ISSN (Print): 0972-2467
ISSN (Online): 0976-2477
SRELS Journal of Information Management, Vol 55(2), April 2018, p. 68-72 DOI: 10.17821/srels/2018/v55i2/121709

Enhancing Features of Library Automation Package by Integrating with Discovery Tool: A Case Study

K. T. Anuradha*

JRD Tata Memorial Library, Indian Institute of Science, Bangalore - 560012, India; shamalanu@gmail.com

Abstract

The main objective of this paper is to explore the possibility of enhancing search and retrieval features of library automation package by integrating it with a discovery tool. PMB, a library automation package and Vufind, a discovery tool are used for demonstration purposes. PMB was selected as it uses simple LAMP architecture and hence is easy to install and use. But the Online Public Access (OPAC) of PMB does not have many features of new generation OAPCs. However, by integrating PMB into Vufind, which has most of the new generation OPAC features, enhanced features of the OPAC are made available in PMB itself. Also, PMB provides excellent and unique options for record import/export in various formats. This feature is used to export records from PMB and import it to Vufind. Generally, any integrated library automation package (ILAP) contains two modules: staff-client module and Online Public Access catalogue (OPAC). PMB is compatible with international standards: it makes use of Z39.50 server and supports UNIMARC format. Another unique feature in PMB is the facility to convert/export of records using which records from one format can be converted to about 39 other formats. Though it has many good features, because it uses MySQL as back-end, it lacks many advanced search features in the OPAC. On the other hand, Vufind, a discovery tool uses Solr (Lucene java search library) as its back-end and has good search and retrieval features. For indexing bibliographic records, Vufind uses MARCSolr, through which MARC records are indexed using Solr search engine. This paper reports a study carried out to integrate into PMB search and retrieval features of Vufind.

Keywords: Discovery Tools, Information Retrieval, Library Automation Software, Open Source Software, PhpMyBibli, OPAC, PMB, Vufind

1. Introduction

Open Source Software (OSS) initiative has brought about tremendous changes in software development in all areas including library environment. Open Source Integrated Library Automation Packages (ILAP) is available, which have features comparable with commercial ILAP. Many of them are built on Linux, Apache, MySQL and PHP/Perl (LAMP) architecture and hence are easy to install and use.

Over the last few years, libraries have been trying to offer more user-friendly enhancements in their OPACs. Rather than abandoning one ILS in favour of another, libraries are increasingly opting to build additional features into an existing ILS by choosing from a variety of vendor-created or open source discovery tools and placing one of these atop a native ILS interface[2-5,12]. In comparison with the time and impact of a complete ILS replacement, this option is meant to leverage the technical expertise of the vendor/library staff to quickly and efficiently provide the library with a "better" catalogue.

PhpMyBibli (PMB) is an ILAP with all the modules well defined and integrated. However, the OPAC is not very robust in PMB. Vufind is a discovery tool which uses Solr as its database and most of the new generation OPAC features such as searching and browsing through all the library's resources, narrowing down search based on author, subject terms, and class number. However, because Vufind is a discovery tool, it does not have staff-client module in it. The main objective of this paper is to enhance search and retrieval features of library automation package by integrating it with discovery tool.

2. Methodology

PMB is selected for the purposes of this study as it uses simple LAMP architecture and hence is easy to install and use. But the OPAC of PMB does not have many features of

*Author for correspondence

new generation OAPCs. However, by integrating Vufind, which has most of the new generation OPAC features, into PMB, enhanced features of the OPAC is made available in PMB itself. Also, PMB provides excellent and unique options for record import/export in various formats.

Usually any ILAP supports MAchine-Readable Cataloguing (MARC) record format. MARC is a standard for the representation and communication of bibliographic and related information in machine-readable form, and related documentation. It was initiated by the Library of Congress as a pilot project in 1965. All MARC Standards conform to ISO2709 standard. UNIMARC (Universal MARC) is a variation of MARC format. The primary purpose of UNIMARC is to facilitate the international exchange of data in machine-readable form between national bibliographic agencies. UNIMARC may also be used as a model for the development of new machine-readable bibliographic formats. A UNIMARC record is composed of blocks corresponding to various types of data. Each block is made up of fields and sub-fields[13].

2.1 PhpMyBibli

PMB is a free open source ILAP and can be downloaded from http://www.pmbservices.fr/. Proprietary products almost exclusively occupy the domain of software for libraries. PMB is based on web technology and requires a HTTP server such as Apache, the MySQL database and the PHP language. PMB is a web application, running on a web server, PMB benefits from the flexibility of Internet applications. The development of PMB started in October 2002 by François Lemarchand and was released in 2004. The 3.0 version was launched in September 2006. Since then, frequent updates have been released and new features added.

2.2 PMB Database

PMB relies on a set of files (PHP scripts, XML) and a database. To function properly, PMB requires that a minimum set of data be present in the database. PMB is distributed with various SQL files. However, in order to customize PMB for local needs, it is recommended to use the SQL files directly. For this purpose, the file bibli. sql, which contains information on the PMB database structure, must be loaded first.

2.3 Functions of PhpMyBibli

PMB has several modules: Circulation (circulation, hold, and view), cataloguing (search, documents, serials, and baskets), authorities (semantics), reporting (loans, borrowers, serials, templates, barcodes) and the administration (actions, acquisition). The administration module has many sub modules which are used for overall administration of PMB. One of the important and unique features in this module is the import, convert, export, tools options through which records in one format is exported to 39 about different formats. A few important external file formats are given in Table 1. Though PMB supports UNIMARC format, using the import, convert, export option in the administration module, records can be easily converted from one format to another format. For importing records to Vufind, the records in UNIMARC format in PMB are exported to ISO2709 format.

Table 1. Conversion of external files to different file formats

External file format	Converted file format
UNIMARC ISO2709	ISO2709
MARC ISO 2709	HTML MARC
MARC ISO 2709	PMB-XML MARC
MARC ISO 2709	TEXT MARC
UNIMARC ISO2709	Text
USMARC ISO2709	UNIMARC ISO2709
MARC21	UNIMARC ISO2709
PMB XML UNIMARC	Text
Memo notices BCDI	UNIMARC ISO 2709
Memo notices BCDI	PMB XML UNIMARC
PMB XML MARC	MARC iso 2709
PMB XML MARC	HTML MARC
HTML MARC	Text MARC
PMB XML MARC	RTF

2.4 Vufind

Vufind is a library resource portal designed and developed for libraries by libraries. The goal of Vufind is to enable users to search and browse through all of library's resources by replacing the traditional OPAC to include catalogue records, digital library items, institutional repository, institutional bibliography, other library collections and resources. Vufind is completely modular so one can implement just the basic system, or all the components. And since it is open source, the modules can be modified to best fit the local needs and new modules can be added to extend the resource offerings. Vufind runs on Apache Solr, an open source search engine, and offers amazing performance and scalability to allow for Vufind to respond searching queries in milliseconds time.

It can be distributed, if the need is to distribute the load of the catalogue, over many servers. Vufind is offered for free through the GPL open source.

2.5 Proposed System

PMB is an OSS-ILAP developed based on international library standards. Both staff-client module and OPAC are very well developed and integrated in PMB. However, because the backend is a RDBMS, the OPAC of PMB does not have many advanced features. On the other hand, Vufind is a discovery tool and uses a robust backend viz., Solr. Solr is the popular, blazing fast open source enterprise search platform from the Apache Lucene project. Its major features include powerful full-text search, hit highlighting, faceted search, dynamic clustering, database integration, and rich document (e.g. Word, PDF) handling. Solr is highly scalable, providing distributed search and index replication, and it powers the search and navigation features of many of the world's largest Internet sites. However, in Vufind, Solr is modified to accept MARC record in MARC21 format, which is known as Solr-MARC. Hence Vufind can be used as a very good OPAC.

An effort is made here to integrate Vufind into PMB; thus PMB is used for library operations such as acquisition, cataloguing, circulation, serials control. After cataloguing, if the records from PMB are exported to Vufind, then Vufind can be used as OPAC.

The records can be imported to Vufind from PMB in two ways: either by writing drivers in Vufind or by using export records option in PMB through which records are exported in a format that is acceptable by Vufind. The drivers written in Vufind will extract the records in MySQL table of PMB into Vufind, in the format acceptable by Vufind backend. On the other hand, by using the export record option in PMB, the records in PMB can be exported in a format that is acceptable by Vufind and in turn they are imported to Vufind. In the present study, the second method is adopted, i.e., records from PMB are exported to Vufind, in a format acceptable by Vufind, by making use of the import/export module available in PMB.

PMB has a very good import/export features. Through import/export module, conversion of records from one format to another format can be carried out very easily. Though PMB accepts records in Unimarc format, through the import/export module, the records in one standard format can be converted to another standard format. Similarly, records from PMB database can be exported to the required standard format available in the import/export module very easily. This feature of exporting records from PMB in a format that is acceptable by Vufind is used in this study to import records to Vufind from PMB.

3. Implementation

For the present study PMB Version 3.3.3 and Vufind Version 1.0-RC2 are installed on Ubuntu 8.04 operating system. A detailed manual for installation of Ubuntu, PMB and Vufind is available[8].

3.1 Importing Records in Vufind

The records are imported to Vufind by using a shell script import-marc.sh available at usr/local/Vufind/import folder. The records to be imported should be in MARC21 format and the file extension has to be 'marc'. After importing the record Vufind server has to be restarted (Figure 1).

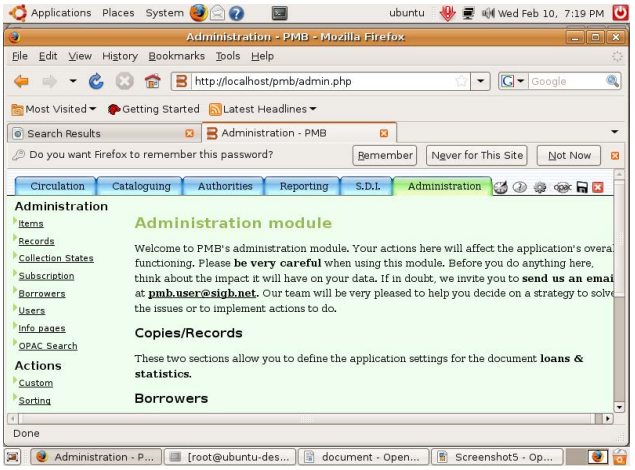

Figure 1. Display of the imported records in Vufind.

3.2 Importing Records in PMB

In PMB the records are imported in three different ways: either by manually typing or by searching Z39.50 servers or by using 'import record' option in the administration module. When the records are downloaded from other servers, they are saved with .fic as file extension and imported into PMB database.

3.3 Exporting Records to Vufind Database

3.3.1 Administration Module

This module contains many sub modules, including convert/export option. This option is used to export the

records from PMB database to Vufind database (Figure 2).

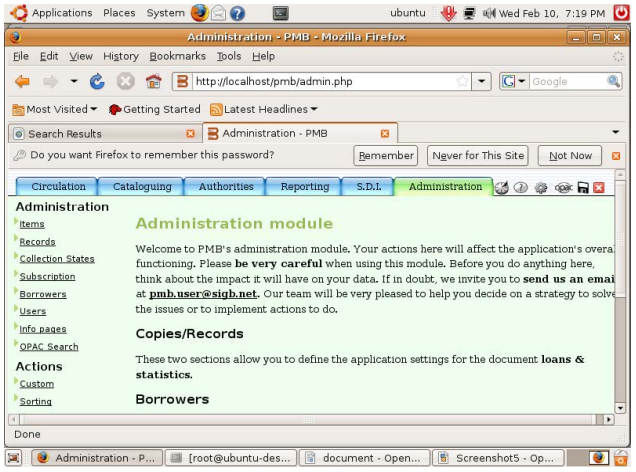

Figure 2. PMB administration module page.

3.3.2 Conversion of External File

Conversion types are (1) MARC ISO2709->HTML MARC (2) MARC ISO2709->pmb-XML MARC (3) MARC ISO2709->TEXTE MARC (4) TEXT->UNIMARC ISO2709 (5) USMARC ISO2709->UNIMARC ISO2709

3.3.3 Export the PMB Database

There are several export types available such as (1) UNIMARC PMB XML (2) UNIMARC Bretagne (3) HTML MARC (4) TEXTE MARC (5) UNIMARC ISO2709 (6) XML LABELLISE (Figure 3).

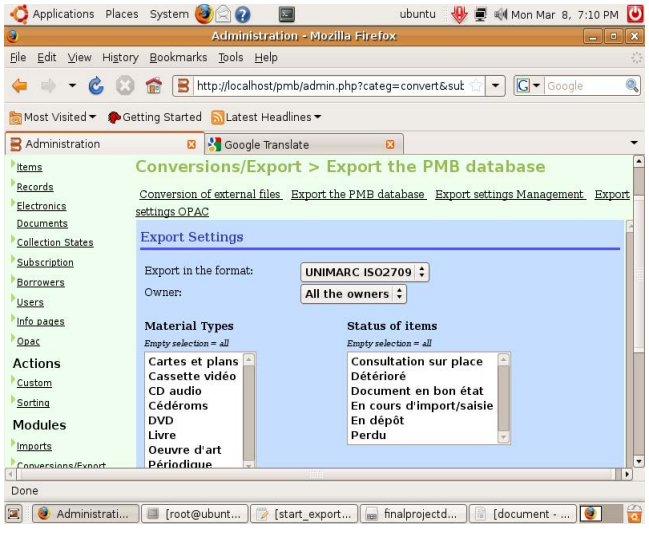

Figure 3. Export the PMB database.

For integrating PMB and Vufind the convert/export option is used in PMB. The record format acceptable to Vufind is UNIMARC ISO2709. Hence the records are exported from PMB in that format. A new tab is created for exporting the records to Vufind. The templates for this are added in usr/local/pmb/includes/templates/admin.tpl.php and the entry code for **Export to Vufind** is given in usr/local/pmb/includes/messages/en.UK.xml file.

In PMB the 'Export to Vufind' tab uses the **start_export.php** program from usr/local/pmb/admin/convert/. This requires running several other programs including the export, recovery file path settings, import. Then **folow.import.php** program is used for transmission of the converted files, suppress the forwarded files and convert the download file in the export format. The file containing the exported records will have the suffix '.fic' extension. Then the records are directly indexed into Vufind database (Figure 4).

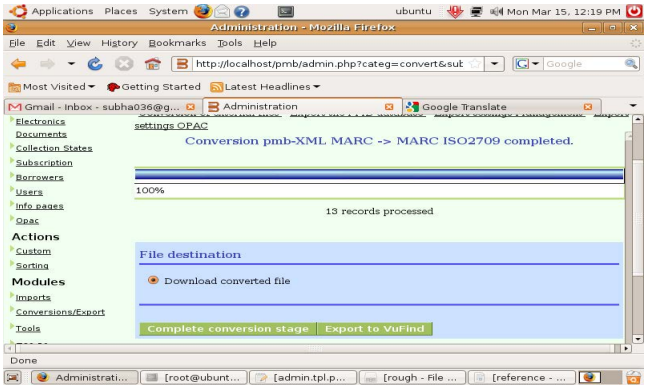

Figure 4. Download converted file and export to Vufind.

4. Conclusion and Future Enhancement

The main objective of this study is to enhance search and retrieval features of a library automation package by integrating it with a discovery tool. PMB and Vufind are taken as case study for this purpose. In this study, import/export feature available in PMB is made use of to import the records into Vufind by exporting the records in UNIMARC ISO 2709.

4.1 Problems Faced

In the initial stage it was quite difficult to understand the programs used for running PMB, as the documentation is in French. The mailing list is not very active and also most of the people on the mailing list communicate in French. PMB and Vufind support different bibliographic

record formats viz., UNIMARC and MARC respectively. Hence both the record formats had to be studied and the way it is implemented in PMB and Vufind also had to be understood.

5. Future Enhancement

In this study, the records from PMB are imported to Vufind by making use of export records option in PMB. This can also be implemented by writing driver in Vufind for PMB.

6. Acknowledgement

This work was carried out as part of a project entitled "Enhancing Knowledge Innovation Culture of Libraries through Union Catalogues", carried out at National Centre for Science Information, Indian Institute of Science, Bangalore, India, funded by International Development Research Center, Canada.

7. References

1. Andrew Nagy. Vufind. Accessed on 2nd May 2009. Available at: http://vufind.org/.
2. Anuradha KT, Sivakaminathan R and Arunkumar P. (2011). Open-source tools for enhancing full-text searching of OPACs Use of Koha, Greenstone and Fedora, Program: Electronic Library and Information Systems. 45(2):231-39. Crossref.
3. Babu PB and Krishnamurthy M. (2013). Library automation to resource discovery: A review of emerging challenges, Electronic Library. 31(4):433-51. Crossref.
4. Bates MJ. (2003). Improving user access to library catalog and portal information. Accessed on 2nd April, 2018. Available at: www.loc.gov/catdir/bibcontrol/2.3BatesReport6-03.doc.pdf.
5. Breeding M. (2009). Open source for library automation and resource discovery: trends in Bolez (1994), Library Automation, Networking, and Other Online and New Technology Costs in Academic Libraries. Accessed on: 19th April, 2009. Available at: www.thefreelibrary.com.
6. David Sklar (2008). Learning PHP 5, Sebastopol, CA, Beijing: O'Reilly; p. 368. Available at: http://shop.oreilly.com/product/9780596005603.do.
7. Hugh E. Williams and David Lane (2002). Web database applications with PHP and MySQL, O'Reilly; p. 582. ISBN: 0-596-000041-3. Available at: http://index-of.es/PHP/O%27Reilly%20-%20Web%20Database%20Applications%20With%20PHP%20&%20MySQL.pdf
8. Kamalakannan K and Anuradha KT. (2010). Installation of PMB, Paper presented at the workshop on Integrating Library Automation Package (PhpMyBibli) into Discovery Tool (Vufind), held at NCSI during July 27th to 31st, 2010.
9. Kamalakannan K and Anuradha KT. (2010). Installation of Vufind. Paper presented at the workshop on Integrating Library Automation Package (PhpMyBibli) into Discovery Tool (Vufind), held at NCSI during July 27th to 31st, 2010.
10. Larry Ullman (2006). MySQL, Peachpit Press. p. 480. ISBN-10: 0-321-37573-4. Available at: http://www.peachpit.com/store/mysql-second-edition-visual-quick-start-guide-9780321375735
11. Lee James and Brent Ware (December 2002). Open Source Web Development with LAMP: Using Linux, Apache, MySQL, Perl, and PHP. Addison Wesley; p. 496. ISBN: 0-201-77061-X. Available at: http://index-of.es/C++/Open%20Source%20Web%20Development%20With%20Lamp%20Using%20Linux,%20Apache,%20Mysql,%20Perl,%20And%20Php.pdf.
12. Modonvalappil Sreedharan (2015). VUFIND 2.x Installation and Integration with KOHA ILS and DSPACE (Replace Koha OPAC by VUFIND). Accessed on 2nd April, 2018. Available at: vufind-koha-dspace.blogspot.in.
13. Raghavan KS. (2010). Introduction to MARC. Paper presented at the workshop on Integrating Library Automation Package (PhpMyBibli) into Discovery Tool (Vufind), held at NCSI during July 27th to 31st, 2010.