Comparative study of open source software (GSDL, Dspace and Ganesha)

Shalini R. Lihitkar

ABSTRACT

The Open Source Software (OSS) Greenstone, DSpace, NewGenlib,fadora and Ganesha digital library software etc are available for library and information management. OSS is becoming an increasingly popular software development method. This paper highlights the comparison of features, function and usability of OSS i.e. Greenstone Digital Library, DSpace, and Ganesha Digital Library software. Ranking of these software were also done based on the assigned points. GSDL software has gained maximum points (40) and thus it is in excellent category.

Key words: Digital Library, Open Source Software, Greenstone, DSpace, Ganesha.

INTRODUCTION

Open source software is software that includes source code and is usually available at no charge. There are additional requirements besides the availability of source code that a program must meet before it is considered open source including: the software must be free to redistribute; derivative works must be allowed; the license can not discriminate against any persons; and the license cannot discriminate against any fields of endeavor. Software that is licensed under an open source license allows for a community of developers from around the world to improve the software by providing enhancements and bug fixes.[1] The services and the collection of the libraries and information centers are becoming global due to the application of Information and Communication Technology. Now in formation can be accessed from the remote places with the help of internet. Due to shrinking budgets and the increasing prices of journals, Librarians have to look forward to a new alternative by which they can collect, store, arrange and disseminate information to the users. The concept of Open Access and Institutional Repositories has evolved to find out the solutions. In building the institutional repository the college libraries can take the help of the Open Source Software.

The term **'software'** refers to two different but related things:

Source code

A set of human readable and understandable instructions that comprise the 'recipe' from which program can be made.

Object code

The actual program which is compiled of machine readable source code. It is fed into a computer's microprocessor to perform various operations. The advocates of what we think of as the open source movements add further conditions before they regard software as open source. Some essentials are:

1. The source is publicly available.

2. The software can be distributed freely.

3. The sources may be studied and changed.

Author's Affiliation: Asst Prof and Head, DLISC, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur,

E-mail:shanwaghmare@yahoo.com (m)09823886717

Reprint's request: Dr. Shalini R. Lihitkar Asst Prof and Head, DLISC, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, E-mail:shanwaghmare@yahoo.com, Mob: 09823886717

Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software. More precisely, it refers to four kinds of freedom, for the users of the software:

1. The freedom to run the program.

2. The freedom to study how the program works.

3. The freedom to redistribute copies so we can help our neighbor.

4. The freedom to improve the program, and release our improvements to the public, so that the whole community benefits.[2]

FEATURES OF OPEN SOURCE SOFTWARE

Open source doesn't just mean access to the source code. The distribution terms of open-source software must comply with the following criteria.

1. Free Redistribution

2. Source Code

3. Derived Works

4. Integrity of the Author's Source Code

5. No Discrimination against Persons or Groups

6. No Discrimination against Fields of Endeavor

7. Distribution of License

8. License Must Not Be Specific to a Product.,

9. The License Must Not Restrict Other Software

10. No provision of the license may be predicated on any individual technology or style of interface.[1]

AIMS AND OBJECTIVES

1. To consolidate the information on Open Source   Software.

2. To compare three Open Source Software and their features.

3. To find out and rank the more user friendly Open Source Software.

RESEARCH METHODOLOGY

Investigative and Evaluative research methodology were used during the study. Data were collected:

1. By surfing Internet and Downloading three Open Source Software such as D-space, GSDL, and Ganesha Digital Library.

2. Comparing the selected Open Source Software.

3. Preparing the worksheet by using different criteria of selected Open source Software.

Table 1: Selected Open Source Software

Software	URL	Free Downloadable	Developed by	Contact Information
GSDL	http://www.greenstone.org	v	New Zealand Digital Library Project with UNESCO and the Human Info NGO	greenstone-users@list. scms.waikato. ac.nz
D-space	http://www.dspace.org/	v	Massachusetts Institute of Technology (MIT) Libraries and Hewlett-Packard	sales@dspace.com.au
Ganesha	http://gdl.itb.ac.id/	v	Indonesian Digital Library Network	mrg@kmrg.itb.ac.id

SCOPE AND LIMITATION

Scope of the study is restricted to surfing internet and downloading the three Open Source Software i.e. D-space, GSDL, and Ganesha Digital Library .

ANALYSIS AND INTERPRETATIONS

There is various open source software but for the current study only three software were selected. The feature of software were studied

Table 2: License, New version, Downloaded Site and Size of the selected Software

Name of the Software	License	Latest Version	Downloaded from	Size
GSDL	GNU (General Public License)	2.62 in 2005	http:// prdownloads.sourceforge.net/greenstone/	44 MB
D-space	The BSD License	1.32 in 2005	http:// sourceforge.net/projects/dspace/	8.94 MB
Ganesha	GNU (General Public License)	4.0 in 2004	http:// gdl.itb.ac.id/download/	13.90 MB

(Source: http://www.greenstone.org, http://www.dspace.org, http://gdl.itb.ac.id)

by applying some criteria like, searching facilities, Platform to Run Software, associated software, Languages Included in Software, searching parameters of Software, Criteria for rating of Open Source software and after analyzing grading of four Open Source Software have been done.

Table 3: Pre-requisite/Associated software for Installation of Selected Open Source Software

Software	Apache		C++	Java		Oracle	MySQL	PHP	PERL	PostgreSQL	
	0.2	1.5		1.4	J2E					7.3	later
Greenstone	v	v	v	×	v	×	v	v	v	×	×
D-space	×	v	×	v	v	v	×	×	×	v	v
Ganesha	×	v	×	×	×	×	v	v	v	×	×

(Source: http://www.greenstone.org, http://www.dspace.org, http://gdl.itb.ac.id)

Table 3a: Analysis of Pre-requisite software for Installation

S.N	Software	No. of Pre-requisite Software
1.	Greenstone	7
2.	Dspace	6
3.	Ganesha	4

Table 2 includes the latest version that is readily available for the use of selected software and also gives the information that in which year new version was released, it also specifies, the site address from which the user can easily download the particular software. It gives the information of the size of the software.

It is observed from table 3a that greenstone digital library software required 7 Pre-requisite software followed by Dspace digital library software required 6 whereasGanasha digital library software required 4 Pre-requisite software..

Table-4 shows the selected software runs on different operating system. Some of the software

Table 4: Operating System required for selected Open Source Software

Name of the Software	Windows					Unix	Linux	Other
	95	98	2000	NT	XP			
Greenstone	v	v	v	v	×	×	v	×
D-space	×	×	×	×	×	v	v	×
Ganesha	×	v	v	v	v	v	v	×

(Source: http://www.greenstone.org, http://www.dspace.org, http://gdl.itb.ac.id)

Table 4a: Compatible Operating System

S.N	Software	Compatible Operating System
1.	Greenstone	5
2.	Dspace	2
3.	Ganesha	6

Table 5: Languages Included in Selected Open Source Software

Name of the Software	Languages							
	Dutch	English	French	Kazakhs	Russian	Spanish	Thai	Other
Greenstone	v	v	v	v	v	v	v	v
D-space	v	v	v	×	v	v	×	×
Ganesha	×	v	v	×	×	×	×	×

(Source: http://www.greenstone.org, http://www.dspace.org, http://gdl.itb.ac.id)

Table 5a: Total no. of Languages included in the software

S.N	Software	Languages Supported
1.	Greenstone	8
2.	Dspace	5
3.	Ganesha	2

Table 6: Facilities provided by Selected Open Source Software

Name of the Software	Searching/Browsing	Multilingual Support	Multimedia	Web OPAC	Metadata (Dublin core)	Catalogue	Retro-Conversion	Internet	Intranet	Extranet
Greenstone	v	v	v	v	v	v	v	v	v	v
D-space	v	v	v	v	v	v	v	v	v	v
Ganesha	v	v	Not Found	v	v	v	N.F	v	v	v

(Source: http://www.greenstone.org, http://www.dspace.org, http://gdl.itb.ac.id)

Table 6a: Total no. of Facilities provided by OSS

S.N	Software	No. of Facilities
1.	**Greenstone**	10
2.	**Dspace**	10
3.	**Ganesha**	8

runs on Windows version (Windows 95, Windows 98, Windows 2000, Windows NT and Windows XP), Linux, UNIX and other.

Table-6a shows the facilities provided by selected open source software whether it has a provision of searching or browsing , Whether a software has a multi-languages supporting

Table-5 shows languages that are supported by the selected open source software and are readily available for use. As per the user

Table 7: Searching Parameter of Selected Open Source Software

Software	Title	Author	Subject	keyword	By Issue date	Format	Publisher	Class no.	News Paper Clipping	Communitie s/ Rare Collection
Greenstone	v	v	v	v	v	v	v	v	v	v
Dspace	v	v	v	v	v	×	×	×	v	v
Ganesha	v	v	v	v	×	N.F	×	×	v	×

(Source: http://www.greenstone.org, http://www.dspace.org, http://gdl.itb.ac.id)

requirement, he can choose and change the language according to his convenience.

facility or not, and Whether it provides multimedia or not, it also gives the information of other facilities that are available such as web OPAC, metadata, catalogue, retro conversion, internet, intranet and extranet etc.

Table 7a: Total no. of Searching Parameters in OSS

S.N	Software	No. of Searching Parameters
1.	Greenstone	10
2.	Dspace	7
3.	Ganesha	5

Maximum numbers (10) of searching parameters have been found in Greenstone Digital Library Software followed by D-space.

Table 8: Rating of Selected Open Source Software

S.N	Parameters	Open Source Software			
		GSDL	Dspace	GSDL	
1.	**Operating System**				
	Windows based	4	0	4	
	UNIX/LINUX	0	2	1	
2.	**Languages**				
	Dutch	1	1	0	
	English	1	1	1	
	French	1	1	1	
	Kazakhs	1	0	0	
	Russian	1	1	0	
	Spanish	1	1	0	
	Thai	1	0	0	
	Other	1	0	0	
3.	**Facilities**				
	Searching/Browsing	1	1	1	
	Multilingual Support	1	1	1	
	Multimedia	2	1	0	
	Web OPAC	1	1	0	
	Metadata	1	1	1	
	Catalogue	2	1	1	
	Retro-Conversion	2	2	0	
	Internet	1	1	1	
	Intranet	1	1	1	
	Extranet	1	1	1	
4.	**Searching Parameters**				
	Title	1	1	1	
	Author	1	1	1	
	Subject	1	1	1	
	Keyword	1	1	1	
	Issue date	1	1	0	
	Format	5	0	0	
	Publisher	1	0	0	
	Class No.	1	0	0	
	News Paper Clipping	2	1	1	
	Communities/Rare Collection	1	2	0	
	Total	40	26	20	

Grading based on the points

1) 40-50 ➔ Excellent   **2)** 30-40 ➔ Very Good   **3)** 20-30 ➔ Good
4) 10-20 ➔ Average   **5)** Below 10 ➔Poor

Table 9: Analysis of grading of selected software

S.N	Software	Excellent	Very Good	Good	Average	Poor
1.	GSDL	v	x	x	x	x
2.	Dspace	x	x	v	x	x
3.	Ganesha	x	x	v	x	x

FINDINGS AND CONCLUSIONS

The study of Open Source Software restricted within the study of the features of the software. They represent rather different perspectives and have different, and in many ways complementary, goals and strengths. One goal they share is to be flexible, and can be customized and modified at many different levels – including the programming level, since they are open source systems. This gives the ultimate flexibility and yields significant advantages over closed-source systems.

FINDINGS

1) All the three Open Source Software are available under the GNU (General Public License) License.

2) In the study of selected software it is also observed that to run this software they need pre-requisite software to install. This software can be used to make sophisticated computational techniques accessible to everyone.

3) Greenstone and Dspace software's metadata is very difficult to create because cataloguer/ entry operator must know xml or html language, and only expertise in this language can do this work very easily, while in Genesha software there is no need to have the knowledge of xml or html languages.

4) All the three selected software supports internet, intranet and extranet, searching / browsing, multimedia and web OPAC etc. In this brief study it is clear that this software would be applicable to fully digitized library and most of the library material can be expanded in the form of CDs, DVDs etc.

5) Among three selected software Greenstone digital library software required maximum number of pre-requisite software for installing i.e. 7 ,6 pre-requisite software followed by Dspace,Ganesha required 4 pre-requisite software .

6) It has been observed that Ganesha digital library software runs on maximum number of operating system i.e. 6, Greenstone digital library software runs on 5 type of operating system, and Dspace software running only in 2 operating system i.e. Linux and Unix.

7) Open source software is supporting different languages, Greenstone digital library software support maximum number of languages i.e. 8 languages is covering as compare to other two software whereas only 5, 2 languages is supported by Dspace,Ganesha digital library software support respectively..

8) Greenstone digital library and Dspace software are providing maximum number of facilities i.e. 10 as compare to Ganesha software (8).

9) Searching parameter of each software were also studied, it is observed that Greenstone digital library software is having maximum number of searching parameters i.e. 10 searching parameters , followed by Dspace i.e. 7, whereas Ganesha digital library software has 5 searching parameters .

10) t is also recorded that Greenstone digital library software comes under Excellent grades

(40 points), followed by Dspace software (26 points) under good rating.

11) Ganesha digital library software has been rated under good rank, It is also observed that none of the software under study falls under poor category.

CONCLUSION

The implementation of open source software in library represents a method for improving library service and collection currently available on open source projects covers application areas hanging from the traditional library system to innovation system. All open sources are governed by some type of license agreement. Library professionals should know how to set up and build digital library collection in their organization.

Open Source Software interface makes it easy for people to create their own library collections. Collections may be built and served locally from the user's own web server, or remotely on a shared digital library host. End users can easily build new collections styled after existing ones from material on the web or from their local files (or both), and collections can be updated and new ones brought on-line at any time. [1]

Open Source Software has much potential for libraries and information centers, and there are a number of projects, including Greenstone, DSpace, and Ganesha that demonstrate its capability in this context. It gives library staff an option to be actively involved in development projects, and this involvement can take many forms,such as reporting bugs, suggesting enhancements, and testing new versions. [3]

Currently available Open Source Software projects cover application areas ranging from the traditional library management systems to innovations like Greenstone and DSpace, which complement traditional systems. Benefits include lower costs, greater accessibility, and better prospects for long-term preservation of scholarly works. GSDL and Dspace OSS are recommended to build the Digital Library and make accessible globally.

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