Digital Library: Definition and Scope

[1] Ashishkumar Jitendrabhai Gajjar, [2] Dr.Manubhai Arjanbhai Makwana
[1] Ph.D Scholar, [2] M.l.i.sc., GSLET, Ph.D
[1]Library and Information Science,
[1]Calorx Teachers' University, Ahmadabad, Gujarat, India.

Abstract
Digital libraries are systems which help the user with a reasonably large means of entry to an organized store of information and knowledge. Digital library is a global virtual library. Libraries which have information in a computer-friendly format or which have access to information in a digital format have reached great heights and therefore the traditional libraries were confronted with many problems so as to match the growing demands of the users. Recent updates in the information would have changed the role of the library in passing information to the users. With the number of users on the rise and their different needs have led the libraries to make use of new communication technology. This is the reason for the need to have a library and the trend to gather, organize, manage, protect and distribute information in digital form. This paper discusses the definition and concept of the digital library and gives information related to existing projects of digital libraries.

Key Words: Digital Library, E-Library, Virtual Library.

Introduction:

Digital libraries are systems which help the user with a reasonably large means of entry to an organized store of information and knowledge. Digital library is a global virtual library. It is a network of thousands of electronic libraries from the beginning of civilization, the intelligent ones have given in from all the directions in shape of print and non-print form to spread information for the user to explore in research and development. Many people have tried to create a name for a library without books. Libraries having information in a computer-friendly format are on the rise and therefore the traditional libraries were confronted with many problems so as to match the growing demands of the users. This is the reason for the need to have a library and the trend to gather, organize, manage, protect and distribute information in digital form.

The concept of Digital Library

The terms, which have been in trend at different times, includes the paperless library, virtual library, E-library, online library, desktop library, and polyglot library, a library without boundaries and in recent time digital libraries. The term Digital library in an overall way allows users to obtain sensible data from the storehouse of data and information.

The digital library is making the current libraries go through a change so as to organize and distribute information resources. A digital library is a distributed electronic collection that envelops virtually all disciplines of a human venture to serve the defined group.

Digital libraries are rational supplements to the existing ones. They expand and enlarge their physical equivalents by expanding the prevailing resources and services and allow for the blossoming of new prospects for information explosion and convalescence. Electronic library based on digitalized data is equivalent of the text substituting the paper records and thus having access to resources any time. In a very negligible time resources sharing, documents delivery services and data transmission is possible. Without confining to any particular geographical boundary, the information, images, graphics and the like can be transmitted in the least time and can be propagated in any of the digitized form through internet which are accessed by the network services provider and all the users who connect their PC's through the Digital collection services using Local Area Network (LAN) Technology to obtain a modified, genuine, distinguished information.

Digital Library: A Brief Expression

Clifford Lynch (1995) defined the digital library as a "System providing a community of users with coherent access to a large organized repository of information and knowledge. The digital library is not? Just one entity, but multiple sources are seamlessly integrated."

According to R. Smith, digital libraries are "Controlled collection of information bearing objects (IBOS) that are in digital form and that may be organized, accessed, evaluated and used by means of a heterogeneous and extensible set of distributed services that are supported by digital technology."

According to E.A. Fox. the digital library may be defined as the " New way of carrying out the function of libraries encompassing new types of information resources, new approaches to acquisition, new methods of storage and preservations, new

approaches to classification and cataloging intensive use of electronic system and networks and dramatic shifts in intellectual organizational and electronic practices. "

Attributes of digital library

The projects and architectures described earlier help to form a base on which we can deduce the symbolic list of important characteristics of a digital library. Neither It is not meant to be a comprehensive list neither does it specify the characteristics that a digital library should possess. Key features: - Typically a digital library supports the following features. • supplies access to a huge information bank • focuses on providing access to adequate information and not only surrogates or indexes • Support multimedia content • Network accessible Provide user-friendly interface • Use declarative representation of document (e.g. tagged small text) in addition or as against image, postscript, etc. forms • Unique referencing of digital objects • Enable link representation to local external object (hypertext) • clearly separate the digital library and the user interfaces by employing client-server architecture. • Support traditional library mission of collection development organization. Access and preservation. • Support advanced search and retrieval • Available for a very time 7 • Integrate personal group enterprise public digital library.

Technical issues in the development of digital libraries

Some of the major technological disputes and issues which have attracted the attention of people working in this area are: High band with computer network supporting performant multimedia document transfer • Open communication protocols (client-server, e.g. z39.50for IR) • Information access tools (browse, display and search tools) • Metadatabase (data based that describe and provide links to other databases/ Information sources • Electronic publishing tools (personal, institutional, publisher) • Data compression • Digital storage • Scanning and conversion technologies • Media integration technologies (multi-media) • Advanced retrieval, indexing, natural language processing, routing and filtering • Document description and representation standards (e.g. SGML) • Inter-operability (how do multiple digital libraries interact) • Privacy, authentication and security.

Some of the Exiting Digital library project

Several digital library projects have been undertaken for many years mainly in the USA and Europe. Chief among these are the NSF/ARPA/AASA funded project initiatives.

1. NSF/ARPA/NASA digital libraries project initiatives Funded through a joint initiative of the national science foundation (NSF), Department of Defense Advanced Research Project Agency (ARPA), and the National Aeronautics and Space Administration (NASA), U.S.A.
2. Information digital video library Located at Carnegie Mellon University.
3. Illinois Digital Library Project This is located at the University of Illinois
4. Alexandria Digital Library Project Located at University of California Santa Barbara.
5. University of Michigan Digital Library Project (U.M.D.L.).
6. University of Berkeley digital project.
7. University of California CD-ROM Information System This system provides online access to a CD-ROM.
8. CORE Project This project is being carried out at Comall
9. British Library
10. The Red Sage Digital Journal Library Project at the University of California, San Francisco (UCSF).

Services of Digital library

Once the traditional library undergoes changes and changes into a digital library, it is capable of providing the below-mentioned services.

E-mail. Is a service provided by the Internet and the Digital Library? • Three stages complete the delivery of an email. The first stage consists of the E-mail going from the user agent to the local server. User-agent uses SMTP client software and the local server uses SMTP server software. The second stage is when the E-mail is passed on by the local server, which now acts as the SMTP client, to the remote server, which is the SMTP (Simple mail transfer protocol) server in this stage. In the third stage, the remote user agent uses E-mail access protocol such as POP3 (Post Office Protocol) or IMAPS to access the mailbox and obtain the mail. • The first two stages use an SMTP protocol and the third uses E-mail Access protocol. • It is not a real-time system; since there is a possibility of some delay in receiving the message. There the mail can be seen by the receiver at any other time.

File Transfer Protocol (FTP) File Transfer Protocol (FTP) is the standard mechanism provided by TCP / IP for making a copy of a file from one host to another. • Transferring files from one computer to another is one of the simplest things to be carried out by a network or internetworking environment. • FTP differs from one other client-server application in that it established two connections between the hosts. • One connection is used for data transfer, the other for control information. • FTP uses two well-known TCP ports: port 21 is used for the control connections and port 20 is used for the data connection. • The FTP is client-server architecture • The client has three components user interface, client control process, and client data transfer. • The server has two components the server control process and the sender data transfer process.

Remote login • When users want to access an application programs utility located remote login. • The client-server programs come into use here at the planet (TELNET) • The users send the keystrokes to the Terminal deliver where the local operating system accepts the characters but does not intercepts them. • The characters are sent to the PLANET client, which transfer from the characters to a universal character set called network virtual Terminal character and deliver them to the local TCP/IP Stack.

World Wide Web. The World Wide Web is a storehouse of information which extends all over the world. The World Wide Web has a distinct composition of workability, movability and user-friendly characteristics that make it better than the other services provided by the Internet. Worldwide web in today's world is more of a client-server-service in which the client using a browser can make use of a service using the server. The service provided is spread over many locations called websites.

Automated Web Search. This is a technique in which a document can be searched. A system called search engine is used for the said purpose. The software helps for recovering the documents of particular information in speed by using broken logic operators and truncation of search terms. Google and Gopher are the most widely used search engines.

Importance of Digital Library

Implementation of I.T. atmosphere is an essential feature with respect to library information technology, by the combination of computer technology with communications, digital imaging, and full-motion video and sound can be a major help to improve education and thus improving skill for gaining full employment.

Speed. The user is able to retrieve information at a faster rate.

Accessing Power. A user is provided with the availability of information by a digital library. The user is also able to utilize the worldwide information through the digital library.

Supporting Power. Digitalization helps to support a broader spectrum of useful stuff. The ability to deal with a larger datasheet also rises.

Space power The Digital Library increases space power. It means that we are making a portable system for materials. Portability is directly proportional to technology. For example, compact disk, DVD system minimizes the larger data and stores it, thereby having no storage problem.

Online Reference Books. Educational software is designed and developed well by the expert group, is a boon to the user. The quality of material from the digitalized library is very high. This has been possible because of the advancement in computer hardware and software with whatever learning programs that were available since the 1900s. Lighting fast microprocessors, large memory, super quick high-resolution video display cards, a sophisticated soundboard that provides digitized audio and the storage medium the CD ROM which can hold data as 450 high-density diskettes, all this helps to provide for the voluminous encyclopedia and other materials. The coordination of audio, video and high-speed processing has led to the concept of multimedia. The online reference books available
make use of the new technologies which are quicker and more colorful animation, audio narrative and feedback, video clips and often the huge variety of activities in one program software publishers and developers are creating learning aids with a breakthrough.

Digital Library – Limitation

The cost of a digital library is too high for the initial stages compared to the traditional one • Skilled personnel are required working and maintenance of the system • Law effect - people secure their publications or material through copyrights. This poses a problem for the user when he tries to copy some matter for his own use. Other laws like cyber law also affect the digital library system. • Effect of Technology – Both hardware and software have advanced.. The digital library entirely depends on telecommunication and computer. As and when new technology comes into the market the digital system needs to be updated • Security problem – The most important of all is how to secure the data when the digital system is connected to the internet and prevent unauthorized access and the prevention of the information acquiring virus.

REFERENCE

Lynch, Clifford, and Garcia, Molina. Hector (ed). Inter-operability Scaling and The Digital libraries Research agenda, 12 Aug. 1995: A Report on the May 18-19 1995ITTA Digital Libraries Workshop. (http://www-diglib.stanford.edu/diglib/pub/repors/iita-dlw/main.html)

Mahapatra, M.and Ramesh, D.B. (ed). Information Technology Application in Libraries: A Textbook for beginners. Bhubaneswar: Repro print (P) Ltd, 2004. p.527

Krishnamurthy, M. SRELS Journal of Information Management, 2004. 41 (4), p. 317-326.

Malwad, N.M., et al.,(ed). Digital libraries. Dynamic storehouse of digitized information 15 Annual conventions and conference 18-20 January 1996. p 203-204.

Association for Computing Machinery (ACM), Communication of the ACM April 1995.

Mai wad, N.M., et al.,(ed). Digital libraries. Dynamic storehouse ° f digitized information 15 Annual conventions and conference 18-20 January 1996. p 195.
Malwad, N.M., et al.,(ed). Digital libraries. Dynamic storehouse of digitized information 15 Annual conventions and conference 18-20 January 1996. p 197.
Malwad, N.M., et al.,(ed). Digital libraries, a dynamic storehouse of digitized information 15 Annual conventions and conference 18-20 January 1996. p 198.
http://www.cnri.reston.va.us/home/dlib/august95/08 contents, HTML date.20.04.2003
Srivastava, Rochana and Saxena, Shalini. SRELS Journal of Information Management 2004. 41 (4) p. 327- 338.
Roy, Tennant. Digital Library. Library Journal. 1997.122(20) p.31-33
http://www.Fuzme.mtcs.cmu.edu/im/informediahtml dtd. 15.04.2003
http://www.grainger.uiuc.edu/dli dtd. 15.04.2003
http://www.alexandria.sdc.ucsb.edu/dtd.14.04.2003
http://www.sils.umich.edu/UMDL/Hompage.html dtd.18.04.2003
http://http.cs.berkeley.edu/~wilenskydtd.18.04.2003
http://cedr.lbl.gov/cdrom/doc/cdrom.html dtd.18.04.2003