

Open Source Software (OSS) for developing open digital library or A3 library in India.

Subrata Ghosh

Librarian, Dewan Abdul Gani College (Affiliated to UGB), Harirampur, Dakshin Dinajpur, West Bengal, India. E-mail: sghosh899@gmail.com

Abstract

There has been a paradigm shift in the concept of library today. In this web era the concept of Anytime Anywhere Accessible Library (A3 Library) has also been emerged with the application of Open Source Software (OSS). A3 Library means Anytime Anywhere Accessible Library. It is the library of the new digital era, which is ICT dependent. The concept of A3 Library has become a reality today with the application of the new ICT gadgets, particularly with the emergence of Open Source Software (OSS). It may be taken as a new concept of the Digital, Electronic, Virtual Library, etc. OSS plays an important role in making an A3 Library lively and accessible worldwide.

Keywords: Web, Digital Era, A3 library, OSS, ICT, Digital Library.

Digital Library

A digital library has been considered as a system that provides the users with coherent access to large, organised repository of digital information and knowledge. This organization of information and knowledge is characterized by the absence of prior detailed knowledge of the users. On the other hand digital libraries are organizations that provide the digital resources, including specialized LIS professionals to select, structure, offer intellectual access to interpret, distribute, preserve the integrity of, and ensure the persistence over time of digital works so that readily and economically available for users. The ability of the users to access, recognize, and utilize digital resources is enriched by the capabilities of digital technologies. In fact, digital libraries are libraries extended and enhanced through digital technology. The purposes of digital libraries include:

- (1). to speed up the systematic development of the means to collect, store, and organise information and knowledge in digital form, and of digital library collections.
- (2). to promote the economical and efficient delivery of information to all parts of society.
- (3). to encourage cooperative efforts which leverage the considerable investment in research resources, computing and communications network.
- (4). to strengthen communication and collaboration between and among the research, business, government and educational communities,
- (5) to contribute to the lifelong learning opportunities of all people.

A3 Library

A3 Library means Anytime Anywhere Accessible Library. It is the library of the new digital era, which is ICT dependent. The concept of A3 Library has become a reality today with the

application of the new ICT gadgets, particularly with the emergence of Open Source Software (OSS). It may be taken as a new concept of the Digital, Electronic, Virtual Library, etc. OSS plays an important role in making an A3 Library lively and accessible worldwide.

Open Source Software (OSS)

Open Source Software (OSS) as a free software began to appear in early part of 1998. It generally refers to the software distributed in source form, which can be modified freely and redistributed. Its basic character is that the source code of the software is open to the world to take, modify and reuse. Application of OSS permits its users freedom concerning access:

- to run the programme for different purposes;
- to study how the programme works and adapt it to users needs;
- to redistribute multiple copies;
- to improve the programmes.

Rights and Obligations

Open Source Initiative (OSI) has defined OSS as software providing certain specific rights and

obligations as enumerated below:

- No royalty or other fee imposed upon redistribution.
- Availability of the source code.
- Right to create modifications and derivative works.
- May require modified versions to be distributed as the original version plus patches.
- No discrimination against persons or groups.
- All rights granted must flow through to/with –redistributed versions.
- The license applies to the programme as a whole and each of its components.
- The license must not restrict other software, thus permitting the distribution of open source and closed source software together.

OSS: Ten Commandments

As identified by OSI, there are ten criteria for a software product to be called open source. OSI also certifies a software license as an OSI Certified License on the basis of ten Commandments as detailed below:

(1). **Free Redistribution** : The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programmes from several different sources. The license shall not require a royalty or other fee for such sale.

(2). **Source Code** : The programme must include source code , and must allow distribution in source code as well as compiled form.

(3). **Derived Works** : The programme must allow modifications and derived works and must allow them to be distributed under the same terms as the license of the original software.

- (4). **Integrity of the Author's Source Code** : The license may restrict source code from being distributed in modified form only if the license allows the distribution of "patch files" with the source code for the purpose of modifying the programme at build time.
- (5). **No Discrimination against Persons or Groups** : In order to get the maximum benefit from the process, the maximum diversity of persons and groups should be equally eligible to contribute to open source.
- (6) **No Discrimination against Fields of Endeavour** : The license must not restrict anyone from making use of the programme in a specific field of endeavour.
- (7). **Distribution of License** : The rights attached to the programme must apply to all to whom the programme is redistributed without the need for execution of an additional license by those parties.
- (8). **License must not be specific to a Product** : The rights attached to the programme must not depend on the programmes being part of a particular software distribution.
- (9). **License must not restrict other Software** : The license must not place restrictions on other software that is distributed along with the licensed software.
- (10). **The License must be Technology-Neutral** : No provision of the license may be predicted on any individual technology or style of interface.

OSS in Library

The important role of OSS in library includes the following:

- Using OSS automation of the library activities can be done efficiently.
- OSS facilitates management of multimedia collections of the library.
- Linux Operating System ,as a platform , can be used for networking of libraries using OSS, which can reduce the cost.
- OSS can successfully be used in different office work of the library. Open office an OSS ,for instance, can be used to handle office work.
- The programming/script languages available with OSS can be employed for designing websites of the library.
- OSS is successfully used in designing Digital Libraries.
- It also enables the library to make accessible its services anytime and anywhere .

Open Source Software (OSS) for Developing Digital Library

With the advent of ICT (Information and Communication Technology), content creation and content management are crucial components for the proper development of modern libraries. Capturing, storing, indexing, preserving and redistributing digital content is a challenge of any Digital Library with ease-of-use and a web-based user interface. For establishing Digital Libraries some operational software is required. For this purpose a number of free digital library software like Greenstone Digital Library Software and Dspace Digital Library Software are available for developing digital libraries , which aim to offer complete digital library solutions. Generally the emphasis is being given to use open source software package, which can offer the solution to construct customized applications for handling and providing

access to digital collection available over the Internet of in Digital Library Archives connected to Web. Besides this some supporting software is also required. Followings are some Open Source Digital Library Software available, which can be used in developing digital library:

(a) Dspace Digital Library Software

Dspace is an open source software and is freely downloadable from <http://www.dspace.org>. It is

one of the most popular software for digital asset management system to capture, store, index, preserve, and redistribute the intellectual output of a university's research faculty in digital formats developed jointly by MIT Libraries and Hewlett-Packard (HP). It is available to research institutions world-wide as an open source system that can be customized and extended. It helps create, index and retrieve various forms of digital content. Dspace is adaptable to different community needs. Interoperability between systems is built-in and it adheres to international standards for metadata.

Followings are some salient features of DSpace:

- Submission facility allows scientists and researchers to upload digital documents from anywhere in the world;
- Workflow feature allows moderation of the submitted documents;
- Uses persistent handles;
- Conforms to the standards like Dublin Core and OAI-PMH v.2.0;
- Security can be built at various levels to effect restricted access;
- Indian Language based digital libraries can be built as it conforms to the UNICODE standard

(b) Green Stone Digital Library Software

It is Open Source Software available from <http://greenstone.org> under the term of the GNU General Public License. Greenstone Digital Library Software was developed by the New Zealand Digital Library Project at the University of Waikato for building and distributing digital library collections. It has been developed for organizing information and publishing it on the Internet or on CD-ROM.

(c) GNU E-Prints Archiving Software (Version 2.2.2): The software is available from <http://www.eprints.org>

(d) Ganesha Digital Library Software: GDL can be downloaded free of cost at <http://gdl.itb.ac.id/download/>

(e) Libraonix Digital Library System: The Libronix DLS is available from the site <http://www.logos.com/products>.

Digital Library Initiatives in India for Open Access

In India substantial number of library and information centres has initiated the digital library projects to establish it by procuring digital resources in the form of CD-ROM based databases, on line databases, on-line e-journals, on-line bibliographical databases, on-line indexes or by digitizing their own rare and valuable collection of archival importance. Many libraries are having rare manuscript with them, which are decaying due to poor maintenance and care. These documents need to be digitized carefully, which may protect its originality and kept in the form of CD-ROM. These resources may also be mounted on high power server for open access through out the world. Now-a-days Digital Libraries and Digitisation are very important catch words in every aspect of life to preserve knowledge resources pertaining to the area of art and culture, education, science and technology (S & T), Library and Information Sciences, literature and humanities, media and entertainment, preservation of cultural heritage and history. The notable institutions among these are National Informatics Centre, All India Institute of Medical Sciences (AIIMS) located in New Delhi, National Institute of Mental Health and Neuroscience in Bangalore, MGR University in Chennai, National Library, and Kolkata etc.

Followings are some of the digital library initiatives which have developed in India as an Open

Access Channels to access information :

- Archives of Indian Labour: Integrated Labour History Research Programme (www.indialabourarchives.org) ;
- Child Trafficking Digital Library (www.childtrafficking.com) ;
- CSIR Explorations (<http://csirexplorations.com>);
- Cultural Heritage Digital Libraries in Hindi (<http://tdil.mit.gov.in/coilnet/ignca/welcome.html>);
- Digital e-Library (Dware Dware Gyan Sampada /Providing Books at Doorsteps) (<http://mobilelibrary.cdacnoida.in>);
- Digital Library Initiative at National Library of India, Kolkata (at: <http://www.nlindia.org>)
- Digital library of India (www.new.dli.ernet.in , <http://dli.iiit.ac.in> , www.dli.cdacnoida.in) ;
- Digitisation of Important Indian University/ Institutional Libraries
- Institute of Mathematical Science , Chennai (<http://in.arxiv.org>);
- India Education Digital Library (www.edudl.gov.in) ;
- Indian National Digital Library in Engineering Sciences and Technology (INDEST Consortium) <http://indest.iitd.ac.in>);
- Kalasampada : Digital Library Resources of Indian Cultural Heritage (DL-RICH) (www.ignca.nic.in/dlrich.html) ;
- Kashmir University Project (www.makhtootat.org)
- Khuda Baksh Oriental Public Library (www.kblibrary.org)
- Muktabodha: Digital Library and Archiving Projects (www.muktabodhalib.org/digital_library.htm);
- National Science Library/ National Digital Library

- Raza Library, Rampur, Uttar Pradesh (www.raزالibrary.com)
- Traditional Knowledge Digital Library (www.tdkl.res.in);
- Vidyanidhi (www.vidyanidhi.org.in); and
- Vigyan Prasar Digital Library (www.vigyanprasar.gov.in/digilib/)

Application of Open Library Concept at INFLIBNET Centre and Other Institutions

Open Library is a new online tool for finding information about books – even (perhaps especially) for titles that are out-of-print, scarce, or likely to find one reader per decade, if even that. It is, so to speak, a catalog with benefits. If a text is available in digital format, there is a link. you to it. Citations and excerpts from reviews will be available. Likewise, cross-references to other works on related topics. A user of Open Library can see the cover of the book and, in some cases, search the contents.

Followings are the initiatives of INFLIBNET and other Institutions for Open access of digital / e-resources which may be considered as a model under Open Library Concept:

- UGC-INFONET Digital Library Consortium (<http://www.inflibnet.ac.in/econ/about.html>) ;
- JCCC@Digital Library Consortium :A Gateway to India's Academic and Research Community (JCCC@UGCINFONET) (<http://www.inflibnet.ac.in/econ/jccc.html>) ;
- Institutional Depositories at INFLIBNET Centre (<http://www.inflibnet.ac.in/dspace/>);
- Institutional Repositories at Indian Institute of Science (IISc.) Bangalore (Dspace@isi.bang.ac.in);
- Electronic Theses and Dissertations Projects (ETD Project of INFLIBNET Centre)
- Vidya Nidhi Projects (www.vidynidhi.org.in)
- ETDs at IITs under the project “Networked Digital Library of Theses and Dissertations (NDLTD) initiated with Virginia Tech. University as world leader. IITB is first in India

To implement the ETD projects.

Using OSS in A3 Library

The major contributing factors towards using the OSS in libraries of the modern age may be Mentioned about:

- Availability with free, thus saving budget of the library.
- Non locking into a single vendor, thereby allowing to choose for buying technical support from other company/vendor.
- Flexibility to use and access.
- Possibility to share responsibilities of solving information systems issues concerning their accessibility.
- There is no need to pay any licensing cost
- Reliability is a major quality of the OSS.
- Freedom to copy and redistribute the software enabling the library makes copies for all the computer systems. Upgradation fee is negligible, even sometimes nil.

The Draft Report of Digital Library Federation, USA (2001) considered the major reasons for using OSS in the libraries with the following its three virtues:

- OSS is an economical alternative to libraries reliance upon commercially supplied software.
- OSS is essential if libraries are to develop software and systems that meet their patrons' needs.
- It ensures that library systems and online services will be more functional for libraries and their patrons and as such be good for library patrons.

The Paradigm Shift

The application of digital technology in libraries has brought in a revolutionary paradigm shift in all types of libraries. This shift can be seen from the following table :

From	To
• Custodian of books Service	Oriented information providers
• One medium	Multiple media
• Own collection	Library without walls
• In good time	Just in time
• In-sourcing	Out-sourcing
• Local reach	Global reach
• User goes to library	Library comes to user

In this new environment the Library and Information Professionals (LIS) need to deal with information available not only in the traditional printed resources, but also resources in digital media.

Conclusion

Use of OSS by the libraries of the new digital era has been in increase since the recent past. Its adoption by the libraries enable to

- lower the initial cost of its implementation;
- enjoy the users great freedom to control their own computers;
- encourage everyone to learn and rejects individual's thrust for knowledge;
- automate the library system;
- network among the libraries;
- design websites;
- develop digital library;
- increase reliability; and
- make the library accessible at any time and anywhere.

It is expected that in just near future, most of the libraries ,irrespective of their type, will be using OSS for use of their users having a very complex nature of information needs and for the benefit of all.

References:

- () Gopal, K.(2005) Intellectual Freedom in Digital Libraries. Delhi: Authorpress.
- () Open Library (<http://openlibrary.org/about>)
- () Sabarathnam ,D. S.(1995). Transforming libraries to support change and growth.In Dempsey, et,al. Networking and the future of libraries The Library Association: London.
- () Webbink, M. Understanding Open Source Software. Available at:www.groklaw.net/article.php