing MARC records.

Drupal uses a classification system for all content in its system that can allow to place content virtually anywhere on the site at any given time[11]. Flexible and powerful Drupal is a great choice for complex site maintenance.

4.4.2 Kompozer (http://kompozer.net)

It is used to design simple webpages in html format. It is an open source web file management system and easy-to-use WYSIWYG (What-You-See-Is-What-You-Get) webpage creating/editing. Kompozer is designed to be extremely easy to use, making it useful for non technical computer users who can create attractive, professional websites/webpages without needing to know HTML or web coding.

4.5 Citation Management Software

4.5.1 Zotero (http://www.zotero.org)

It is a free web-based easy to use citation management tool. It helps one to collect, organise, cite and share his/her research sources. Zotero is a firefox plugin and a standalone application. It lives right where one does his/her work in the web browser itself. Zotero allows to grab books, articles, webpages, and whatever else one find and allows to cite and then organise and generate bibliography in different standard format such as National Library of Medicine, American Psychological Association, American Political Science Association, Chicago Manual of Style, etc., and allow to easily cite references while writing articles, thesis, reports.

Zotero not only allows to manage all references as per different categories but as well allow to upload full-text of files along with each reference and these full text files are indexed so it allows to search inside the pdf files which are uploaded on a Zotero server.

4.6 Audio/Video Files Editing

4.6.1 Audacity (http://audacity.sourceforge.net)

It is a free OSS for recording and editing sound. It is a free, easy-to-use and multilingual audio editor and recorder for Windows, Mac OS X, GNU/Linux and other operating systems. Audacity allows to record live audio, convert tapes/records into digital recordings/CDs, edit variety of audio files, allow to cut, copy, mix sound together, etc.

4.6.2 Avidemux (http://http://fixounet.free.fr/avidemux/)

It is a free video editor designed for simple cutting, filtering and encoding of video files. It supports many file types including AVI, MP4, MPEG, ASF, etc. Avidemux is available for Linux, BSD, Mac OSX and Microsoft Windows under the GNU GPL license.

4.6.3 Kino (http://www.kinodv.org)

It is an another popular video editor software. Kino allow to load multiple video clips, cut, paste portions of video/audio and save it as a new file. Kino allow to export videos into number of formats such as AVI, MP3, MPEG-1, MPEG-2, MPEG-4.There are several audio/video players available under open source such as vlc, mplayer, Kaffine, etc. which can be used to play audio/video files. Among all available players, VLC player has capability to handle most of the audio/video file formats.

4.7 Conference Management System

Conference Management systems are web applications which usually include features such as registration, payment, paper submission, review, scheduling, announcements, post conference details, proceedings of the conference, recordings of the talks delivered during the conference, etc.

4.7.1 Open Conference Systems (http://pkp.sfu.ca/?q=ocs)

It is an open source solution to managing and publishing scholarly conferences online. It has been designed to reduce the time and energy devoted to the clerical and managerial tasks associated with managing a conference, while improving the record-keeping and efficiency of editorial processes as well as allow to publish post conference proceedings.

4.7.2 Indico (http://indico-software.org)

It is an another web application to schedule and organise events, from simple lectures to complex meetings, workshops and conferences with sessions and contributions. The tool includes an advanced user delegation mechanism, and allows paper reviewing, archival of conference information and electronic proceedings.

4.8 Journal Management System

4.8.1 Open Journal System (http://http://pkp.sfu.ca/?q=ojs)

It is a journal management and publishing system that has been developed to expand and improve access to research. The OJS can handle online submission and management of all contents. The OJS assists with every stage of the referred publishing process, from submissions through to online publication and indexing.

The OJS is made freely available to journals worldwide for the purpose of making open access publishing a viable option for more journals, as open access can increase a journal's readership as well as its contribution to the public good on a global scale.

4.9 Website Download

4.9.1 HTTrack (http://www.httrack.com)

It is a free, easy-to-use off line browser utility. It allows to download a world wide web site from the Internet to a local directory, building recursively all directories, HTML pages, images, and other files from the server to a local computer. HTTrack arranges the original site's relative link-structure. To view a website, one can simply open a page of the 'mirrored' website in a browser, and it is possible to browse the site from link to link, as if you are viewing it online. HTTrack can also update an existing mirrored site, and resume interrupted downloads. HTTrack is fully configurable, and has an integrated help system.

4.9.2 Document Editing Software

To edit, combine and manage several PDF files, there are several free tools available such as pdfedit, pdfjam, pdfjoin, pdf90, pdf180, etc. are available in linux. One can easily play with multiple pdf files. These tools allow to join, rotate and edit pdf files.

4.10 E-learning Management System

A learning management system (LMS) is a system used to deliver online education. Today, most LMS make extensive use of web and include features such as discussion forums, chats, journals, grading tools, and student tracking.

4.10.1 Moodle (http://moodle.org)

It is one of the most popular open source e-learning course management system (CMS), also known as a learning management system or a virtual learning environment (VLE). It is a free web application that

educators can use to create effective online learning sites. A single Moodle website can host a large number of courses. Each course can be managed by one or more teachers. Courses can contain activities such as discussion forums, student journals, quizzes, surveys, assignments, chats, and workshops. Moodle includes support for grading, file uploads, user logging and tracking, multimedia, e-mail integration, and many other features, all comparable to those available in a proprietary LMS.

4.11 Next Generation OPACs

Due to developments in technology, the users expect now one-stop searching for all documents (federated searching) that are available in libraries such as searching across library OPAC (bibliographic information search about printed books, videos, journal titles), digital library collections (metadata, full-text search from digital documents), e-books, e-journals subscribed by the library and other databases available in the library.

These next generation catalogue systems are distinguished from earlier OPACs as they provide more sophisticated search and retrieval features as well as support[12]:

- Images of book covers, CD, audio/video files, Table of Contents, summaries, reviews
- Relevance ranking
- Faceted search
- Spell checking
- Users who borrowed this also borrowed
- Amazon like contents
- RSS feeds (which deliver new acquisitions of books and search updates)
- Write reviews/comments about a book, initiate discussions about a book, ratings and tag clouds
- Create reading lists and share with others through a more versatile OPAC interfaces
- Suggest books online
- Home delivery of books to users who never visit libraries
- Mobile/e-mail notices of overdue/return/reserved books as well as access to library web OPAC
- Users may be interested in knowing what their neighbors are reading, listening and watching
- User ratings
- Bookmark and share
- TOC, summary of the book and visual display of narrow down results

Many open source next generation OPAC software are available such as SOPAC supported by Drupal, Evergreen, Bluefind, Vufind, Voyager, etc.

4.11.1 Vufind (http://www.vufind.org)

It is a one of the popular and heavily used next generation OPAC software designed and developed for libraries by libraries. The goal of VuFind is to enable users to search and browse through all of your library's resources by replacing the traditional OPAC to include searching records from library catalog, locally cached journals, digital library items, institutional repository items, institutional bibliography items, and any other library collections and resources.

4.12 Wiki Management

A wiki is a website that can be edited directly by people browsing it. Wikis allow others to contribute and modify entries. Wikis are online, collaborative that allow anyone to add, edit or delete pages. Some Wikis require registered membership, and others are private, but many allow anyone with access to the web to contribute. Wikis use a simplified mark-up syntax that allow users to contribute without any knowledge of HTML.

Wiki's help libraries to organise library resources and improve communication with users. Wiki software can be used to perform several tasks such as to create subject guides in libraries, to create documentation manuals, to create professional knowledge repository, to maintain wiki for a software development and its activities, to maintain conference website, etc. There are range of OSS available for creating wikis are CoWiki, Instiki, MediaWiki, MoinMoin, PmWiki, Swiki, and Twiki.

4.12.1 MediaWiki (http://www.mediawiki.org)

It is an open source extremely powerful, scalable software and a feature-rich wiki implementation software. Software runs on PHP and data is stored in MySQL. Mediawiki is a fully dynamic and a popular software.

4.13 Electronic Journals Archiving

The LOCKSS (lots of copies keep stuff safe) program (http://www.lockss.org) is an open source, library-led digital preservation system built on the principle of 'lots of copies keep stuff safe'. Today, it is named as 'Controlled lots of copies keep stuff safe (CLOCKSS)'. The LOCKSS system allow librarians to take custody of and preserve access to the e-content for which libraries have paid for. Using their computers and network connections, librarians can obtain, preserve, and provide access to purchased copies of e-contents.

The LOCKSS allows to preserve all electronic contents locally for which subscriptions are paid by the libraries which allow them to restore their print purchasing models. If the publishers web site contents are unavailable, archived contents are served to the library users through LOCKSS archived program. The LOCKSS delivers a copy of the original publication to authorised users in real time, whenever it is needed. Because LOCKSS preserves the original publisher's copy of each item, it ensures that the most authoritative version persists, remains unchanged, with full credit to the publisher.

4.14 Meta Searching/Federated Searching

Federated searching is known as meta searching, broadcast searching, cross-searching and a variety of other names, is the ability to search multiple information resources from a single interface and return an integrated set of results[13].

Federated searching (also known as meta search or cross searching) allow users to search simultaneously multiple web resources and subscription-based bibliographic databases from a single interface. To achieve that, parallel processes are executed in real-time and retrieve results from each separate source. The returned results are then grouped together and presented to the user in a unified way.

4.14.1 DbWiz (http://researcher.sfu.ca/dbwiz)

It is an open source federated search engine which allows to search across multiple databases, websites, catalogues, and other online resources from a single interface, and presents the results as an integrated list. dbWiz provides a single stop search facility for all the resources available in any library.

4.14.2 Pazpar2 (http://www.indexdata.com/pazpar2)

It is a high-performance user interface-independent meta search engine featuring merging, relevance ranking, record sorting, and faceted results. It is a web-oriented Z39.50 client which will search a lot of targets in parallel and provide on-the-fly integration of results. The interface is entirely web service-based.

5. CONCLUSIONS

Open source offers useful savings in time, money, and resources. Large percentage of library professionals have recognised potential for OSS systems and applications. With exponential growth of information, user expectations are growing and more and more 'personalised' services are required by users and there is a great opportunity for librarians to play a leading role in organising and presenting filtered information by making use of these OSS tools. To save and preserve library data for future, it is important that libraries adopt as many OSS as they can and participate in the movement of sharing information globally with open standards and open formats.

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