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Comparing Open Source Digital Library Software: Special Reference to DSpace, EPrint and Greenstone

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Abstract— *Open sources software (OSS) model makes sources code accessibility to user, who can adjust the software to adopt it more closely to their necessities. Open sources digital library software dase not require the primary expenditure of commercial software and enables libraries to have larger control over their working environment. This paper presents the evaluation, features, utility and usability of open source digital library management software like Greenstone, DSpace and EPrint. The methodology followed involves study of related software documentation and associated technical manual.*

Keywords— *Open sources software, Digital library management software, Greenstone, DSpace, EPrint.*

I. INTRODUCTION

Open sources software has developed to a great extent in scope and attractiveness over the last few years, and is now in prevalent use. The development of OSS has gained the thought of research librarian and created new opportunity for libraries [1]. Open source software can benefits libraries by lowering initial and containing cost, eliminating vendor locked in, and allowing for grater elasticity.

Digital library refers to a collection that constitutes electronics resources, easy to get through the WWW. It habitually contains electronics version of book, photograph videos etc [2]. Open sources digital library software presents a system for the construction and presentation of information collections. It helps in edifice collections with search and metadata-bases browsing facilities. Moreover, they are simply maintained and can be augmented and rebuilt mechanically. With a lot of OSS available for library and information management, organizations now have narrative options for acquiring and implementing system [3]. The open source software applications for libraries and information centres' that will be discussed Greenstone, DSpace and EPrint digital library management software.

II. OPEN SOURCES SOFTWARE

Open Source Software is computer software with its source code made available with a licence in which the copy right provide the right to study, change, and distribute the software to any one and for any purpose [4].

Distinctiveness of open sources software:

Open sources software has much Distinctiveness are [5]:

- a) It is normally acquired liberally
- b) Developer has no right to state royalties on the distribution or use
- c) Source code is easy to get to the user and distributed with the software
- d) No dissent to an individual or to a group to access source code of the software. It has stipulation of modifications and derivations under the programme's original name
- e) Rights of facilities attached to the programme must not depend on the programme's being part of a scrupulous software distribution
- f) Licensed software cannot place limit on other software that is distributed with it
- g) Distribution of License should not be precise to a product and License should be technology neutral, etc.

III. DIGITAL LIBRARY

Digital library is a special library with a focused collection of digital objects that can include text, visual material, audio material, video material, stored as electronics media formats along with means for organising, storing and retrieving the files and media contained in a library collection [6].

IV. OPEN SOURCES DIGITAL LIBRARY SOFTWARE

Today various type of commercial digital library management software accessible in India and abroad World. But they are too rich to be afforded by libraries. These proprietary software packages also require high installation, annual maintenance and updating cost. For this situation is the taking on open sources software for digital library [7]. To build a

digital library under economical conditions open sources software is preferable. An attempt has been made here to give explanation and comparison three open source software such as DSpace, Greenstone and EPrint.

A. Greenstone Digital Library Software:

Green stone digital library software a University product in 1975 at the University of Waikato in Newzeland with the supported by UNESCO has been developed for the building and presentation of digital information collection. October 2005 the latest version of the software is 2.60 published. It is available under the GNU GPL licence. In the field of slandered the system supports the dubline core metadata scheme, OAI-PHM protocol and its support Z39.50 protocol for two-way search catalogues and others libraries, as the only one from all system evaluated, however the configuration for this support is not part of the standard configuration and has to be compiled in order to start its operation [8] [9].

Special Features of Green stone Digital Library Software

Special features of Green stone digital library software are

- a) Collections are accessed through a standard web browser and easy to use browsing with powerful search facilities [10].
- b) The user can search the full text of the documents; choose between indexes built from different parts of the documents.
- c) Flexible browsing amenities like user can browse listed authors, title, dates, classification and so on.
- d) All searching and browsing structure are built directly from the document themselves. No links inserted by manually, existing links are maintained [11].
- e) Accommodate various type of sources document, the software is organised in such a way that plug-in can be written for new document type.
- f) Collection can be design million if document, making the several gigabytes,
- g) Greenstone supported multiple format can contained text, picture, audio and video clips.
- h) An administrative function enable specified user to authorised new user to built collection, document access by the registered user with the help of user [10].
- i) CD-ROM or internet collection can be made available.

B. DSpace Digital Library Software:

DSpace design and developed by Massachusetts Institute of Technology (MIT) Libraries and Hewlett-Packard (HP) its first edition is from 2002. DSpace is the software of preference for academic, non-profit and trade organizations build open digital repositories [12]. It is free and easy to install "out of the box" and completely customizable to fit the needs of any organization.

DSpace conserve and enables easy and open access to all types of digital content through text, images, moving images, mpegs and data sets. DSpace is an open source repository software package typically used for creating open access repositories for scholarly and/or published digital content. While DSpace shares some feature go beyond with content management systems and document management systems, the DSpace repository software serves a specific need as a digital archives system focused on the continuing storage, access and protection of digital content.

Special Features of DSpace Digital Library Software:

Special features of DSpace digital library software are

- a) DSpace allows contributors to limit access to items in DSpace, at both the collection and the entity item stage[13].
- b) Authentication is provided through user passwords, X509 certificates or LDAP. Access controls can be administered by only authorized users.
- c) DSpace can store and provide on-line browsing ability for independent, non-dynamic HTML documents.
- d) The OAI-PMH is a protocol for metadata harvesting allows sites to programmatically recover or 'harvest' the metadata from numerous sources, and offer services using that metadata, such as indexing or concerning services [13].
- e) The collection and communities in DSpace are created via web interface.
- f) Import and export for communities, collections and item is supported by DSpace.
- g) DSpace are provide all statistical report/summary for administrated usages
- h) To help in creation persistent identifier for every item DSpace makes use of handle systems global resolution features.
- i) DSpace ensure that data can be exchanged with other slandered acquiescent system, such as MARC21 [14].

C. EPrint Digital Library Software:

EPrints was created in 2000 as a direct outcome of the 1999 Santa Fe meeting that launched what eventually became the OAI-PMH. Version 3 of the software was officially released on 24 January 2007 at the Open Repositories 2007 Conference and was described by its developers as "a major leap forward in functionality, giving even more control and flexibility to repository managers, depositors, researchers and technical administrators [15]."

The EPrints software was enthusiastically received and became the first and one of the most widely used free open access, institutional repository software, and it has since inspired the development of other software that fulfill a similar purpose.

Special Features of EPrint Digital Library Software:

Special features of EPrint digital library software are

- a) EPrints provides web based interface that makes easy to use and administer.
- b) Searching in EPrints allows scanning each of the metadata field types in the database by using simple or advanced search.
- c) EPrint archive can use any metadata schema as being provided by the administrator. The administrator decides what metadata held about EPrints item [16].
- d) EPrint uses traditional technologies and runs on pure open source system. It uses MySQL, Apache database and web server. EPrints is programmed by using the scripting language “perl”
- e) Three user roles, administrator role controls all back-end options, editor role reviews submission, metadata etc. author role allows submission of document and management of previously submitted.
- f) EPrint is fully interoperable with Open Archives Initiative Protocol for Metadata Harvesting [17].
- g) PDF, HTML, JPEG, TIFF, MP3, AVI etc. file formats supported on EPrint

V. COMPARISON

Comparison table between DSpace, GSDL and EPrints digital library software based on above discussion [7].

Table-I Comparison between DSpace, GSDL and EPrints Software.

Feature	D Space	E Prints	Greenstone
Creation year	2002	2000	1997
Developed by	Mit Libraries and Hewlett-Packard Lab	University of Southampton	University of waikato
Cost of license	Free	Free	Free
Resource	CNRI	No	OAI Identifier
OAI-PMH	Yes	Yes	Yes
Storage and retrieves	Can storage and retrieve all type of content	Can storage and retrieve all type of content	Can storage and retrieve all type of content
Metadata formats	Dublin core, Qualified DC, METS	Dublin core, METS	Dublin core, Qualified DC, METS, NZGLS, AGLS
User interface functions	End user deposition, multilingual support	End user deposition, multilingual support	End user deposition, multilingual support
Thumbnail preview	images	Images , Audio, Video	Images , Audio, Video
Searching capabilities	Field specified, Boolean Logic, Sorting options	Field specified, Sorting options	Field specified, Boolean Logic
Browsing options	By author, Subject and collection	Browsing can be done using any field	Browsing can be done using any field
Syndication	RSS, ATOM	RSS, ATOM	-----
User authentication	LDAP authentication, Ssholeth authentication,	LDAP authentication	User groups
Statistical report	Count of full record	Count of full record	Count of full record
Software platforms	Linux or Unix, Windows, Solaris	Linux, Unix, Windows,	Linux, Unix, Windows, Mac-OS
Databases	Oracle, Postgre SQL	MySQL, Oracle, Postgre SQL, Cloud	Its Own
Programming language	Java, JSP	Perl	C++, Perl, Java
Web server	Apache and Tomcat	Apache	Apache/IIS
Machine-to machine interoperability	OAI-MHP, OAI-ORE, SWORD, SWAP	OAI-MHP, OAI-ORE, SWORD, SWAP, RDI	Z39.50, OAI-MHP
Licence	GNU	BSD	GNU
Services	Services via 3 rd part services providers	Training consultancy, Site visit	Training

VI. FINDINGS

This comparison of three open source software based on certain feature mentioned above resulted into the following findings.

- a) DSpace is the most accepted between the digital library solutions available in the open source province and DSpace is functionally comfortable and supports a wide collection of object types, including images, sound, text and video. It provides thorough implementation guidelines.
- b) GSDL and EPrints are also extensively used and it is a low cost option for a repository primarily expected at open access to article pre-prints and post-prints, as well as digital theses. A collection of object types can be uploaded, with video, audio, images and zip files. Educational institutions control in the use of these packages.
- c) Institutions for which EPrints is not relatively appropriate may find DSpace and Greenstone more directly meets their needs, without being without need complex.
- d) DSpace supports neighborhood based content policies and submission procedure and accommodates different kinds of digital document formats.
- e) EPrints is a valuable digital library system with large user community. But when there is require for technical support and training in using the software, space was found suitable.
- f) Although numerous libraries are using Greenstone and E-Print but the bulk of the libraries have a preference DSpace as it has got several advantages and can support several forms and formats.

VII. CONCLUSION

The digital library management software presents an easy to use, customizable design to create online digital libraries. Open source software incorporates an edge that makes it easy for people to make their own library collections. From the fallout of the comparison/evaluation, it is observed that current open source digital library software still lacks certain functionalities apparent to be significant, as gathered from the literature. However, flanked by the three, space and Greenstone were able to fulfil most of all the vital indicators because of its well-built support for end-user functionality. EPrints was yet another strong contender which has the ability to get better when it adds a usage monitoring and reporting element in the next release. Prints did not fare well in the evaluation because it lacked strong support in certain areas, especially in the kind of search. However, it has to be noted that each software package has entity strengths and weaknesses that will appeal to various organizations and stakeholders with different needs

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