Final Report

Implementing next generation Open Source Discovery tool VuFind at BRAC University Libraries

(May 2010-January 2011)

http://library.bracu.ac.bd/vufind/

Prepared

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Introduction

In today's library environment, patrons encounter multiple interfaces to search, and they often need to learn how to access each system and determine its content. By offering a one-stop resource that allows the patron access to all of the library's materials from one place, the library can truly begin to leverage its resources and deliver them to its patrons more effectively.

Like most other libraries, BRAC University Ayesha Abed Library has a growing number of local collections: traditional print, electronic journals & databases, and digital repository. Each its has own user interface (http://library.bracu.ac.bd, http://dspace.bracu.ac.bd). It is very difficult for users to find or fully utilize much of what is available to them and time-consuming for them to search each resource one at a time. Discovery tools make it possible to search multiple resources with one query. Selecting discovery tool like VuFind will enable a library to offer access to all of its resources in one single search-and-browse system.

Background

BRACU decided to use VuFind in 2009 and submitted a project proposal to INASP for financial assistance. VuFind was selected as the preferred Search and Discovery interface for BRAC University Libraries. Because VuFind is open source. VuFind is currently being tested and used at numerous academic libraries including Yale, Villanova, Trent Universities, George Mason University, Princeton University. VuFind received a Mellon Award for Technology Collaboration. VuFind would give more flexibility to add context sensitive information about finding or requesting material, and also to inject third party content (eg book covers and Google Book previews). VuFind also includes as standard a number of search features such as spell matching, alternative spelling suggestions, faceted post search filtering options, and suggestions for similar books or other editions. Selecting discovery tool like VuFind will enable/has enabled our library to offer access to all of its resources in one.

Ultimate objective of this project was to make it easier for patrons to discover and use the wealth of information resources held at BRACU by providing a comprehensive place to search and browse. VuFind

is one small step for discovery, and one large leap for building a platform that will provide today's scholars with the next generation of tools to conduct teaching, learning and research by tapping the full scope and power of BRACU's academic information resources

Objectives of the Project

The main objective of this project was to better integrate all of the library's resources and to provide a clean, consistent interface for the users. Other specific objectives are:

- To access and discover information in a robust, distributed digital environment through an open source federate tool
- To enable users to search and browse through all library resources (catalogue, Institutional Repository and other database and e-journals.)
- To improve the ability to parse, contextualize, and interpret search results through better interface design
- To provide a clean, consistent and single interface
- To increase access to library resources
- To eliminates need to repeat same search multiple times
- To reduce time needed to find information

Methodology and Implementation

A nine month Project Implementation Plan included:

a. Forming Advisory Committee
b. Recruitment of staff
c. VuFind Installation, Customization and Configuration
d. Acquire Server and other necessary equipment
d. Integration of ILS (KOHA) with VuFind
e. Integration of institutional repository with VuFind
f. Integration of e-resources and databases
g. Prepare documentation
h. Training on VuFind

The project was completed according to the work plan of project proposal.

Forming Advisory Committee

To ensure that the implementation has the required support at all levels and that relevant experts are involved to give advice and guidance, the following advisory committee was formed in June 2010.

1. Dr. Md. Golam Samdani Fakir Pro-Vice Chancellor, (1st October 2009)	Chairperson
2. Professor Mumit Khan Department of Computer Science,	Project Advisor
3. Ms Hasina Afroz Sr. Deputy Librarian (Head of Library)	Project Director
4. Mr. Altaf Mahmud System Programmer, VuFind Project	Member

The committee met once or more every month, depending on the urgency of the business, to review the overall progress of the project, to approve development plans and programmes, and to discuss administrative issues related to acquisition of hardware and other supplies.

Recruitment of Staff

Mr. Altaf Mahmud was appointed on May 1, 2010 as full time System Programmer for VuFind Project

Ms Asma Khatun, Junior Assistant Librarian, BRACU worked as Resource management staff for three months for converting all records of ejournals to MARC 21

Implementing the System

VuFind Installation

In June 2010, the first installation of VuFind 1.0 was successfully installed on Core 2 Duo 2.8 GHz PC with 2GB RAM running on Debian Lenny 5.0.4 GNU/Linux operating system. The installation procedure was standard. In version 1.0 harvesting metadata from DSpace was not possible to be integrated. Later, version 1.0.1 was installed in August, 2010 after release.

Now, the current system is:

VuFind 1.0.1
Server: IBM 3500 series
Operating System: Debian squeeze 6.0
RAM: 16 GB

HDD: 150 GB*5 = 750 GB

Acquiring Server and other necessary equipment as needed

Server: IBM 3500 M2 – 783942A
RAM: 16 GB
HDD: 150 GB*5 = 750 GB
Purchase date: October 24, 2010

Integration of ILS (Koha)

A default VuFind installation comes with the flexibility to upload MARC data. Initially, MARC records were exported from ILS and then imported into VuFind. By default, VuFind takes '001' as starting and unique field of a bibliographic record. In our library system, the control number in '001' field is not always used, instead, the bibliographic ID at '999c' field which contains the bibliographic ID, found to be more reliable. Since this field actually generated by Koha (ILS) itself, it always exists. This modification was done in July, 2010.

The next problem was, holding status and other live status of a particular bibliographic data were not being shown. It required a specific driver that connects with ILS database and retrieves associated information.

Building VuFind-Koha Driver

This includes writing a connector code in php that will retrieve associated information per bibliographic records from database. After communicating with developers through mailing list, we came to know that there is no connector exists for VuFind with Koha. Previously, a connector was built to index record from zebra to solr, but it failed to adapt with recent versions of Koha. Initially a connector code was written on November 30, 2010. Then the improved version was completed on December 21, 2010 with some enhancements. The connector currently provides following functionality:

a. Patron Login

b. Hold integration

1. View active holds
2. Place Holds
3. Log in to ILS to view all patron's information (i.e. profile, favorites, search history, fine etc.)

4. View currently checked out items
5. View location, shelf and other associated information per item record

Integration of Institutional Repository (DSpace)

The full functionality for integrating institutional repository doesn't come with latest stable release 1.0.1. Integrating this resource requires importing some harvesting modules from current development trunk. Approximately in mid-July, after communicating with VuFind developers and as per instructions from Demian Katz, Library Technology Development Specialist of Villanova University, a harvester was written to collect metadata from institutional repository. In the last week of July, 2010, the initial harvester was developed and successfully harvested metadata from DSpace. But this module still needed some re-factoring to make the process more flexible and robust. In August, 2010, the final harvester was included in latest development trunk. Then It has been integrated in our system. The harvester was modified to meet our needs in following points:

a. Online archives shouldn't have any Call Number or Location, but it shows Publisher name and other information at VuFind's main search view. To implement this, a separate Record Driver for DSpace was written in the last week of August 2010. This Record Driver determines the display format of DSpace records.

b. The harvester injects an unique identifier for each record, therefore, it has been customized on September 08, 2010, to collect the handle-server prefix of each item of DSpace and inject it as unique identifier for each record. By this time, the necessary configuration was done at DSpace to enable OAI-PMH so that VuFind can pick up the appropriate URL of handle-server prefix.

c. The harvester was collecting format types dynamically from each item. We wanted to put all collections under one format type. This customization was committed on September 14, 2010.

Integrating e-resources and databases

At the first stage, the e-journals were collected in .xls and .csv files. These were converted into MARC using MarcEdit software. Then first MARC records of e-journals were uploaded into VuFind on September, 23, 2010. Then it has been observed that, same as Digital Repository data, Call Number and

Location are coming into display. Moreover, it collides with other MARC format of ILS, and the display format was being messed up. So, following steps were taken to prevent this:

a. The importing process for e-journals were made completely separate from ILS. It requires defining which metadata should be collected and displayed. These modifications have been done on several configuration files and completed on October 12, 2010. Each record was assigned a unique control number at '001' field.

b. A separate Record Driver for e-journals was written on October 17, 2010 to define the display format and change the view orderings. By this time, other template files are modified to show search result.

c. Some extra fields and extra notes were added into ejournals' MARC data. It had to be decided which fields and notes would be included after discussions and several trials. This procedure was completed on October 27, 2010.

Using External Contents

- Google Book Cover image was added on November 09, 2010.
- Amazon review was added on November 11, 2010.
- Necessary configuration and some extra code was written to include Google preview in VuFind's main search page and also in holdings tab on November 19, 2010.

Search Engine Customization

VuFind uses two type of queries: Dismax and Lucene. While optimizing search options, these two features need to be balanced. Initially, the default searching was unable to search by publisher name. This option was included into VuFind SoLr search engine, after calculating 'weighting' and 'fuzziness' of various search fields, on November 29, 2010.

Configure Hold option according to library policy

In our library, users can place a hold on a item only if it is checked out. There is no option to hold an available item. This option was implemented on December 09, 2010.

Adding icons for format types

The CSS files are modified to show icons for our newly added format types on December 13, 2010.

Adding email option

A mail server has been setup and configured to add this functionality into our VuFind on December 26, 2010. This functionality is useful to email web links of records in VuFind.

Customizing Faceted search option

At BRACU library we are holding four types of resources: Book, e-book, ej-ournals and Digital Repository items. E-Journals, E-books and Digital Repository items are categorized as 'Electronic' . So a new format type 'Electronic' was added into Faceted search option that covers above three resources. This was completed on January 02, 2011.

Documentation

Documentation is not always perfect in Open Source project. Indeed technical documentation for any software is rarely fully satisfactory. The writing of technical documentation such as installation documentation requires substantial knowledge of the software. However documentation, just like source code, is under constant revision. It improves over time.

Two manuals have been prepared during this project period. One manual for Vufind Installation and configuration, and another one is Integration VuFind with KOHA, Dspace and e-journals.

Training Program

A two-day training program on next- generation open source discovery tool VuFind was conducted on 5th and 6th January 2011. A total of 45 library professionals from 35 public and private universities, and research institutes participated in the training. The Vice Chancellor of BRAC University Professor Ainun Nishat inaugurated the newly established discovery tool VuFind (http://library.bracu.ac.bd/vufind).

The ceremony started with a welcome address by Mr. Ishfaq Ilahi Choudhury, Registrar of BRAC University.

The Chief Guest of the Inauguration Ceremony Professor Ainun Nishat, Vice Chancellor, BRAC University praised the initiatives taken by the BRAC University library. In his speech, Vice Chancellor

Professor Ainun Nishat, gave importance on building network of university libraries in Bangladesh. He said this new discovery tool will play a significant role in helping student, faculty and researchers.

Ms. Hasina Afroz, Senior Deputy Librarian and Project Director of ILS (KOHA), Institutional Repository (DSpace) and Discovery Tool Vufind made a presentation on " ***BRAC University: Building a 21st Century Library".*** Her presentation covered the vision and initiatives taken by BRAC University library and experience of implementation of newly established discovery tool. Ms Hasina Afroz expressed her willingness to extend their assistance if other universities want to establish their discovery.

Dr. M A Mazed, Director and Country Coordinator, INASP and Dr. S.M. Zabed Ahmed, Professor, Information Science and Library Management, Dhaka University were present as special guest in the ceremony. The inauguration ceremony was concluded with a vote of thanks by the Head of Library.

Achievements/ Outcomes/Benefits

- Intuitive searching across many collections in the BRACU Library. BRAC University has successfully integrated Koha (12,000), Dspace (629) and e-journals (46,158) with VuFind Discovery tool.
- BRAC University is the first university who has integrated KOHA and Dspace with VuFind and has build a Koha- VuFind Driver which is available at current development trunk https://vufind.svn.sourceforge.net/svnroot/vufind/trunk/web/Drivers/Koha.php
- VuFind enables BRACU to meet the needs of its users in terms of improved experience, and better search functionality. It will improve client satisfaction.
- The addition of faceted search filtering by author, topic or format, signposting to alternative editions, tagging, personal listing and a variety of output options, will all increase the ability of our users to find and utilize library resources, and help promote our digital collections.
- Enhanced Web 2.0 functionality. Now users can tag records, leave comments, add to favorites RSS feeds.
- The success of this project is that other universities including the INASP PERII Consortium institutes across the country can also implement and similarly enjoy the benefits of this discovery tool.
- The University has also build expertise in the implementation of the software and is now in a position to offer both implementation consultancy and software support services to other institutions

- Step by step documentation of VuFind installation, customization, integration with KOHA and Dspace has been prepared.
- Any institute which is considering implementation VuFind, or another open-source discovery platform, is likely to benefit from the experiences of this discovery tool project.
- Data quality has been Improved

Conclusion

BRAC University is the first in Bangladesh to implement a discovery tool using Open Source software VuFind. Having established this discovery tool library professionals are now capable to assist other universities in Bangladesh embarking on similar project and it may direct to make a network of university libraries. That will bring a dramatic change in library system and services in Bangladesh.

Acknowledgements

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Appendix A

Financial Statement

(May 2010- January 2011)

Total Budget: USD 10,025

Total Expenditure: USD 12,162

N.B 1 USD = 70.00 BDT

Amount contributed by INASP: 4170.00

Amount contributed by BRAC University: 7992.00

Sl No	Items and Description	Actual Expenses USD	Allocated Budget	Amount contributed by INASP	Amount contributed by BRACU
A	**VuFind Production Server**	5,672.00	-	-	5,672.00
B	**VuFind Development Machine**	600.00	-	-	600.00
C	**Salary of Project Staff**				
	System Programmer (Full Time for 9 Months)	2655.00	2655.00	1327.50	1327.50
	Resource Management Staff (Full time for 3 Months)	585.00	585.00	292.50	292.50
D	***Workshop on VuFind***				
	Honoraria for Resource person	300.00	300.00	300.00	-
	Lunch and Refreshment for trainees	1300.00	1300.00	1300.00	
	Training materials, Photocopy	500.00	400.00	400.00	100.00
	Room/Equipment rental, Internet access	200.00	200.00	200.00	
	Workshop Administration	350.00	350.00	350.00	
	Grand Total (A+B+C+D)	**12,162.00**	**5790.00**	**4170.00**	**7992.00**