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## Digital Libraries : A Boon for Information Seekers

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### Abstract

*Now a days, people responsible for organization and dissemination of informations are steadily switching over from traditional means to electronic tools of documentation system. In this connection the developments in electronic technology, digital libraries have come in vogue to help and support the librarians and users. Digital libraries collect, store, organize and disseminate the information in digital format. This paper explains that how the digitization can help in providing accurate information timely and save time of users and space for data storage, i.e. the data and information specially required by the scientists and research scholars.*

**Keywords :** Digital Libraries

### **0. Introduction**

Rapid growth and emergence of new subjects in the research field especially in scientific fields have made it very difficult or rather impossible to provide the complete and latest information in least time. To satisfy 2<sup>nd</sup> and 5<sup>th</sup> laws of library science i.e. "Every reader his/her book" and "Save the time of reader"<sup>1</sup> is becoming a challenge to the librarians/Information scientists. Providing desired information to the clientele in least possible time is the main object of any library or information centre. But now a days it is a Herculean task to access the relevant information from the mountain of information. According to a survey "The total out put of the world information crosses 4 trillion pages in one year which is growing at a rate of 6 to 11% per year over the past decade"<sup>2</sup> Even in India about 60,000 books in various languages are published annually.

Such huge information sources not only create the problems of storage and maintenance but also become inaccessible. Remedy to overcome this problem is the electronic technology or the digitization of documents to store, maintain and quick retrieval of information.

Digitization is the conversion of an item from one format (usually print or analog) into digital and in this process electronic photograph is made of a physical object. An image of the physical object is captured using a scanner or digital camera and converted to digital format, that can be stored electrically and can be accessed via a computer.

Revolution in information and communication technologies has introduced new format i.e. digital format. Now a days digital database alongwith bibliographical data, even full text are easily accessible over networks and on CD ROMs. It provides a new and advanced way of generating, publishing and distributing digital information to a wider community within the shortest possible time. Digital libraries are logical extension and augmentation of physical libraries. Digital library is an electronic library, which can be accessed from widely distributed places in globe with large and diverse repository of electronic objects using computer networks<sup>3</sup>.

Donald Waters wrote that "Digital Libraries are organizations that provide the resources including the specialized staff, to select, structure, offer intellectual access to interpret, distribute, preserve the integrity

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of and ensure the persistence overtime of collections of digital works so that they are readily and economically available for use by a defined community or set of communities.”<sup>4</sup>

Digital library reduces the barrier of distance, timeliness, shared resources and content delivery. It can disseminate data to users without visit to library physically.

Digital libraries should have following elements:

1. Digital library is not a single entity.
2. Digital library requires technology to link the resources.
3. Linkage between Digital libraries and information services are transported to users.
4. Universal access to digital libraries must be a goal.
5. Digital library collection are not restricted to document surrogates but include digital artifacts that have not printed equivalent.

Digital library collection development is not at ease as acquiring and organizing print and non-print materials. The digital libraries came in changing large deposit of analogue data into searchable electronic document. Computer is capable of computing and having large disk storage space. The indexing of images for efficient searching, storage of images and browsing needs electronic engineers and computer scientists.

Computer’s ability to store and process vast amount of information and communication technology with its ability to transmit the information from one location to another covers to form “information technology” or “informatics”

The digital revolution employing network based technologies places access to remote resources into the hands of scientist and corporate users. Presently libraries can exploit the use of new digital text, imaging, video, audio, automatic indexing and knowledge based search and retrieval products innovations.

Application of IT enables libraries to participate in library networks and facilitate wider accessibility of information through internet, intranet, CD ROMs.

## **1. Selection Criteria for Digitization**

Following criteria can be adopted for digitization of documents :

- ✍ Value : Priority is given to high value documents. Its serves preventive preservation as well as security by reducing the handling of documents.
- ✍ Condition : Items which are not serviceable due to damage or fragility.
- ✍ Use : Original materials which have high frequency of demand or high retrieval cost.

## **2. Present Scenario in DRDE Library**

1. In DRDE a LAN computer of 75 nodes has been setup. LAN has following applications:
  - ✍ Online information access through internet on each node through proxy server.
  - ✍ E-mail facility inside and outside campus.

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- ✍ Library holding search facility (OPAC).
  - ✍ Books – Author wise, Title wise, Keyword wise alongwith its circulation status.
  - ✍ Periodical holdings - Year wise, Title wise, Subject wise, Current subscription list, Discontinue / continue status.
  - ✍ Micro documents holdings.
2. Procurement in CD format  
Chemical Abstracts, Current Content Life Sciences, Current Contents Physical/Chemical & Earth Sciences, Medline.
  3. Online Software - SciFinder  
A research tool that assists scientists and researchers in locating and processing information on wide variety of chemical and science related topics. It retrieves information contained in databases produced by Chemical Abstracts Services as well as the MEDLINE database from the National Library of Medicine. All records are in English.  
  
CA plus databases containing over 23 million documents from more than 9000 journals covering literature from 1907 to the present.  
  
The MEDLINE database covers biomedical literature from more than 3900 journals contains more than 13 million biomedical citations from 1958 to the present.
  4. Web based full text search.
  5. CD of some books & journals.
  6. Computerized circulation.
  7. Online Journals
    - ✍ Chemical Communication
    - ✍ Chemical Society Review
    - ✍ Current Science
    - ✍ Digit
    - ✍ FASEB Journal
    - ✍ Journal of Medical Microbiology
    - ✍ Microbiology Abstracts Sec.B
    - ✍ Organic & Biomolecular Chemistry
    - ✍ Pharmacological Reviews
    - ✍ Science
    - ✍ Toxicological Sciences
    - ✍ Virological & AIDS Abstracts
  8. All in house operations are computerized.

### 3. On-line Search : A Case Study

Scientist's interest was to search an article published in "Journal of Clinical Microbiology" March 1991. Particular issue of the journal was not available in DRDE library. The issue was searched on the Website <http://jcm.asm.org/> Online archival issues were available from Jan 1992 onwards only. Since the requirement was for the 1991 which was not available on the particular site of the journal. Hence it was difficult to access the information.

On searching the PubMed site i.e. [www.pubmedcentral.gov/](http://www.pubmedcentral.gov/), we found that the full text was available since its inception year i.e. 1975 Vol.1 and they provide its free access after 6 months of publication. On selecting the "Journal of Clinical Microbiology" Vol. 29 we could get from January to December 1991 and the article in March issue was obtained as full text.

In the above search we found that in the journal site was having full text from January 1998 onward while the earlier issues from January 1992 to December 1994 continued abstracts only and from January 1995 to December 1997 PDF and abstracts were available but the full texts have been covered by the other websites.

### 4. Future Plan

We are planning to develop digital library in following phases :

- Ist Phase : Acquiring materials in digital format.
- IIInd Phase : Digitization of reports, special collection related to protection against chemical, biological warfare.
- IIIrd Phase : Digitization of journals, theses and books available in DRDE library.

The place for exploitation of Internet by the Library and Information Centers are unlimited and endless. Internet provides a wealth of information to Library and Information Centers. It also provides free access to variety of information sources such as online e-books, e-journals both full text, abstracts and contents depending on the publisher's policy, e-news letters and so on.

### 5. Free Online Information Sources

The freely available online information sources which are identified by the author and compiled at the above mentioned URL, following are the important ones.

1. Electronic Books ([http://www.geocities.com/ghosh\\_tbd/inf3.html](http://www.geocities.com/ghosh_tbd/inf3.html))  
This provides link of some organizations and universities to providing free access to thousands of online e-books free of charges.
2. Gutenberg Project on electronic books online (<http://www.promo.net/pg>)  
This site is having browsing facility by Author and by Title. Author wise list of e-books is available at <http://www.promo.net/pg/authors.zip> and Title wise list of e-books is available at <http://www.promo.net/pg/titles.zip> and current list of e-books is available as GUTINDEXALL at the FTP site at the University of North Carolina <ftp://ibiblio.org/pub/docs/books/gutenberg/GUTINDEXALL>
3. The Online Books Page (<http://digital.library.upenn.edu/books/>)  
The Online Books Page is a website that facilitates access to books that are freely readable over the Internet. This site include the different sections like Books Online, News, Features, Archives.

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4. Banned Books Online (<http://digital.upenn.edu/books/banned-books.html>)
  5. This special exhibit of books have been the objects of censorship or censorship attempts.
  5. University of Virginia's E-Book Library (<http://etext.lib.virginia.edu/ebooks/ebooklist.html>)  
In this site 1,600 e-books are publicly available online.
  6. Online Electronic Free.Journals ([http://www.geocities.com/ghosh\\_tbd/jnl.html](http://www.geocities.com/ghosh_tbd/jnl.html))  
Near about 624 online electronic journals are identified and linked in the above mentioned URL. Out of 624 journals 351 journals are available in full text.
  7. Databases ([http://www.geocities.com/ghosh\\_tbd/dbase.html](http://www.geocities.com/ghosh_tbd/dbase.html))  
Near about 29 dabatases are available free of charge. Out of which following are the most important ones.
  8. AGRICOLA (Agriculture Online Access) (<http://www.nal.usda.gov/ag98>)  
It is maintained by the National Agricultural Library (NAL). It contains two parts i.e. (a) Online Public Access Catalogue (OPAC) for Books and (2) Journal articles, book chapters.
  9. UnCover Database (<http://uncweb.carl.org>)  
The UnCover service has now been integrated to Ingenta's <http://www.ingenta.co> full text delivery service. The contents and abstracts are available free of charges. It contains 12,087,668 articles and 26,529 publications.
  10. US Patent Full-Text and Full-Page Image Database
  11. National Library of Medicine Gateway (<http://gateway.nlm.gov/gw/cmd>)  
The current Gateway searches MEDLINE/are pubmed, OLDMEDLINE, LOCATOR plus, MEDLINEplus, DIRLINE, AIDS Meetings, Health Service research Meetings, Space Life sciences Meetings, and HSR Proj.
  12. Libraries-Virtual Libraries-Digital Libraries ([http://www.geocities.com/ghosh\\_tbd/lib.html](http://www.geocities.com/ghosh_tbd/lib.html))  
In this section reputed libraries all over the world, different digital libraries and virtual libraries are linked.
  13. Digital Library of Virginia Tech (Virginia Polytechnic Institute and State University) (<http://scholar.lib.vt.edu>)  
It provides (a) Scholarly Publishing Services including E-journals, Electronic theses & Dissertations, news, reports, survey database and Virginia Tech Publications and (b) Library Services and Archives including E-reserves, special collections, manuscripts, rare books, University archives and searching digital library and archives.
  14. Digital Library: University of California (<http://elib.cs.berkeley.edu>)  
It provides quick access of the collection, overview of the collection, image retrieval by image content, document image analysis and
  15. Virtual Libraries (<http://elib.cs.berkeley.edu>)  
This site contains the link of the virtual libraries on Agriculture, Business and Economics, computing, Communication and Media, Education, Engineering, Humanities, Information & Libraries, International Affairs, Law, Recreation, Regional Studies, Science and Society.<sup>5</sup>

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## 6. Problems of IT based information system

Some shortcomings or cons of digital library are as follows :

1. Paper based publications are more comfortable in reading in comfortable postures.
2. Digitization of printed matter is expensive and difficult to maintain. It will be a formidable task with the associated software, human skills and copyright problems.
3. Internet based publications have two main problems :
  - ✍ Lack of organization of information, so one has to spend several hours for exhaustive information searches. Internet may be compared to a large library without a catalogue having bulk unclassified random shelved documents.
  - ✍ A survey was published in the journal "Computers in library" in 1995 found that librarians usually take less time to provide information from library collection than internet. A paper published in "Communication of ACM" 1995 also advised "If you are in a hurry, go to library not to the internet"<sup>6</sup>

## 7. Digitization scenario in India

At present following major libraries have adopted or are in process of digitization:

1. All India Institute of Medical Science, New Delhi.
2. Archaeological Survey of India, New Delhi
3. Banaras Hindu University Library, Varanasi.
4. Central Secretariat Library, New Delhi.
5. Department of Ocean Development, Govt. of India.
6. Department of Space.
7. Geographical Survey of India.
8. Indian Agriculture Research Institute Library, New Delhi.
9. Indian Institute of Management Library, Kolkata.
10. Indian Institute of Science, Bangalore.
11. Indian Veterinary Research Institute Library, Izzatnagar.
12. Indira Gandhi Memorial Library, Hyderabad.
13. Ministry of Environment & Forest, Govt. of India.
14. MS University Library, Baroda.
15. National Archives, New Delhi.
16. National Dairy Research Institute Library, Karnal
17. National Gallery of Modern Art, New Delhi
18. National Informatics Centre
19. National Instt. Of Advanced Studies on Rare Manuscript Preservation Project, Survey of India.
20. National Library, Kolkata.
21. Publication Division (Min. of Information & Broadcasting), New Delhi
22. Rajasthan Tourism Development Corporation Ltd.,
23. Sahitya Academy, New Delhi

## 8. Conclusion

Application of IT enables libraries to participate in library networks and facilitate wider accessibility of information through digitization. The key to the success of digital library lies in proper utilization and accessibility to usable and stable systems.

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## 10. References

1. Ranganathan SR(1957), Five Laws of Library Science. Madras: Madras Library Association Publication Series 23 .
2. Dhake RPS, Arora K(1995), Electronic library – A myth or a Reality. Ann.Lib.Sci.Doc. 42(4): pp 152-59.
3. Goswami SK, Ghosh BK, Digital Library Environment- Indian context. XX IASLIC National Seminar, Patiala, India, 2002,\* pp 229-234.
4. Drake MA Ed., (2003), Encyclopaedia of Library and Information Science 2<sup>nd</sup> Edition, New York: Marcel Dekker Inc. pp 884.
5. Ghosh TB(2002). Freely Available Online Information Sources and their Impact 2002, on Libraries and Impact on Libraries and Information Centres. "Internet Engineering for Library and Information Centres" H.Anil Kumar et al Ed. Caliber 2002, Ahmedabad, INFLIBNET Centre,, pp 376-383.
6. Pandey AC et al (1999). Role of Computer Networks and Information Management. IASLIC xxvii All India Conference, AGRA , \*pp28-31 .
7. Chandra R et al . Electronic References Sources of Biomedical Literature.
8. "Modern Technologies for Biomedical Information Handling." Lazar Mathew, T. et al Ed., Delhi, INMAS, \*pp 85-90.

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