Open Access, Open Source Archives, and Open Libraries Initiatives for Universal Access to Knowledge and Information :An Overview of Indian Initiatives

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Abstract

The present paper describes about the universal access to knowledge and information in the network and digital environment. It highlights the Open Access Declaration, Open Access Movement in India and aboard, Open Source Software for establishing Institutional Repositories and Digital Libraries for open access. Besides this it also highlights the recommendations of the Working Groups of National Knowledge Commission for Libraries and Open Access and Open Access Educational Resources. Some of the national level digital library initiatives and institutional repositories have also been listed for the benefit of the professionals. Initiatives taken by the INFLIBNET Centre , Ahmedabad and IISc , Bangalore and other institutions for creating Digital Libraries using Dspace has also been described. The initiatives taken by the INFLIBNET Centre and IIT Bombay for initiating Electronic Theses and Dissertation Project has been described in brief.

Key Words : Open Access, Open Source Software (OSS), Open Standards , Open Source Archives / Self Archiving of Journals , Institutional Repositories, Digital Libraries

1. Introduction

Universal access to information and knowledge is the UNESCO's overall mandate to promote the free flow of information by word and by image and thus to place information and knowledge at the doorstep of communities. UNESCO strives to forge an enabling environment to facilitate and open up avenues for universal access to information and knowledge. Open Access to information and knowledge is an innovative mode of scholarly communication within the digital environment aimed at achievement of universal access to information and knowledge. While open access helps digital inclusion of citizens in developing countries by bringing within easy reach full-text contents of scholarly works, documentary heritage collections and development literature , the Digital Library remains a knowledge repositories of such citizens, indigenous people , communities and institutions. Open Access to knowledge is a model adopted by many International and Inter-Governmental organizing , such as World Summit on the Information Society (WSIS), for disseminating full-text contents to online communities (Josiah, 2008).

Among the third world countries, India is the most prominent partner in respect of its successful Open Access and Digital Library Initiatives in South Asia Sub-Region which is now in the forefront of the Open Access Movement within developing countries of the world. The institutional and policy frameworks in India also provide innovative ideas and solutions for increasing international visibility

and accessibility of scholarly literature and documentary heritage in this country. In the information society, free flow of information is a fundamental principle for bridging the knowledge gaps between privileged and under-privileged communities. Open access to information and knowledge is a key component in providing universal access to information and knowledge. Therefore , the open access movement is gaining momentum in developed countries where necessary information infrastructure has already been developed. The emerging economics amongst the developing countries are not far behind in building up necessary information infrastructure, essential for sustainable economic development. These emerging countries have limitations in bringing the digital divide within their societies which may be due to the co-existence of marginalized and privileged communities. With the availability of advanced ICTs and by building up necessary information infrastructure in developing countries like India which is regarded as the major stakeholder / contributor in providing open access literature on global basis. The open access contribution is almost equal to the flow of literature through subscription based channels (Das, 2008).

The traditional knowledge presently available amongst the indigenous people in folklore or other form is now being explored and documented under the auspices of National Library of India, and National Manuscript Mission Project of Department of Culture , Govt. of India. The digitization of century old documents, manuscripts, Government records and rare documents are being carried out in the different universities/ institutional libraries of India under National Manuscript Mission Programme to preserve and make them accessible through the library and information networks of digital archives over Internet. E-content is being produced by various Governmental agencies like UGC, CSIR, ICMR and various NGOs/ grass-root level civil society organizations.India is leader amongst the developing countries for Open Access movement and it has contributed a lot for upgrading the printed scholarly journals into open access electronic journals and establishing a number of open access repositories using free and open source software. Establishment of open courseware and cross archives search service are new areas of open access initiatives.

The library and information professionals are trying to establish Institutional Repositories (IRs) systems in local libraries using various open source software like Dspace, Greenstone and E-prints. The IR may be allowed to access over local campus wide network over Intranet and it may be opened to the outside world for dissemination of scholarly literature. The ETD (Electronic Theses and Dissertations) initiatives of INFLIBNET, Vidyanidhi, ETD@IISc, have been gaining importance and acceptance among the academic community. The research papers , conference papers, technical reports, presentations, e-prints, photographs, news clippings and electronic theses & dissertations are maintained by many other national level Institutions like IISc, IITs, IIMs, and Central Universities, OpenMED @NIC and Librarians' Digital Library are some of the examples of such initiatives.

2. Open Access Movement

Open access to scholarly information has been a hot topic for debate among librarians, scholars, and publishers over the last few years. Recent proposals by the National Institutes of Health (NIH) in

the United States (requiring for scholarly works that come out of NIH funded research to be made available via NIH's PubMed Central open access database), by the government in the United Kingdom (requiring that all UK government-funded research to be available via open access), and by others has expanded this debate. Various different, though similar, definitions of open access exist with the Budapest Open Access Initiative definition being the most widely used (Goodman 2004). Other definitions include the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, the Bethesda Statement on Open Access Publishing, and the Washington DC Principles for Free Access to Science. While there are multiple definitions and flavors of open access, open access basically calls for scholarly publications to be made freely available to libraries and end users.

Willinsky (2003) identified nine flavors of open access. The flavors are: 1) e-print archive (authors self-archive pre- or post-prints), 2) unqualified (immediate and full open access publication of a journal, 3) dual mode (both print subscription and open access versions of a journal are offered), 4) delayed open access (open access is available after a certain period of time), 5) author fee (authors pay a fee to support open access), 6) partial open access (some articles from a journal are available via open access), 7) per-capita (open access is made available to countries based on per-capita income), 8) abstract (open access available to table of contents/abstracts, and 9) co-op (institutional members support open access journals).

The growth of the open access movement is partially in response to the enormous costs of many scholarly journals. With traditional journal publication methods it is not uncommon for an institution to have to pay for an article twice. First they pay scholars to produce the work and then the institution's library pays to purchase the work back from the journal publisher. Anderson (2004) is correct that there is no such thing as free information and that there are costs involved in producing scholarly information. However, with the advent of new technologies and software programs, it is becoming increasingly less expensive to compile and distribute scholarly information. By using different funding methods and electronic delivery of journals, the costs can be absorbed by alternative means to subscription fees. One of the great benefits to open access is that libraries in smaller institutions or in economically disadvantaged areas around the world can have greater access to these scholarly resources.

Open access helps to ensure long-term access to scholarly articles. Unlike articles that are licensed in traditional article databases, libraries and others can create local copies and repositories of these resources. Libraries, by working together to make repositories of open access literature, can ensure continued access to these scholarly publications into the distant future.

2.1 Open Access Declarations / Statements

In order to popularise the Open Access Initiatives amongst the various stakeholders, some important declarations and statements have already been made during the past decade where the world's

leading research institutions representing from developed and developing countries have agreed upon the open access mandate. The United Nations supported World Summit on Information Society (WSIS) strongly supported open access movement to information and knowledge. Das (2008) has listed about some of the declarations/ statements which are enumerated below. Details may be accessed to by visiting the respective websites.

- ARIIC Open Access Statement (Australian Research Information Infrastructure Committee) [www.caul.edu.au/scholcomm/Open Access ARIIC statement.doc]
- Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities[http:// oa.mpg.de/open access-berlin/berlindeclaration.html]
- Bethesda Statement on Open Access [www.earham.edu/-peters/fos/Bethesda.htm]
- Budapest Open Access Initiatives [www.soros.org/open access/]
- ERCIM Statement on Open Access (European Research Consortium for Informatics and Mathematics)[www.ercim.org/publication/ercim_news/enw64/ercim-oa.html]
- IFLA Statement on Open Access to Scholarly Literature and Research Documentation (International Federation of Library Association and Institutions) [www.ifla.org/v/cdoc/ open-access04.html]
- National Knowledge Commission (NKC) Statement on Open Access [http:// knowledgecommission.gov.in/downloads/documents/wg_lib.PDF &
- http://www.knowledgecommission.gov.in/downloads/documents/wg_open_course.pdf]
- Organisation for Economic Co-operation and Development (OECD) Declaration on Access to Research Data from Public Funding [www.oecd.org/documents/ 0,2340,en_2649_34487_25998799_1_1_1_1,00.html]
- Washington DC Principles for Free Access to Science : A Statement from Not-for-Profit Publishers [www.dcprinciples.org/staement.htm]
- Welcome Trust Position Statement in support of open and unrestricted access to published research [www.welcome.ac.uk/doc_wtdc002766.html]
- World Summit on the Information Society WSIS Declaration of Principle and Plan of Action [www.itu.int/wsis/docs/genewa/official/dop.html & http://www.itu.int/wsis/docs/genewa/ official/poa.html]

3. Open Source Software (OSS) for Developing Institutional Repositories/ Self Archives/ Digital Libraries

Open Source Software production is a successful new innovation model which disapproves that only private ownership of Intellectual Property Rights fosters innovations. The emergence of Open Source Software

gained the attention of the research librarians and created new opportunities to the libraries to make optimum utilisation of the software (Sherikar and Jange, 2006) for database creation, housekeeping operations and automated library and information services

Open source software (OSS) 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.

Libraries can realize many advantages by using open source software. One of the most obvious advantages is the initial cost. Open source software is generally available for free (or at a minimal cost) and it is not necessary to purchase additional licenses for every computer that the program is to be installed on or for every person who is going to use the software. Open source software not only has a lower acquisition cost than proprietary software, it often has lower implementation and support costs as well.

Popular Open Source Software as listed by Sherikar and Jange (2006) is given below which are extensively used for library operations:

- Linux Kernel (http://kernel.org/);
- Apache Web Server (http://apache.org);
- Samba which supports Interoperability with Windows Clients (http://www.samba.org) ;
- Perl Programming/ Scripting Languages (http://www.perl.org/);
- MySQL (http://www.mysql.com (;
- PostgreSQL (http://www.postgresql.org);
- PHP , Hypertext Pre-processor used for web development (http://www.php.net/);
- Mozilla web browser and e-mail client (http://www.mozilla.org) ;
- OpenOffice.org (http://www.openoffice.org);
- Open Source BSD Operating System (http://www.openbsd.org);
- MyLibrary Open Source Portal Software
- KOHA Open Source Integrated Library System Software developed in New Zealand by Katipo Communications Ltd. and maintained by a team of volunteers from around the globe which is used by many library for Cataloguing, OPAC, Circulation and Acquisition System.

3.1 Open Source Software (OSS) / Digital Library Software 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:

3.2 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

3.3 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.

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

3.5 Ganesha Digital Library Software: GDL can be downloaded free of cost at http://gdl.itb.ac.id/download/

3.6 Libraonix Digital Library System: The Libronix DLS is available from the site http://www.logos.com/products.

4. Open Access Initiatives of Government of India

Many initiatives have been taken by the different Ministries of the Govt. of India and the higher educational institutions and universities for universal access to the outcome of the scholarly literature produced out of the public funding. In this direction the National Knowledge Commission has made marvelous recommendations on open access initiatives.

4.1 Recommendation of National Knowledge Commission for Digitization and Open Access

The National Knowledge Commission of India (NKC) which has been constituted by the Govt. of India on June 13, 2005 , is a high level Advisory Body to the Prime Minister of India , with a mandate to guide policy and direct reforms. The main objective of the NKC is to transform India into a vibrant knowledge based society. While advocating the digitization of rare documents and encouraging open access , the National Knowledge Commission (NKC) has made few important recommendations for open access of scholarly literature produced out of public funding.

4.2 Recommendations of Working Group of National Knowledge Commission on Open Access and Open Educational Resources

It encourage the concept of open access and recommended as " open access materials stimulates research and helps students ,teachers and researchers across the world. Therefore at a policy level , all research articles published by Indian authors receiving substantial government or public funding must be made available under Open Access and should be archived in the standard OA format at least n/her web site. As a next steps , a national academic OA Portal should be developed. The Government should allocate resources to increase the current digitization efforts of books and periodicals which are outside copyright protection. Separate funding should be allocated to develop a new high quality OCR software package so that old and new fonts in many different Indian languages can be converted into ISCI/ASCI code and OA portals and servers could be upgraded regularly. Appropriate financial resources should be earmarked for these endeavours. This will also facilitate machine translation of these valuable resources" (http://knowledge.commission.gov.in/downloads/documents/wg_open_course.PDF).

4.3 Recommendations of National Knowledge Commission Working Groups on Libraries

It also advocated for the digitization and Open Access and made recommendations as " To enable equitable and universal to knowledge resources , it is important to create more digital resources which can be shared. The concept of an "information commons", i.e., "resources shared by a

community of producers ad consumers in an open access environment" needs to be promoted New resources should be openly accessible and historical documents too, should be digitized ad made available.

The Working Group strongly recommends that peer -reviewed published research papers resulting from publicly funded research in India must be made available through open access channels , subject o copyright regulations. The group also recommends use of open standards and free and open source software.All pre-independence periodicals and newspapers in all Indian languages and in English must be digitized for access and preservation. To help preservation of digital resources , optimize their use and avoid duplication of effort: State -Level Archives form preservation of digitized materials must be set up; and Every State should establish a registry and archives of knowledge based digital resources , and make it accessible (http://knowledge.commission.gov.in/downloads/documents/wg_lib.PDF)".

5. Developing Digital Library for Open Access

India is rich in cultural heritage. In our country large volume documentary resources with national heritage importance are being destroyed due to lack of proper preservation strategies. Very rare documents and manuscripts are available at various religious bodies like temple, monasteries, private houses and public libraries which needs to be documented and preserved. Now -a- days digital library technologies are available to us on affordable cost. The open source digital library and open archive / open access software are available which are being utilized by various public and private agencies for preserving the rare cultural heritage. The Ministry of Culture, Government of India has established National Manuscript Mission to save the rare manuscripts and documents and kept in digitized form on national digital library portal of National Library of India for open access (Sinha et. al., 2006).

Some of the open access channels found in India are digital libraries, open access journals, institutional repositories; national level repositories open courseware, metadata harvesting services etc. Many of them are supported by government bodies or public institutions and some are supported by Non-Profit making organisations.In India there are many open archives / open access and digital library initiatives like Digital Library of India (DLI), Traditional Knowledge Digital Library (TKDL), Kalasampada Digital Library -Resources for Indian Cultural Heritage (DL-RICH), Mukatabodha Digital Library, Archives of Indian Labours, Self Archiving of Indian Journals by INSA, New Delhi and science journals published by NISCARE and Indian Academy of Sciences and Current Science Association (Das, 2008).

5.1 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 digitised 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 (Das, 2008 , and Sinha et. al , 2006 A) :

- Archives of Indian Labour: Integrated Labour History Research Programme (www.indialabourarchives.org) ;
- Child Trafficking Digital Library (www.childtrafficking.com) ;
- CSIR Explorations (http://csirexplrations.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
- In.arXive (Institute of Mathematical Science , Chennai) (http://in.arxive.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.kblibrray.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.razalibrary.com)
- Traditional Knowledge Digital Library (www.tdkl.res.in);
- Vidyanidhi (www.vidyanidhi.org.in); and
- Vigyan Prasar Digital Library (www.vigyanprasar.gov.in/digilib/)

6. Institutional Repository (IR) Initiatives for Open Access

An Institutional Repository (IR) is a digital collection or archives of universities intellectual output, which collect, organise, preserve and make accessible the knowledge generated by the universities and academic institutions to all. Universities and other institutions are producing digital information base of their Ph.D. theses & dissertations, articles, reports, conference proceedings, Audio-Video records using Open Source software and making them available to their end users It also makes possible to give access to quality scholarship produced by the concerned universities and institutions to others throughout the world over the Internet.

Premchand et. al., (2004) have highlighted in their paper the importance of Institutional repositories, Open Access Movement and use of OAI-PMH compliant software for creating institutional repositories. They also describes about the current development of Open Access Initiatives, Open Archive initiatives Protocol for Metadata Harvesting (OAI-PMH), which is an important infrastructure component for establishing institutional repositories. They also highlighted the role played by the INFLIBNET Centre for launching the project of Institutional Repositories where information will be kept in digital archives and access will be given to all free of cost.

Some of the National Level Digital Repositories and Institutional Repositories which have been developed in India are listed below (Das, 2008) :

6.1 National Level Digital Repositories

- Catalysis Database (www.eprints.iitm.ac.in);
- Knowledge Community on Children in India: Turning Knowledge into Action (www.kcci.org.in);
- Librarian's Digital Library (LDL) (http://isibang.ac.in/);
- OpenMED@NIC (http://openmed.nic.in/)
- Urban Health Gateway (http://uhrc.in/uhgateway/);

6.2 Institutional Repositories

- Digital Archives of National Institute of Technology , Rourkela) (http://dspace.nitrkl.ac.in/dspace/);
- Electronic Theses and Dissertations of Indian Institute of Science (RTD@IISc) (http://etd.ncsi.iisc.ernet.in);
- Open Access Repositories of IISc Research Publications(eprints@iisc);
- IDRC Digital Library (http://idli-bnc.irdc.ca/);
- Digital Repositories of IIT Bombay (http://dspace.library.iitb.ac.in/dspace/);
- Dspace at National Centre for Radio Physics (http://ncralib.ncra.tifr.res.in:8080/dspace/) ;
- Digital Repositories Service at National Institute of Oceanography (http://drs.nio.org/);
- ICFAI Business School Ahmedabad Digital Repositories (http://202.131.96.59:8080/dspace) ;
- Indian Institute of Astrophysics Repositories (http://prints.iiap.res.in);
- DSapce at National Chemical Laboratories (http://dsapce.ncl.res.in/dspace/) ;
- Dspace@INFLIBNET (http://dspace.inflibnet.ac.in) ;
- Dsapce at Thapar University (http://dsapce.tiet.ac.in.8080/dspace/);
- University of Delhi E-Print Archives (http://eprints.du.ac.in/);
- Raman Research Institute Digital Repositories (http://dspac.rri.res.in:8080/dspace/);
- E-Prints and ETD at Indian Institute of Technology (http://eprint.iid.ac.in/dspace/);
- Digital Repositories at Management Development Institute ,Gugaon (http://dspace.mdi.ac.in/dspace/);
- National Aerospace Laboratories Institutional Repositories (NAL Repositories) (http://nal-ir.nal.res.in); and
- One World South Asia Open Archives Initiativs (http://open.ekduniya.net/)

6.3 Open Courseware Initiatives (as listed by Das, 2008)

- CEC Learning Object Repositories (www.cec-lor.edu.in);
- E-Gyankosh : A National Digital Repositories (www.egynkosh.ac.in) ;
- Indo-German e-Gurukul on Digital Library (http://drtc.isibang.ac.in.mmb/);
- National Programme on Technology Enhanced Learning (NPEL) (www.nptel.iitm.ac.in);
- NCERT Online Textbooks (www.ncert.nic.in/textbook/testing/Index.htm); and
- UNESCO-SALIS e-Learning Portal (http://salisonline.org)

7. Self Archives and Open Access Journals

7.1 Definition of an Open Access Publication

An open access publication[1] is one that meets the following two conditions:

- The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual (for the lifetime of the applicable copyright) right of access to, and a icense to copy, use, distribute, perform and display the work publicly and to make and distribute derivative work in any digital medium for any reasonable purpose,subject to proper attribution of authorship[2], as well as the right to make small numbers of printed copies for their personal use.
- A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving (for the biomedical sciences,PubMed Central is such a repository).

Researchers and scholars need tools and assistance in order to deposit there refereed journal articles in open electronic archives, a practice commonly called self-archiving. This is to achieve the goal of lifting these research communications from obscurity. A model has been proposed to set up interoperable institutional digital research repositories. By self-archiving and by adopting the interoperability framework, these institutional repositories are accessible via the Internet.

The first endeavor to be successfully implemented in this area is e-Prints, an institutional repository of research output from the premier Indian research institute, the Indian Institute of Science, Bangalore (http://eprints.iisc.ernet.in/). National Centre maintains the archive for Science Information (NCSI) and it supports self-archiving by IISc's scientists of research publications in various file formats (PDF, MS-Word, HTML, etc.). This open access system facilitates seamless access, thereby increasing international visibility for this research. India, with its large R&D base of federally funded organizations, has a great potential for open access publishing (Rajshekar 2003).

7.2 Open Access Journals Initiatives by Scientific Societies / Scientific Publishers

A number of Indian publishers are taking advantage of the improved communication networks and technology to initiate an open access policy for their journals. These initiatives are happening as isolated efforts by both society and private publishers.

Bio Line International: (http://www.bioline.org.br/);

Indian Academy of Sciences Published Open Access Journals e-journals@INSA

Indian MEDLARS Centre: (http://indmed.nic.in/);

Indian National Science Academy (http://www.insaindia.org/);

IndianJounals.com hosted Open Access Journals (www.indianjournals.com);

ISI Kolkata : Sankhya (http://sankhya.isical.ac.in/).

Kamalraj enterprise publishes Open Access Journals (www.krepublishers.com/KRE-New-J/index.html ;

MEDIND@NIC : Bioedical Journals from India (http://medind.nic.in)

Medknow Publications hosted Open Access Jounals (www.mdknow.com/journals.asp)

NISCAIR (National Institute of Science Communication and Information Resources) Journals (http://www.niscom.res.in/ScienceCommunication),

8. 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 project. Under this project it is mandatory to submit full text and one page abstract for the Post-Graduate Students in electronic form (CD-ROM) besides the hard copies. Access is available to all IITs and other technical libraries on request.

9. Conclusion

These benefits of open access, open source archives and open standards are numerous. The benefits include lower costs, great accessibility, and better prospects for long-term preservation of scholarly works. Libraries should embrace all these concepts now and in the future. By supporting open access, open source, and open standards libraries not only can help ensure that their current and

future patrons will have easier and more comprehensive access to scholarly research, they will also be helping other libraries around the world, including those in disadvantaged areas, to have access to important scholarly research.

Acknowledgements

The author is thankful to all the LIS Professionals who have been associated themselves for the noble cause of making information available to all irrespective of their status and for advocating the concept of open access, open source archives and open libraries into the reality.

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