RECENT ADVANCES IN LIBRARY AUTOMATION

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Digital Library Concept, Developments and Challenges

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INTRODUCTION

Today's modern as library acts an interface between the users and the large amount of information available in published and unpublished form. The present features attributed to it through various stages of his developments-starting from the age ·of information in clay tablets to the present storing devices like in CD-ROMs, DVDs etc. Digital Library is the name and shape of the professional efforts of library and information scientists articulated in the formation of a library that can be in the position to better serve the information need of the society. Many challenges came across its way of developments and many more are still continuing from within and outside of library profession.

DIGITAL LIBRARY: CONCEPT AND DEFINITIONS

In simple terms, if a library developed with the collection in digital version (in CD, DVDs web documents etc.) the processing and retrieving thorough of those materials through digital technologies (i.e. computers etc) storing in optical devices, and their dissemination in digital mode on-line through network, can be called as digital library. It never means total withdrawal of traditional documents from library and refilling the gap with digital ones, rather setting up of a separate section in library of digital collection to serve as a digital counterpart. There will be a vast population of user scattered to access easily and conveniently, the complete contents of thousands of repositories containing texts, images, sound recording, videos, maps scientific technology, as will as hypermedia combination of these elements.

The digital library is the widely accepted term describing the use of digital technologies to acquire, store, preserve and provide access to information and materials originally published in digital form or digitized from existing print, audio visual and other forms.

(a) Digital library is a system of distributed database most often in full text and multimedia accessible online on computer network. The important components of a digital library is a digital object' or information object which may be textual, audio, audio, video, image, numeric, computer programmes of multimedia composites of such components.

(b) Digital library are different from traditional. In digital library all the information and data presented in the form of digital way user are used the library resource through computer and network in digital form or electronic form.

(c) According to Ckifford Lynch "Digital libraries are systems providing users with coherent access to a very large, organized repository of information and knowledge."

(d) R.R. Larson defined Digital library as global virtual library the library of thousands of net worked electronics libraries.

(e) Journal of ASIS and communication of the ACM states: A digital library is an assemblage of digital computers, storage, and communication machinery together with the context and software needed to produce, emulate, and extend those services provided by conventional libraries based on paper and other materials means of collecting, cataloging, finding and disseminating information... A full-service digital library must accomplish all essential services of traditional libraries and also exploit the well known advantages of digital storage, searching and communication.

(f) Paul Kantor postulates that "Digital library is that set of global inter networked libraries" that includes the following criteria :

- A collection of texts, images, or data in digitized form
- A set of systems for indexing and navigating or retrieving in that collection
- One or more defined community of users.

(g) Christine Borgman states: We find that the term "digital library is used in two distinct senses. In general researchers view digital libraries as content collected on behalf of user communities, while practicing libraries view digital libraries as institution or services.

CHARACTERISTICS OF DL

The digital library is characterized as a new generation of the library development with the following features:

- Digital counterparts of traditional libraries.
- Accessible from outside of library.
- Quick and efficient action.
- Performs all functions of traditional library.

OBJECTIVES

1. To eliminate the barriers of space and time to access the library and use its materials. In Digital Libraries, access of information would be in digital form via communication channels.
2. To serve right information to right user at right time.
3. To dissemination information at user doorstep in 24×7 concept service.
4. To accommodate the space problems in case of libraries.
5. To save the time of both user and staff.
6. To store large number of texts, sound, videos etc.

7. To set platform for Virtual Library.
8. To increase users and user ship of library and to transform potential users into real users.
9. Too provide better environment to the library staff to work on.

NEED AND FUNCTIONS

The Information Explosion and evolution of Internet in the last quarter of the 20th century shaped the library in a different way provoking it to consider on the digital-shape documents, as well to deal with space crunch in library, dwindling budget, increasing information demand from users, and availability of new information technology. The technology of electronic transfer of information made electronic publishing, processing, delivery and storage of information including text and images are all feasible and operational.

The building of digital library needs to go through different stages of preparation:

i) Digitization : This is the process of converting paper and other previously acquired enormous archives in library into digital form. The fragile materials in library need to be given priority for digitization as that have lost their usability. At the time of digitization of these materials extra care should taken to prevent any damage to the original.

ii) Acquisition of Digital Collection- The Digital Library collection include e-book, e-journal, on-line journals, CD-ROM databases, DVD documents, full-text documents, multi-media documents, Internet documents, etc. These materials need to be procured in a library for development of a Digital Libraries.

iii) Access to External Sources- The materials not held in library can be acquired from outside library online through Internet by providing pointers to websites, other library collections or publishers.

iv) Metadata Creation- Metadata is the data about data, consists of information that characterizes data. Like library catalogue for book metadata are used to provide documentation for data products, particularly pinpointed information on the Internet. In a Digital Library in helps in preparing catalogue for presenting digital information to the public. Normally information provided in metadata are like author, title digital, publisher, copyright date, copyright owner digital format used, keywords, etc. for metadata description certain standard formats are used like MARC 21 and Dublin Core.

v) Technical Architecture –In order to Digital establish a Library a new technical architecture to accommodate digital materials, has to be set up. In other words, we can say the minimum required technologies for establishing a Digital Library. That may include the following components:

i. Hardware

1. High end server
2. CD/DVD server
3. CD/DVD writer
4. Web and FTP server

ii Softwere

1. DL Sofware- There are a few Digital Library Software are available in market for development and management of DLs, some of the open source software are:

    (a) Greenstone-produced from New Zealand

    (b) D-space-Developed by HP

2. Scanning Software –Some of the scanning software available in market are: Photo Library V3 ,Picasso, Optics

3. OCR software- The Optical Character Recognition software to convert printed characters into electronic ones that can be processed by computer. ABBYY Fine reader, Omni page, Text bridge, etc.

iii image file Storage Format-Image reduction is required as there would not be that much space to store scanned data, some ** formats are used to store images in reduced nanner are, TIFF,JPEG,JPG,PNG, and PDF.

iv Storage devices-CDs DVDs etc.

v High speed Local Area Network (LAN)

vi High speed Internet connectivity

vii Relational databases that support various digital formats

viii Full text search engines to index the digital resources/and to provide access to them.

ix Scanners –Flatbed scanners, Sheet fed scanners, Microfilm scanner, etc. can be used to scan the documents texts and pictures.

x Digital cameras –for capturing the sculptures and pictures

    1. High end camera –for high quality images

    2. Entry level camera- for low quality images

xi Resolution pixels- for adding clarity in the images photographs

xii Multimedia interfaces

xiii Other requirements- The Library staff should develop the following skills to manage the Digital Library.

    1. Library staff should be skillful in identifying, verifying and locating URL of the required electronic resources and other free databases.

    2. Librarian should design and develop library home page and providing necessary links with other electronic resources.

    3. Develop knowledge of HTML, XML programming language.

    4. Develop knowledge of search engine, searching, locating browsing, navigating, and retrieval mechanism of digital documents.

5. Learning techniques of searching and retrieval of text, images visualization and other multimedia objects

6. Conversion of print media into digital media

7. Knowledge of Optical Character Recognition technology

DIGITAL LIBRARY CHALLENGES

Developing digital libraries poses serious challenges. Challenges. Because of the unique nature of digital information, it is less fixed, easily copied, and remotely accessible by multiple users simultaneously. Listed below are some important issues and challenges related to the continued development and deployment of digital libraries:

(1) Digitization –Dealing with the enormous archives of previously published work now available in print-in relation to their digitization-is really a daunting task and also needs enough money, time, and expertise. It requires page-to-page conversion and digitization of the information into electronic format.

(2) Digitization Cost- Besides technical complexity involved in the process of digitization –cost estimation of each element in the entire process is another complex area. After digitization also, the cost for maintenance of those digital documents and related technologies is also involved in it.

(3) Building Digital Resources- Development of digital collection for a digital library is not as easy as in case of printed documents. Off line resources publication in CDs DVDs, etc. are not comprehensively included in bibliographies and catalogues. Online publication are to be accessed through Internet by expert library staff for the library users at appropriate time.

(4) Digital Document Preservation –Preservation of digital documents like hard disk, magnetic disk, floppy disk, optical

CD-ROM and DVD's raise different types of challenges. The storage media we are using to day obsolete tomorrow – like that proverbial "here today gone tomorrow" Digital preservation means the planning, resource allocation and application of preservation methods and technologies necessary to ensure accessibility, usability, durability and intellectual integrity of information contained therein. The biggest problem of preservation of digital documents is technological obsolescence- hardware and software get obsolete very soon. To some extent preservation of digital documents in library become possible with the help of certain preservation, strategies like technology preservation, refreshing, migration and reformatting emulation etc.

(5) Copyright and IPR Problem-The biggest advantage of digital document easy to copy-is the largest huddle in the making of Digital Library. As an institution, library can not allow to do multiple copy of the document and excerpt the contents of the document violating the Copyright and Intellectual Property Right laws of the land. Libraries have to develop mechanisms for managing copyright that may be authorized charging and/ or payment to the copyright holder. Alternatively the publishers of the digital documents may provide keys to the authorized users of their documents.

CONCLUSION

Any library with the available technology and affordable cost can start building Digital Library if librarian has strong determination and commitment. This is not a hoaxing environment that people think of rather a smooth process of operation. In the information age only the Digital Library can fulfill the information requirement of everybody. Alternatively, any library, if not having enough resources, can provide Digital Library services to its users by being member of other digital libraries.

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