DESIGNING AND DEVELOPING AN INTEGRATED INFORMATION MANAGEMENT AND RETRIEVAL SYSTEM FOR COLLEGE LIBRARIES UNDER THE UNIVERSITY OF BURDWAN

Sukumar Mandal
Assistant Professor, Department of Library and Information Science,
The University of Burdwan, West Bengal, India

ABSTRACT

The paper discusses the implementation of six domain specific cluster software in the college libraries. Select the open source software and global parameters on the basis of global recommendations including the areas like integrated library system cluster, digital media archiving cluster, content management system cluster, learning content management system cluster, federated search system cluster and college communication interaction cluster for designing and developing the college libraries under the University of Burdwan. Also develop the single window based interface in six domain specific cluster for the college librarians and the users to access their necessary resources through open source software and open standards. These six domain specific cluster softwares are to be selected for easily managed the digital and library resources in the college libraries affiliated to the University of Burdwan.

Keywords: Open Source Software, Domain Specific Cluster and Single Window Base Interface


1. INTRODUCTION

College libraries of any type or size are now struggling with the processes of organizing, storing and dissemination of digital and print resources in an integrated environment (Morgan, 2002). Moreover, the advent of digital resources and Web 2.0
Designing and Developing an Integrated Information Management and Retrieval System For College Libraries Under The University of Burdwan

technologies recently raised a new challenge for college libraries which are generally characterized by limited resources and inadequate technical manpower. In short, a typical college library under UGC system is now expected to manage library automation, portal for e-journals (mainly available through N-LIST programme of INFLIBNET (UGC) (Tseng, Poulter & Hiom, 1996) and open access journals), digital asset management (curricula, question papers, digital learning objects, digital scholarly resources produced by institute, institutional reports etc.), learning content management system (as a platform for learner-teacher interaction through a digital teaching-learning-evaluation system); and interactive communication and interaction setup for institutional members (Blogs, Wikis, Discussion forum etc.). All these resources and services require to be integrated in a single-window user interface for efficient retrieval through content management system (Weber, 2004). Apart from these requirements, college libraries need to handle regional language based information retrieval system for managing multilingual information resources (Henley, 1970). This research work selected college library affiliated under the University of Burdwan. Now total number of colleges are 85 under the University of Burdwan. Whereas Seven government colleges, private aided colleges and private non-aided colleges. These research work select only Government and Government aided colleges of the University of Burdwan. From the above recommendations and important approaches designing of college libraries under the university of Burdwan through open source software, open content management system, open standards and global and local recommendations. The integrated framework will be based on global set of recommendations as far as standards; workflows and users services are concerned. Although, the integrated information management and retrieval system will be designed primarily on the basis of requirements of college libraries under the University of Burdwan, but the design architecture will be crafted carefully so that the integrated system framework can be extended to college libraries in general (Lyle, 1974). As college libraries in our state work in more or less similar environment, the results and products of this research study may easily be extended to cover college libraries working under other universities in the state.

Table 1 No. of College libraries under the University of Burdwan

<table>
<thead>
<tr>
<th>SL.</th>
<th>College Libraries Under the University of Burdwan</th>
<th>No. of College libraries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government College Libraries</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>Government Aided College Libraries</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td><strong>Total Number of Colleges</strong></td>
<td><strong>85</strong></td>
</tr>
</tbody>
</table>

1.1. Objectives
The objectives of this research work are explained in the following ways:

- To design the college libraries through open source software in six Domain specific clusters.
- To create the single window based interface for the college libraries in domain specific cluster.
1.2. Methodology
The methodology of this research paper the selection of parameters and open source software on the basis of global recommendations like integrated library system for discovery interface, service oriented architecture and open library environment project for designing and developing the domain specific clusters including integrated library system, digital media archiving, content management system, learning content management system, federated search system and community communication interaction. These parameters and softwares developed in a single window based interface on Ubuntu operating system for designing and developing the college libraries under the University of Burdwan.

1.3. Development of Domain Specific Cluster
Domain specific cluster is one of the important task in this research study. Domain specific cluster can be classified in six areas like integrated library system cluster, digital media archiving cluster, content management system cluster, learning content management system cluster, federated search system cluster and college communication and interaction cluster. These six domain specific clusters can be developed through matured level open source software (Table – 2).

<table>
<thead>
<tr>
<th>Integrated Library System Cluster</th>
<th>Koha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Media Archiving Cluster</td>
<td>DSpace</td>
</tr>
<tr>
<td>Content Management System Cluster</td>
<td>Joomla</td>
</tr>
<tr>
<td>Learning Content Management System Cluster</td>
<td>Moodle</td>
</tr>
<tr>
<td>Federated Search System Cluster</td>
<td>VuFind</td>
</tr>
<tr>
<td>College Communication and Interaction Cluster</td>
<td>Mediawiki</td>
</tr>
</tbody>
</table>

I. Designing Housekeeping Operations for college libraries
This is also an important tasks in the college libraries for managing the books and other library resources. Housekeeping operations is possible by using the open source software Koha. This research work select the Koha software because its including all the features like acquisition, cataloguing, circulation, report generation, serials control and authority control. The Figure – 1 is represents the housekeeping operation interface in Koha for the college libraries under the University of Burdwan. All the bibliographic data is accessible in Koha OPAC interface for the users as well as library professionals. Privileges controlled is also possible by using Koha admin interface. Data backup and restoration can be done under the option of tools. Data import and export is also possible in Koha admin interface. Circulation and patron card layout management can be possible in Koha admin interface.
II. Designing Digital Media Archiving Cluster

DSpace provides support for Creative Commons licenses to be attached to items in the repository. They represent an alternative to traditional copyright. To learn more about Creative Commons, visit their website. Support for the licenses is controlled by a site-wide configuration option, and since license selection involves redirection to the Creative Commons website (Figure – 2), additional parameters may be configured to work with a proxy server. If the option is enabled, users may select a Creative Commons license during the submission process, or elect to skip Creative Commons licensing. If a selection is made a copy of the license text and RDF metadata is stored along with the item in the repository. There is also an indication - text and a Creative Commons icon - in the item display page of the web user interface when an item is licensed under Creative Commons.
Each item has one qualified Dublin Core metadata (Figure 3) record. Other metadata might be stored in an item as a serialized bitstream, but we store Dublin Core for every item for interoperability and ease of discovery. The Dublin Core may be entered by end-users as they submit content, or it might be derived from other metadata as part of an ingest process.

![Dublin Core Metadata Interface in DSpace](image)

**Figure 3** Dublin core metadata interface in DSpace

### III. Designing Content Management System Cluster

Most of the college libraries have been suffering to managed their content in the college Websites. This research paper is successfully installed and configured the necessary parameters for managing the content and it also accessible in college websites. So, the college libraries not only managed the bibliographic resources it also managed the Web resources for the students and the college administrators. The Figure 4 is represents the Joomla content management interface to managed the web content. Most of the tools under this button can be used for general management maintenance of the site and communication among users and another user is editing a file, a little padlock prevents others from editing it at the same time, and “checks it out” for the time being. The Global Check In basically makes everything that was checked out available for editing by checking them in again. The type of new user registrations in Joomla including registered, author, editor and publisher for the college users. The user is simply a registered user of the site with no privileges and author can create content and determine where it should go and some minor settings relating to their individual articles. Editor has the same ability as the above users, but they can also edit articles by other users and publisher can do all of the above, plus the ability to choose whether an article will be published.
Designing and Developing an Integrated Information Management and Retrieval System For College Libraries Under The University of Burdwan

IV. Designing Federated Search System Cluster

Federated search system is also an important aspects in this research paper. VuFind is the most comprehensive discovery tools in federated search system because it can managed both the bibliographic as well as digital resources (Elguindi & Schmidt, 2012). It can managed all the data which is available in Koha, DSpace and Greenstone because it can easily integrate the digital resources in the college libraries. Citation styles can be broadly divided into styles common (Figure -5) to the Humanities and the Sciences, though there is considerable overlap (Little, 2012). Some style guides, such as the Chicago Manual of Style, are quite flexible and cover both parenthetical and note citation systems. Others, such as MLA and APA styles, specify formats within the context of a single citation system (Moore & Greene, 2012). These three well known citation style can be display in a single window. So, obviously, it can says that the citation style maintain is possible in VuFind user interface and its helpful to the college users and researchers.

Figure 4 Content management system in Joomla

Figure 5 VuFind discovery tools in FSS cluster
V. Designing College Communication and Interaction Cluster

This research paper is also explores the college communication and interaction in the college campus. College communication is possible through Mediawiki open source software. The Figure -6 is represents the college communication and interaction interface. This will be helpful for the users as well as library professionals because they can communicate with each other. Published new information about on college like library resources, books, admission and others for the college libraries under the University of Burdwan. WYSIWYG editor is one of the important in the domain of college communication interaction and this can be achieved through Mediawiki in the different college department like physics, chemistry, geography, bengali, history, economics and etc. The college users can easily access their necessary information through this open source tool.

![Figure 6 College communication and interaction interface](image)

VI. Designing Learning Content Management System Cluster

Learning content management system is possible through Moodle open source software. Design the new database in different areas like questions, quiz, multiple choice questions, broad type questions and etc. for the college students. Students have to be accessed the questions and answer the questions and it generate the report as per answer given by the students. This is helpful for the college students in different departments like Bengali, History, English, Geography, Chemistry, Physics and etc. The Figure – 7 is represents the learning content management interface for the college libraries affiliated to the University of Burdwan.

![Figure 7 Learning content management system interface](image)
Designing and Developing an Integrated Information Management and Retrieval System For College Libraries Under The University of Burdwan

1.4. Single Window Base Interface
The main objectives of this research paper is to design the single window based interface for six domain specific cluster. This is possible by using the Ubuntu operating system. The Figure – 8 represents the single window based interface for the college libraries. The users and library staff can be accessed their necessary resources and also possible the bibliographic data entry. Digital and multilingual document is also support in this research work.

![Single Window based interface for the college libraries](image)

Figure 8 Single Window based interface for the college libraries

1.5. Findings
The findings of this research paper are explained in the following ways :

- It is possible to integrate the federated search system like VuFind in Koha OPAC interface ;
- Housekeeping operations is easily managed by Koha in the college libraries of the University of Burdwan ;
- Digital resource is managed by DSpace in the college libraries ;
- Content management and learning content management system are also easily possible through Joomla and Moodle ;
- College communication and interaction is possible by using the Mediawiki in the college libraries ;
- Six domain specific cluster software can be accessed in a single window based interface for the college libraries under the University of Burdwan.
1.6. Conclusion

The research work has successfully integrated the six domain specific cluster in a single window based interface for the users as well as library professionals. The college librarians can easily managed their housekeeping operations in the integrated library system cluster by Koha open source software. Digital resource is managed by DSpace and users in the colleges can access their necessary resources. Federated the information from the other institutional repositories or it integrated with the integrated library system both in admin and OPAC interfaces. Learning content management is also explore in this research work and students can easily access the questions and answers. In this section they also see the results in the particular subject areas. Content management has been perform the two tasks like content create and published in the college websites of different areas. College communication and interaction is managed by the Mediawiki open source software and in this stage create the new things in different areas in regional languages for the college libraries affiliated to the University of Burdwan.

REFERENCES


