Review Article

Open Source Initiative in Indian Library Automation Using Newgenlib and Koha: A Comparative Study

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Introduction

Why computerized information management is required?

Developments in electronic and communication technology have affected every profession in the past decades and libraries are no exception. Libraries of all types are challenged to provide greater information access and improved levels of service, while coping with the pace of technological change and ever-increasing budget pressure. Use of software applications in libraries has become essential due to a number of factors. The most visible factors among them are:

Growth of Electronic Resources: Large databases from periodical, magazine, and journal publishers became increasingly available in digital format – at first on CD-ROM, later via online services. Library services are transitioning from local traditional collections to global resources provided on demand via the most advanced networking technologies. Today, library collections are used by people on campus as well as by individuals who are not even located on the library's physical facilities.

Anytime Anywhere Access: Access to online digital information from anywhere is the need of the hour. This is forcing a shift in role of library from a repository to a gateway, with users expecting online libraries that can provide round the clock service. "Library users have grown accustomed to using the Internet as a research tool and do not always appreciate the difference in quality of information available through a library's specialized collections, especially when compared to what can be located through an Internet search engine. Thus, libraries with substantial collections of information often find those collections underutilized if the user interface is not designed to make it easy to locate the required information."

Resource Sharing: Libraries of all types also need to utilize new application systems to automate resource sharing. Union Catalogs and Libraries in developing countries are in phase of development and require lot of resources to achieve well organized knowledge platform. Thanks to open source software efforts which have made developing libraries competent to meet the international challenges. Now these days many open source technologies are available which have been deployed successfully in Indian libraries. Now web has become a platform foe delivery of infrastructure, software and platform services. Such services are called computing in the cloud. Of course such cloud services are alternative to the conventional web system.

Open Source Initiative – NewGenlib and Koha

NewGenlib

Introduction

NewGenlib is an integrated library management system developed by Verus Solutions Pvt Ltd. Domain expertise is provided by Kesavan Institute of Information and

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Knowledge Management in Hyderabad, India. NewGenLib version 1.0 was released in March 2005. On 9 January 2008, NewGenlib was declared Open Source Software under GNU GPL. The latest version of NewGenlib is 3.0.4 released 1 update 2 on 4th March 2013. Many libraries across the globe (mainly from the developing countries) are using NewGenLib as their Primary integrated library management system. The system can run on windows xp, linux and Ubnutu 8.0 or above distributions.

Salient Features of NewGenLib Open Source Software

- *Licensing:* It is open source under the most widely used open source software Licensing system called GNU GPL (General Public License).

- *Source Code & User Manual:* The open source binaries and source code can be downloaded. Installation notes for Linux and Windows are also available at the site. The user manual is also downloadable.

- *User's Feedback*: The users of the software can post their feedback with views, problems, solutions, discussions, etc to the organization.

- *Architecture & Backend*: It is web-based and has a multi-tier architecture; it uses Java (a swing-based librarian's GUI) the JBoss (J2EE-based Application Server) and PostgreSQL as default backend.

- *Functional Modules*: NewGenlib functional modules are : Acquisitions management (monographs and serials); technical processing; circulation control; system configuration; a desktop reports application and an end-of-day process (scheduler) application.

- *Data Create & Exchange Format*: NewGenlib open source is compliant with MARC-21 format. It has a MARC editor. It allows seamless bibliographic and authority data import into

cataloguing templates.

- *Mail Server*: SMTP mail servers can be configured for emails that can be sent form functional modules. A special provision of smtp mail server configuration is given for Gmail users in modern version of NewGenlib.

- *Open Access Compatibility*: NewGenlib open source allows creation of Institutional open access (OA) repositories compliant with the OAI-PMH.

- *Unicode Compatibility*: NewGenlib open source is Unicode 3.0 compliant.

- *RFID Technology*: It is RFID ready.

Technology and Architecture

NewGenlib is integrated Library management system that runs on computer through network of computers. Although internet is important component for this software yet it can run on local area network without support of internet, but in lack of internet many important features of the software cannot be utilized. These important features are Sms and email functionality in circulation module. Marc data import facility in cataloging modules etc. many other features which are based on internet will remain untouched if internet is not present. However still it is very useful if runs without internet particularly In remote areas of India where such facility is not present.

The NewGenlib software is entirely java based. It uses number of well supported and widely used reliable open source component like Apache Tomcat, Postges Sql, and Solr Lucene etc. The main three layer of software is presentation, webserver and database layer.

Advanced Features

NewGenlib software is unique in sense of Indian Library Management Softwares, but it is equally important for international requirements too. Because it is joint efforts of Experienced Library professionals and

Technology		Reason and advantages
Java.6.0	a)	Operating System independent, fast evolving mature and very powerful platform highly used for large enterprise management system software
	b)	Larger support from the market. Many third party open source libraries available
	c)	Proven upward scalability
PostgreSQL (8.3 or above) Database server	a)	More powerful open source enterprise database, more focused on data integrity, and stricter at complying with SQL specifications (wiki.postgresql.org).
	b)	Very stable with large scalability and available on Windows and Linux platforms.
	c)	A number of library-related other projects like DSpace, Evergreen use it.
Apache Tomcat	a)	a) Most widely used free and open source Web server
	b)	b) Most stable and Java based.
Spring Framework		Earlier version of NewGenLib used Session EJBs in the service layer. This is replaced by more efficient and light weight service layer using Spring framework. Uses lesser memory footprint compared to EJBs
Hibernate framework		Earlier version of NewGenlib used Entity EJBs. This is replaced by more efficient ORM (Object Relational Model) layer powered by Hibernate. It solves object-relational impedance mismatch problems by replacing direct persistence-related database accesses with high-level object handling functions (Wikipedia).
Open Office		Open Source and free office suite, available on Windows and Linux Platforms used for generation of all form of letters.
Commons mail 1.2		Used for auto-email dispatch and connects to any SMTP server and also Gmail (including Google Apps) SMTP service.
Commons HTTP Client File upload package		To upload attachments and download digital attachments.
Commons FTP		FTP access to digital attachments.
XML and JSON		XML and JSON are used for messaging between Clients and Server. Messages are compressed through GZIP before sending over network.
JDOM		To generate and parse XML documents.
JSON		To generate and parse JSON data.
Jakarta POI		To generate reports and other data in Microsoft XML Format.
HTML Parser		To edit and generate HTML documents.
Lobo browser		Used for displaying HTML content.
C3P		For database connection pooling.
Lucene and Solr	a)	Fast evolving and highly popular open source enterprise search platform, used as search engine for indexing Bibliographic and Authority data searches
	b)	It has also been used by a number of similar library related projects like Vufind, ExLibris's commercial discovery system, etc (Houser, John 2009)
Twitter4J		To send Twitter messages and Direct Messages to followers.
Marc4j		To read/write MARC data in MARC Communications and MARCXML formats.
Struts, JSTL, JSP		Struts, Java Standard Tag Library and JSPs are used for Web OPAC development (used up to version 3.0.3 U5)
Jquery		Used as Java Script Framework library in Web OPAC
Freemarker template		The OPAC of Version 3.0.4 (will be released soon) uses an open Source template engine called Freemarker. The OPAC is now template based and one can change the look and feel easily.

information technology experts of India naturally it has given more emphasis on those practices which is usually used by Indian libraries. Like most of the Indian library make payment of subscription while in western world payment are made by finance office or by administration department, hence here NewGenlib had made provision of payment

as per the practice followed by Indian libraries.

Main features are as follows:

- NewGenlib opac is configured for Twitter; it gives instant information to patrons twitter account directly.

- Mail server configuration is no more separate application for Gmail. Now Gmail can easily be configured my any Gmail account. All the transaction emails can be generated with any Gmail email address.

This is the good application for those libraries which cannot maintain their own separate mail server due to several financial and technical reasons.

- New Arrivals can be seen in OPAC by user defined period.

- Now OPAC has provision of RSS Feed.

- Loan period can be defined in hours, days or up to a any date.

- SMS functionality which can be configured etc.

- Radio Frequency Identification Library compatibility

- Android capable

- Catalogue harvesting through Google site map.

KOHA

Koha is the first open source fully featured integrated library system (ILS) used by a considerable number of libraries in USA, New Zealand, and Europe. The Koha ILS includes catalogue, OPAC, circulation, member management, and acquisitions package. Koha is used by public libraries, private collectors, not-profit organizations, churches, schools, and corporates.

Special Features

Some of the key features are:

- Simple clear interface for librarians and members (patrons) to search right from the front page.

- Customizable search - you choose which fields you want on your search forms when you set it up

- Reading lists for members - now you can find the name of that great book you read last year.

- Full acquisitions including budgets and pricing information (including supplier and currency conversion), being kept so that you can see what you've ordered and received - so handy at end of year and audit time.

- *Software Tools for Automation*

- Simple acquisitions for the smaller library

- Able to catalogue websites as items, or have them as links to existing records.

History

Koha was developed in 1999 and the first library went live in January of 2000. Koha's code has been in production since then and is continuing to move towards higher levels of functionality and standards compliance, including embracing the international records and cataloguing standards MARC and Z39.50.

Current Status

The latest stable release of Koha is 3.12.0

Project Sponsors/Administrators

Katipo Communications, and funding by Horowhenua Library Trust and other libraries. Current project leader is Patrick Eyler.

Dependency

Apache, Perl, MySQL (or any RDBMS).

Supported Platforms

Windows (without Z39.50 support), Linux, and UNIX.

License

GNU General Public License

Comparative Features NewGenlib vs Koha

NewGenlib vs Koha Opac Comparison

Some highlighted similarity and difference of OPAC are as follows:

Features	NewGenlib	Koha
Formatting of Display	Yes	Yes
Index Field Modification	Yes	Yes
Cataloging of Website	Yes	No
Google book Cover	Yes	No
Cataloging of Electronic Document	Yes	Yes
Item Reservation though OPAC	Yes	Yes
New Arrivals Display	Yes	Yes
Support International metadata standard	Yes	Yes
Authority file & controlled vocabulary	Yes	Yes
Support network environment	Yes	Yes
Ability to build digital library	Yes	No
Ability to build portal	Yes	No
Article Indexing	Yes	No
Associate component found in open source	Yes	Yes
Digital library integration	Yes	Yes
No restriction of use	Yes	Yes
Power search facility	Yes	Yes
Scalable and high speed	Yes	No
Union cataloguing	Yes	Yes

Availability

http://sourceforge.net/projects/koha, http://www.koha.org/download/

Further Information

1. Project Homepage: http://www.koha.org/

2. Koha Wiki Page: http://www.saas.nsw.edu.au/wiki/index.php?page=KohaProject

Conclusion

It has been a major advantage for open source softwares that everybody can make his contribution for development of information management system. Generally people think that writing of source code is contribution in development of system but those who give suggestion for betterment, make complaint, report bugs are also play role in development of system. Both the software has developed

their self by this way. Support of Lib Lime to Koha is major contribution in development of software.

Use of technology, Open Standards and well designed system has made both the software highly capable, flexible and user friendly management softwares. Forum of both the softwares has give real time help for user of the softwares. Although installation of Koha is comparative somewhat difficult then NewGenlib though a person without much knowledge of software can install and use both the softwares. The level of involvement of users in submitting bug reports and participating in the project's mailing list and the number of developers arough the project are also major factors for continuing success of both the softwares (Crowson *et al*).

NewGenlib Developers (Versu Solution Pvt Ltd.) has instituted several initiatives like adoption programme, offering free data conversion, Free SMS sending (Till Recent Time), providing quick response to query/ complaints. All the development work is being done by original developers and there are hardly any external developers for NewGenlib. On the other hand Indian libraries have lack of infrastructure and hardly are they having any IT expert.

Koha is having international support from the world community of users but still lot of work is remaining for development. Especially installation on Linux platform is difficult for Indian users as they are not very use to with Linux environment. Koha is lacking of table of contents, weed out, index glossary, SDI and provision of No Dues Certificate. Location map is also not available with koha.

In short we can say that Functionality module of NewGenlib is better than Koha.

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