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Emerging Technology and Innovation of Library Services using Open Source Software (FOSS) in Academic Environment: A Current Trends

Meera Mani[1] and Madaiah Krishnamurthy[2]
[1]Librarian , Jain University,Bangalore, Karnataka, India
[2]Professor,Dept of Library and Information Science
Mangalore University, Mangalore, Karnataka, India
E-mail: Email: n.meeramani@jainuniversity.ac.in, mkrishna_murthy@hotmail.com
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Abstract **- Open access to knowledge and information as we may see from this listing has a long way to go.With the availability of advanced ICTs and by building up the necessary infrastructure particularly in academic institutes, this will becomes an active contributor to global open-access literature. It is largely achievable is a country where policy frameworks, institutional frameworks, information infrastructure, trained manpower, and financial resources are adequately available. The information infrastructure in a country consists of telecommunications network, strategic information systems, policy and legal frameworks affecting their deployment, as well as skilled human resources needed to develop and use it.This paper This paper describes the importance of open source software and its characteristics, and need for the open Source software and procedure.**
Keywords: **Emegring Technology, Open Source, Dspace, Eprints, LMS,Library Services**

1.INTRODUCTION

In today's information society, heterogeneous data and information can be dynamically accessed, converted, distributed, located, processed, and stored across diverse application, channels, databases, guidance which distinguishes the library's se services commitment, philosophy, plans, routine, operations and essential services etc. The internet and World Wide Web have become the most important platforms on which to access and locate information. However, many professionals stall have in selecting the best innovative approaches and technical solutions when they try to improve and integrate their specific academic library information services. Many do not know even where to find or how to follow the developing trends in emerging and cutting edge technologies. It is therefore a matter of urgency for academic administration s, executives, faculty, It specialists, librarians, managers, LIS students , and other professionals to understand emerging technologies before they can make informed decisions and select the most innovative and practical approaches to designing, developing, integrating, supporting high quality academic library resources , services and instruction to the digital age.

II..ACCESS OF INFORMATION

According to Johnson, while traditional publishing model limits readership, obscures institutional origin, costs much, the new model implies no monopoly, increase of output, awareness(Johnson, 2002). This aim also complies with the Freedom of Information Act, which establishes the right for everyone to access information held by a public authority and implies for each university to have anup to date publication scheme and a "digital records management system" (according to Barton etal., 2003) which allows universities to have knowledge and control on their whole publications and make them available: as Johnsons and Bailey (Bailey, 2005) remark as well, literature before published on personal or departmental sites can now be hosted on permanent repositories, since metadata standards, networking technologies and interoperability protocols are now enough widespread and reliable. The new scholarly communication model drawn by faculty members is horizontal, disaggregated and unbundles different functions of scholarly communication model (four functions indicated by Crow in 2002 and Prosser in 2004: registration, certification, awareness, archive)as many authors which cite them) retain IR can serve as "indicators of a university's quality to demonstrate the scientific, societal, and economic relevance of its research activities, thus increasing the institution's visibility, status, and public value". The author stresses that these objectives can be achieved without competition, rather in a complementary way, with traditional commercial publishing and that this disaggregated model can be very economic for those institutions which can't afford huge technical investments, if self archiving, effective copyright policies and encouragement to improve and increase research outputs from faculties are well set up. As a result, sensible changes can be gained without altering the financial or technical resources, but reallocating and reorganizing them maintaining advantages, as retaining intellectual property for authors and increasing research output's use and prestige without paying subscriptions.

III..LIBRARY APPLICATIONS

Library staff can identify potential content for an institutional repository by surveying departmental and faculty web sites; talking with academic and administrative departments about their output and publications; reading campus newsletters to learn about conferences, presentations, and lectures that might merit inclusion in the archive; and reviewing print publications and contacting editors to see if they are willing to archive the digital versions from which almost all print publications originate today. The initial vision of IRs as a place to capture finished faculty output was too limited. Such a vision places these archives in direct competition with traditional publication

models and expects faculty and university administrators to abandon a model they know and trust for an uncertain one that seems to require more effort on their part with a less certain outcome. Some of the examples of application listed below:

IV. DIGITAL LIBRARY SOFTWARE

Digital libraries provide an integrated set of services for capturing, cataloguing, storing, searching, protecting, and retrieving information, which provide a coherent organisation and convenient access to typically large amounts of digital information. The OSS4lib portal includes a number of library-related projects and some of these are discussed in detailed. These range from simple scripts to produce statistics to integrated library systems to institutional repository software. Digital Library Software which are all widely used OSS for digital libraries.

A. DSpace

DSpace is a digital library system designed to capture, store, index, preserve, and redistribute the intellectual output of a university's research faculty in digital formats (www.dspace.org). It was developed jointly by Hewlett Packard (HP) Laboratories and Massachusetts Institute of Technology libraries. The DSpace architecture consists of three layers: application layer; business layer; storage layer. The application layercovers the interface to the systems, the web and user and interface and batch loader, inparticular. The business layer contains the DSpace specific functionality, workflow,content management, administration, and search and browse modules. The storagelayer is implemented using the relational database management system Postgre SQL.Each module has a well-documented API and all original code is in the JavaName URL Type of projectApache www.apache.org Web server FreeBSD www.freebasd.org Unix operating systemGIMP www.gimp.org OS image manipulation softwareGNOME www.gnome.org Unix desktop environment KDE www.kde.org Unix desktop environmentLinux www.linux.org Unix operating system Mozilla www.mozilla.org Web browserMy SQL www.mysql.org DatabaseProject Gutenberg http://promo.net/pg/ Freely available digital content (started 1971)Open Office www.openoffice.org Office application suite PHP www.php.net OS programming tool DSpace www.dspace.org Digital library software E-Prints www.eprints.org Digital library software programming language. Other pieces of the technology include a web server and Java servlet engine (Apache and Tomcat, both from the Apache Foundation), Jena (an RDFtoolkit from HP labs), OAICat (from OCLC). The system is available on Source Forge,linked from both the DSpace informational website and the HP labs site (Smith et al.,2003).

B. E-Prints

E-Prints is also an example of open source software for institutional repositories. It was developed at the University of Southampton and was designed initially to create a pre-print institutional repository for scholarly research, but is now used for other material including reprints, technical reports, conference publications or other means of electronic communication. On its website (www.eprints.org) this OSS is described as "a flexible platform for building high quality, high value repositories. It is recognized as the easiest and fastest way to set up repositories of research outputs of literature, scientific data, theses and reports or multimedia artefacts from collections, exhibitions and performances". OpenDOAR provides details of repositories worldwide using E-Prints. Most (152) are in the UK, then the USA (151), Italy (35), Australia (41) and the rest in other countries. Simpson (2006) describes the use of the E-Prints software for the institutional repository at the University of Southampton.

C. Greenstone

The Greenstone Digital Library (GSDL) software was developed by the New Zealand digital library project at the University of Waikato in the early 2000s, and provides a suite of open source software for building and distributing digital library collections. Greenstone is now developed and distributed in co-operation with Unesco and the Human Info non-governmental organisation. GSDL runs under UNIX and Windows and aims to provide for ease of use as users can create files using varying formats, e.g. PDF, Postscript, MS-word or ftp. There are five stages in developing a digital library using GSDL:

1. Collect information.
2. Describe the data.
3. Configure the collection.
4. Build the collection.
5. View the collection.

Greenstone constructs full-text indexes from the document text, and from metadata elements such as title and author. Indexes can be searched for particular words, Boolean combinations, or phrases, and results are ranked by relevance or sorted by a metadata element. Greenstone 3 is a complete redesign and re-implementation of the original Greenstone digital library software and incorporates all the features of the existing system, and is backward compatible, that is, it can build and run existing collections without modification. Written in Java, it is structured as a network of in dependent modules that communicate using XML (Witten et al., 2002). A number of examples of libraries around the world that have implemented GSDL are provided on the website (www.greenstone.org); these include Human Rights in Argentina, Krygyz Republic National Library, Philippine Research, Education and Government Information Network and the Sudan Open Archive.

V. LEARNING MANAGEMENT SYSTEMS

A Learning Management System (or LMS) is a software package, usually on a large scale (that scale is decreasing rapidly), that enables the management and delivery of learning content and resources to students. Most LMS systems are web-based to facilitate "anytime, anywhere" access to learning content and administration. At a minimum, the LMS usually allows for student registration, the delivery and tracking of e-learning courses and content, and testing, and may also allow for the management of instructor-led training classes. In the most comprehensive of LMSs, one may find tools such as competency management, skills-gap analysis, succession planning, certifications, virtual live classes, and resource allocation (venues, rooms, textbooks, instructors, etc.). Most systems allow for learner self-service, facilitating self-enrollment, and access to courses.

Some LMS vendors do not distinguish between LMS and LCMS, preferring to refer to both under the term "LMS", but there is a difference. The LCMS, which stands for "Learning Content Management System", facilitates organization of content from authoring tools, and presentation of this content to students via the LMS. It focuses purely on managing and delivering the appropriate eLearning content for users when they need it. The Learning Content Management System provides an infrastructure that can be used to rapidly create, modify, and manage content for a wide range of learning to meet the needs of rapidly changing business requirements. The LCMS can use its detailed data on learner scores, question choices, and navigation habits to give content managers crucial information on the effectiveness of the content when combined with specific instructional strategies, delivery technologies, and learner preferences. The Sharable Content Object Reference Model (SCORM) defines a Web-based learning "Content Aggregation Model" and "Run-Time Environment" for learning objects. The SCORM is a collection of specifications adapted from multiple sources to provide a comprehensive suite of e-learning capabilities that enable interoperability, accessibility and reusability of Web-based learning content.

VI. OPEN SOURCE LMS

A.Moodle

The Moodle VLE is a software package designed to facilitate the creation and delivery of online courses. Moodle is Open Source, which means you are free to download, use, modify and even distribute under the terms of the GNU General Public License. Moodle is Open Source Course Management System (CMS with virtual Learning Environment (VLE) and provides Online Assessment Features .It uses by Teachers, Trainers, Instructors ,Registered Training Organisations (RTOs),Education based Special Interest Groups,Project teams, Consultative groups, Professional Associations. Open Source e-Learning platform (LMS and LCMS) used in corporate and higher education markets. The Platform supports 18 languages and can support different didactic models.

B. ATutor

ATutor is an Open Source Web-based **Learning Content Management System (LCMS)** designed with accessibility and adaptability in mind. Administrators can install or update ATutor in minutes, develop custom themes to give ATutor a new look, and easily extend its functionality with feature modules. Educators can quickly assemble, package, and redistribute Web-based instructional content, easily import prepackaged content, and conduct their courses online. Students learn in an adaptive learning environment.

C. Joomla

Joomla has become one of the most powerful and multi functional open source content management systems on the planet and is used by the millions of people world wide. It is an award winning content management systems (CMS). Which enables to build websites and powerful online applications. Joomla is an open source and is a free open source frame work and content publishing system designed for quickly creating highly interactive Multilanguage websites, online communities, media portals, and blogs and e-commerce applications.

D. Drupal

Drupal is open source software for creating content management systems maintained and developed by a community users and developers. It is distributed under terms of GPL, which means anyone is free to download it and share it with others, allows easily organizing, managing and publishing content, with an endless variety of communication. Drupal provides easy collaboration capabilities, user authentication

VII. ADVANTAGES AND DISADVANTAGES OF FOSS

Open source offer a radically different and exponentially better software development model companies can improve that products greatly and significantly increase their market share. Overall, open source is good for everyone. The following are the few advantages from the OSS.

1. Access to source code and ability and right to modify it: The availability of the source code and the right to modify it is very important. It enables the unlimited tuning and improvement of a software product.
2. Right to redistribute modification to benefit wider community: The right to redistribute modifications and improvements to the code, and to reuse other open source code, permits all the advantages to the modifiability of the software to be shared by the large committees.
3. The right to use the software to any way: This combined with redistribution rights, ensure a large

population of users, which helps in turn to build up a market for support and customization of the software, which can only attract more and more developers to the project.

4. Cost effective: Usually, the first perceived advantage of open source models is the fact that FOSS is made available gratis or at a low cost.
5. Customizable: Since FOSS come with the source, one can customize existing software to suit one's needs. Open source licensed typically guarantee the right to be able to customize the software.
6. Preventing re- invention at the wheel: Since we can reuse existing code, effort is not wasted re developing software that exists. Open source development can build on the entire body of work already released under a suitable open source license.

A.Disadvantages of FOSS

The following are listed as disadvantages;

1. Perceived disadvantages of open source models: Of course, open source development models lead also to the perception of some disadvantages. However, some of them are only disadvantages if we are stick to classical (proprietary) development models, which is of course not the case with open source.
2. Limited or No accountability: limited domain of solutions. Limited hard real time support.
3. Resistance to migration: most of the world's offices and desktops are currently using proprietary software. The migration to open source cost money and take effort in the short term, before long term benefits can be obtained.
4. The Total cost of Ownership Argument: For a long time, it was argued that although FOSS was initially cheaper, the long term total cost of ownership was higher.
5. Lack of Advertising: There are only a few major proprietary software companies, and they have made a lot of money, which they can they spend on adverting.
6. Difficult to use: A subset of the above that should be enumerated explicitly. FOSS need to be written by engineers for other engineers and for many of them it is accepted that ordinary function will involve creation of configuration files, writing scripts, or actually editing the source code and recompiling.

VIII. CONCLUSION

Open access to knowledge and information as we may see from this listing has far to go in India. With the availability of advanced information and communication technologies (ICTs) and by building up necessary infrastructure in India, particularly in academic institutes, this will becomes an active contributor to global open access literature. It is largely achievable is a country where policy frame works, institutional frameworks, information infrastructure, trained manpower, and financial resources are adequately available. The information infrastructure in a country consists of telecommunications network, strategic information systems, policy and legal frameworks affecting their deployment, as well as skilled human resources needed to develop and use it. To develop strong information infrastructure, it is necessary to mobilize the many stakeholders that are involved in its deployment and use; government, business, individual users, the telecommunications and information service providers and so on. IRs in universities generally include pre-prints of journal articles, seminar papers, technical reports, research data, theses, dissertations, work in progress, important print and image collections, teaching and learning materials, and materials documenting the history of the institution.

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