

Digital Library Environment in Indian Research Institutions

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Abstract

This paper mainly describes various aspects of digital library development and different types of reference services being provided in digital environment which include: (i) personalized services (ii) web-based reference and information services (iii) search engine services (iv) digital reference services for general public as well as academic community (v) co-operative digital library service. This paper highlights present scenario of digital library services in India. It outlines the initiatives taken by the UGC, India the INFLIBNET Centre, DELNET, IITs, RECs, National Research Organizations/ institutions of India in the digitization of libraries and information centers in order to provide digital library services. Further it suggests that in a developing country like India where resources are limited, funds are inadequate the library and information professionals should develop their skill and proficiency to meet the challenges of technological developments and changes emerging out of digital library services.

Introduction

The digital library is an electronic or virtual library where information is selected, acquired, processed, organized, stored and retrieved in digital form. The developed countries have already digitized their libraries. The developing countries are in the process of digitization of their libraries. The users of digital libraries are the universal users who should have facility to access to all created and acquired digital sources of information in the form of electronic text, image, map, sound, video and multimedia. Thus the digital libraries are attributed to electronic databases and capable of handling large data and servicing users effectively in resource sharing environment.

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Digital library infrastructure

A digital library has certain technological requirements such as:

- I. Locally developed database
- II. Local library system with adequate personal computers having LAN and CD-ROM Drives.
- III. Electronic mail service
- IV. Network connection to have access to other data bases
- V. Various functions to coordinate manage the entry and retrieve data.
- VI. Multimedia Kit
- VII. Well trained manpower
- VIII. Computer Hardware with Audio-Visuals, Video Conferencing Kit, Pentium Web Server, Laser Printer, Scanner, Barcode Scanner, Barcode Printer, Digital graphic printer and UPS.
- IX. Software and its accessories.

Digital Library Projects

Digital Library of India

The Indian Institute of Science (IISc), Carnegie Mellon University (CMU), the International Institute of Information Technology, Hyderabad (IIITH), and many other academic, religious, and government organizations in India, a total of more than twenty "Content Creation Centers," have become partners in the Digital Library of India (DLI). The DLI seeks to preserve Indian heritage that is contained in books, manuscripts, art, and music. Each centre brings its own unique collection. This digital library is also a test-bed for Indian language research. The DLI is a leader in worldwide efforts to make knowledge free. A pilot project to scan some 10,000 books was initiated at CMU and then followed up at IISc, IIITH, and other organizations. All the processes involved have been perfected. The vision is to preserve all the knowledge of the human race in digital form and make that content search-

able, independent of language and location, and to ensure that the cultural heritage of countries like India is not lost during the transition from paper to bits and bytes, as they were lost during a former transition of cultural content from palm leaves to paper.

So far, more than 289,000 books have been scanned, of which nearly 170,000 are in Indian languages. More than 84,000 books (25 million pages) are available on the DLI web site at the Indian Institute of science and more than 149,000 books (43 million pages) are available on the DLI web site at the International Institute of Information Technology. The link to other partner sites is also provided through a commonly accessible website.

Funding for the DLI comes from multiple sources. The Office of the Principal Scientific Advisor to the Government of India is funding the project at the Indian Institute of Science. The Ministry of Communication and Information Technology (MCIT) is funding the project at various DLI partner centers. The National Science Foundation (USA) is providing funding for scanners and software research and development through Carnegie Mellon University. The First Citizen of India, His Excellency Dr APJ Abdul Kalam, President, who himself is one of the contributors to this vision, has personally taken a keen interest in making the Rashtrapathi Bhavan one of the major centres of the DLI.

Access to e-journals: Indian scenario

University libraries

In the 21st century access to information and knowledge is a critical determinant of the success and sustain ability of a nation. It is a challenge to access the new information and communication technologies amidst the lack of basic infrastructure and facilities. According to a survey conducted by the University Grants Commission in India in the year 2001, 142 university libraries are equipped with computers and internet facilities and they are interlinked within the INFLIBNET. But the libraries having internet access do not all necessarily subscribe to electronic journals primarily due to enormous fees for access. The allocated yearly budget is utilized mainly to subscribe to the printed journals and to sustain the subscriptions without cutting down essential journals. Due to this, many uni-

versity libraries feel that the transformed electronic format is a burden for them and even if considered to be a necessary not a need they can satisfy probably a consortium model which facilitates the sharing of resources without requiring additional fees to access the electronic journals, will be an ideal solution, but is such a solution feasible? Will the publishers encourage such as a library friendly budget idea.

Electronic Theses and Dissertation Project of INFLIBNET Centre

INLIBNET hosts a bibliographic database 200,000 dissertations from about two hundred Indian universities going back to 1905. The Repository uses D-Space, which complies with the Open Archives Initiative (OAI) framework allowing publications to be easily indexed and searched by web search engines and other indexing services.

V. V. Giri National Labor Institute

The Archives of Indian Labour were created by the V.V. Giri National Labour Institute and the Association of Indian Labour Historians (AILH). The archive preserves documents, builds collections, and initiates research in labour history. The collections include documents from different organizations. Documents from labour movements are included, as well as personal accounts and memories of labour leaders and workers. The archive uses Greenstone, an open-source digital library system, to integrate text, audio, and video

Indian Institute of Astrophysics

The Indian Institute of Astrophysics has its origins in the Madras Observatory, which was created in the late 18th century. Today the Institute is a national research centre for physics and astronomy. Its repository includes dissertations from researchers associated with the Institute, as well as papers from the Bulletin of the Astronomical Society India beginning with volume 1 (1973), journal articles, and conference papers. Archival materials from the 18th, 19th, and 20th centuries have recently been added. These materials are manuscripts, photographs, annual reports, instruments and their descriptions. The repository uses D-Space.

Raman Research Institute

The Raman Research Institute Digital Reposi-

tory allows the Institute community to deposit pre-prints, post-prints, and other publications and organizes these publications for retrieval. It also contains the annual reports of Institute and newspaper clippings from its archives. The Repository uses D-Space.

National Chemical Laboratory

National Chemical Laboratory is an interdisciplinary research centre focusing on polymer science, organic chemistry, catalysis, materials chemistry, chemical engineering, biochemical sciences, and process development. It partners with industry, and some 400 graduate students are pursuing doctoral degrees. About 50 Ph.D. degrees are awarded each year. The institute has the second largest number of papers in chemical sciences (ca. 430), files the largest number of patents, both in India (60) and abroad (60) and produces the largest number of PhDs in chemical sciences in India. The repository uses D-Space. There are currently 500 theses, project reports, and journal articles available.

National Institute of Oceanography

The digital repository of the National Institute of Oceanography collects and preserves institutional publications (journal articles, conference proceedings, technical reports, theses, dissertations, etc). Some of the completed and ongoing projects are:

- Marine boundary layer characteristics during a cyclonic storm over the Bay of Bengal
- Variation of wave directional spread parameters along the Indian coast
- Study of Goa and its environment from space: A report on coastal sand dune ecosystems of Goa: Significance, uses and anthropogenic impacts
- The coastal regulation zone of Goa: Oceanographic, environmental and societal perspectives
- Marine pollution detection through biomarkers in marine bivalves. The repository uses D-Space.

Indian Institute of Technology, New Delhi.

Digital library initiatives began in 1998 with an upgrade to a faster Internet connection. The high-speed Internet connection led to a number of digitized collections. IITs receive grants from

government bodies such as AICTE (All India Council of Technical Education) and the Ministry of Human Resources Development and Management (MHRD) to develop digital libraries. Online courseware has been developed and older volumes of journals have been digitized, among other projects. More than 500 dissertations are available in the repository. The campus has facilities for submitting material to the repository. More than 25,000 pages of journals were scanned and are available on the Institute intranet.

Indian Institute of Technology, Kharagpur

The Central Library, IIT Kharagpur, created an electronic library in 1994, which is now called a digital library. Older documents have been digitized, and it has large number of electronic resources such as Ei-Tech index, Compendex, IEEE / IEE journals in full text, INSPEC, Current Contents, Chemical Abstracts, Biotechnology Abstracts, Agricultural Abstracts, Library and Information Science Abstracts, ASTM standards and ABI. The institutional repository collects, preserves, and disseminates research output. At present, access is restricted to the IIT Kharagpur campus LAN only and submission of documents to this repository is also limited to the IIT Kharagpur research community. The repository uses D-Space.

Indian Institute of Science, Bangalore

The Institute uses e-Prints, an institutional repository of research output. The archive is maintained by the National Center for Science Information (NCSI) and it supports self-archiving in various file formats (PDF, Word, html, etc.) Around 5,000 articles are available.

Indian Institute of Technology, Bombay

The repository has bibliographic information and abstract for dissertations beginning in 1965. The master's thesis database has bibliographic information and abstract from 1999 on. More than 3,000 full text theses and Dissertations are available in the ETD database. The repository uses Greenstone, open source software, which complies with the Open Archives Initiative (OAI) protocol.

Indian Institute of Management, Kozhikode

The IIM-K institutional repository uses GNU E-Prints software, which was developed at the

University of Southampton. The community can archive preprints, post prints, and other scholarly publications. Anyone can access the archive, but submission of documents is limited to the IIMK research community. At present around 200 full-text documents are available in the repository.

National Institute of Technology, Calicut

“Nalanda” was initiated in 1999 and is one of the largest digital libraries in the country. It serves the campus with research and other academic information in science, engineering, and technology. The software used was developed by the institute itself. Nalanda is accessible from anywhere on campus. The repository contains theses and dissertations, course materials, articles, and annual reports.

National Institute of Technology, Rourkela

Formerly known as Regional Engineering Col-

lege (REC), this is one of the premier institutions for technical education in the country. NIT is a joint undertaking of Government of India and Government of Orissa. This Institutional Repository uses D-Space. At present around 343 documents are available in the repository.

Librarian’s Digital Library

This repository is at the Documentation Research Training Centre, Indian Statistical Institute, Bangalore. It is aimed at librarians worldwide, and uses D-Space. It contains articles, theses and dissertations, presentations, multi-lingual documents, photographs, etc.

The INDEST-AICTE consortium also encourages open access through institutional repositories to its member institutions as given the table.

Table1: Open archives Initiatives in India

S.No	Name of the Institution/ organization	Name of the institutional repositories
1	Indian Institute of Science, Bangalore	e-prints @IISc
2	Indian Institute of technology, Bombay	Etd@ IIT Bomaby
3	Indian Institute of technology, Delhi	e- print &Etd@ IITDelhi
4	Indian Institute of Management, Kozhikode	Etd@IIM Kozhikode
5	Delhi University	DU E print Archive
6	NIT, Rourkella	D-space@netr
7	IIIT, Allahabad	GNU E prints
8	INDEST Consortium	http://www.eprints.iisc.ernet.in
9	National Centre for Radio Astrophysics, Pune	http://www.ncra.tifr.res.in
10	National Chemical Laboratory, Pune	http://dspace.ncl.res.in/dspace/index.jsp

Table 2: Initiative of Science Consortiums in India

S.No	Name of the consortium	Web site
1	FORSA	http:// www.iiap.res.in/library/forsa.html
2	VIC(Virtual Information Centre)	http:// www.vic-ikp.info
3	NISCAIR	http:// www.niscair.res.in
4	INDEST-AICTE	http:// www.incest.iitd.ac.in
5	IASB(Indian Academy of Science, Bangalore)	http:// www.webwire.com
6	NPTEL(National programe on Technology Enhanced learning)	http://nptel.iitm.ac.in
7	Open Access e-journals portal in India	www.openj.gate.com
8	UGC-INFONET	http://www.ugc.ac.in
9	HELINET	http://jgate-helinet.inforindia.co.in

Conclusion

Research Institutions are promoting digital libraries and sufficient funds providing form UGC, AICTE, NCTE ,CSIR and DST, They researchers keen reference from e-documents in relevant fields. In India UGC and INFLIBNET Centre have taken steps to develop a consortium where college, university and research libraries can join for subscription to on-line journals. Similarly procurement of e-reference sources on CDs can be made and on-line current awareness service of the content pages of the journals subscribed may be provided on the Intranet.

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