Research Journal of Library Sciences
Vol. **1(1),** 20-23, March **(2013)** *Res. J. Library Sci.*

Review Paper

Digitization of Library in 21st Century-Digital Library

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Available online at: www.isca.in
Received 21st November 2012, revised 23rd February 2013, accepted 20th March 2013

Abstract

Information technology and networks are the major tools to shape our society in future. The application of information technology has the largest impact on library and librarianship. It has changed the way we perceive and disseminate information and has even threatened the traditional approaches to library and library professionals. The impact of such technologies (computer network, internet, hypermedia, multimedia, CD-ROM etc.) has led to a paperless society. The convergent of computational storage and networking technologies now have a wider impact on society. The computers can record any information/ document at high speed and disseminate information wherever required to the users. It is possible now to digitize and store information in the form of high quality graphics, network texts, color images, voice signals and video clips at a relatively affordable cost. The term "Digital Library" in a broad sense is a computerized system that allows obtaining a coherent means of access to an organized, electronically stored repository of information and data. It is a relatively new concept. The term digital library explains the nature of its collection. This term became familiar towards the end of the 20th century. Resources in digital library are electronic store and access of information. Access to digital library is therefore, not based on space or time.

Keywords: Automation, information process, software, University library.

Introduction

A digital library is a library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible via computers[1]. The digital content may be stored locally, or accessed remotely via computer networks. A digital library is a type of information retrieval system.

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The first use of the term *digital library* in print may have been in a 1988 report to the Corporation for National Research Initiatives[2]. The term *digital libraries* was first popularized by the NSF/DARPA/NASA Digital Libraries Initiative in 1994. These draw heavily on As We May Think by Vannevar Bush in 1945, which set out a vision not in terms of technology, but user experience[3]. The term *virtual library* was initially used interchangeably with *digital library,* but is now primarily used for libraries that are virtual in other senses (such as libraries which aggregate distributed content).

Definitions

Cleveland: "Digital library is a web based electronic storage and access environment for information stored in the digital format, either locally in a library, or in a group of networked libraries, or at a remote location."

Bernie Hurley: "Digital libraries are different from traditional library, in that, they are designed to support the creation, maintenance, management, access to, and preservation of digital content."

Witten and Bainbridge: "A digital library is an organized and focused collection of digital objects, including text, images, video and audio records, along with method for access and retrieval, and for selection, creation, organization, maintenance and sharing of the collection."

In summary, a Digital Library may be defined as "A collection of information in digital formats and accessible over a network/networks."

Characteristics of Digital Library

The important characteristics of digital libraries are as follows: i. Digital library is a digital object, ii. Digital library provides faster access to information, iii. Digital library enables easy

management of large amounts of data, iv. Digital library collections are fixed and permanent. v. Digital library support formal and informal learning procedures, vi. Digital library can be accessed by any user from any workplace.

Functions of Digital Library

The most important functions of digital libraries are: i. To provide friendly interface to users. ii. To avail network facilities. iii. To support library functions. iv. To improve the cost effectiveness of library operations. v. To enhance advanced search, access and retrieval of information. vi. To support in editing and publishing annotations and integration of information. vii. To digitize documents for preservation and for space saving.

Advantages

The advantages of digital libraries as a means of easily and rapidly accessing books, archives and images of various types are now widely recognized by commercial interests and public bodies alike[4].

Traditional libraries are limited by storage space; digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain it. As such, the cost of maintaining a digital library can be much lower than that of a traditional library. A physical library must spend large sums of money paying for staff, book maintenance, rent, and additional books. Digital libraries may reduce or, in some instances, do away with these fees. Both types of library require cataloguing input to allow users to locate and retrieve material. Digital libraries may be more willing to adopt innovations in technology providing users with improvements in electronic and audio book technology as well as presenting new forms of communication such as wikis and blogs.

No physical boundary: The user of a digital library need not to go to the library physically; people from all over the world can gain access to the same information, as long as an Internet connection is available.

Round the clock availability: a major advantage of digital libraries is that people can gain access 24/7 to the information.

Multiple accesses: The same resources can be used simultaneously by a number of institutions and patrons. This may not be the case for copyrighted material: a library may have a license for "lending out" only one copy at a time; this is achieved with a system of digital rights management where a resource can become inaccessible after expiration of the lending period or after the lender chooses to make it inaccessible (equivalent to returning the resource).

Information retrieval: The user is able to use any search term (word, phrase, title, name, and subject) to search the entire collection. Digital libraries can provide very user-friendly interfaces, giving clickable access to its resources.

Preservation and conservation: Digitization is not a long-term preservation solution for physical collections, but does succeed in providing access copies for materials that would otherwise fall to degradation from repeated use. Digitized collections and born-digital objects pose many preservation and conservation concerns that analog materials do not. Please see the following "Problems" section of this page for examples.

Space: Whereas traditional libraries are limited by storage space, digital libraries have the potential to store much more information; simply because digital information requires very little physical space to contain them and media storage technologies are more affordable than ever before.

Added value: Certain characteristics of objects, primarily the quality of images, may be improved. Digitization can enhance legibility and remove visible flaws such as stains and discoloration.

Easily accessible

Construction and organization

Digital Collections Selection Criteria: Digital Collections Selection Criteria are applied by organizations (typically libraries) creating a digital library which of their existing holdings and forth-coming acquisitions to digitize for inclusion. A strategy with defined selection priorities for digitization is critical, and should consider both preservation and access.

Factors to consider are: i. the value of materials; ii. the condition of materials; iii. use of materials; and iv. Material characteristics ensuring a high level of success.

For the Library of Congress, items of national interest were prime candidates both to improve access and reduce wear and tear on the physical copies[6].

Software

There are a number of software packages for use in general digital libraries, for notable ones see Digital library software. Institutional repository software, which focuses primarily on ingest, preservation and access of locally produced documents, particularly locally produced academic outputs, can be found in Institutional repository software[7].

Digitization

With the rise of information explosion libraries facing manpower and monetary constraints are able to acquire every

document published under one roof and thus evolve the concept of resource sharing and network. Automation has helped libraries in improving library activities and accelerates their working. It saves the effort, time and manpower of libraries. In an automated system the information can be altered and updated without the repetitive work involved in the manual system. With the development of computer, any information can be turned into sequences. So, any user can access into the sequence without any trouble and delay. It saves the time for the users, staffs and increases productivity and reliability. As a series of development the concept of digitization evolved in the field of libraries. The process of library culture is and shall be as follows – the traditional libraries shifted towards automated libraries; the automated ones towards electronic ones; the electronic ones towards digitization ones and ultimately to virtual libraries (libraries without walls).

In the past few years, procedures for digitizing books at high speed and comparatively low cost have improved considerably with the result that it is now possible to digitize millions of books per year. Google book-scanning project is also working with libraries to offer digitize books pushing forward on the digitize book realm[8].

Problems of digitization: i. Lake of definite and clear goals by the parent organizations puts the libraries in a fix; as a result the real purpose of digitalization application is being defeated. ii. Absence of adequate enthusiasm and attitude of library authority makes the situation difficult to automate the library in the right direction. iii. Inadequate fund provision for computerization of libraries is the main cause responsible for under-employment of digitalization. iv. Library professionals do not enjoy freedom to work as a result there is undue delay in modernization of libraries. v. Lake of adequate training facilities and absence of IT education in the state for the library professionals is one of the reasons that reflect such a poor state of digitalization in libraries. vi. Absence of right and appropriate technology and equipment for modernization of library suffers from the setback of digital application in libraries.

Organization: Steps in the organization of digital library include. i. Higher bandwidth computer networks, supported with efficient multimedia document transfer, ii. Open communication protocols (client-server, Z39.50 for information retrieval), iii. Information access tools (browsers, display and search tools), iv. Digital storage devices, scanning and conversion technologies, v. Media integration technology (multimedia), vi. Advanced retrieval, indexing, routing and filtering etc., vii. Document description and representation standards, viii. Inter-operability over the network, ix. Privacy, authentication and security of information, x. Data collection or capturing and integrating information, xi. Provision of value added services.

Challenges of digital library

Digital preservation: Digital preservation aims to ensure that digital media and information systems are still interpretable into the indefinite future. Each necessary component of this must be migrated, preserved or emulated. Typically lower levels of systems (floppy disks for example) are emulated, bit-streams (the actual files stored in the disks) are preserved and operating systems are emulated as a virtual machine[9].

Copyright and licensing: Digital libraries are hampered by copyright law because, unlike with traditional libraries, digital libraries do not have access to works from every time period. The republication of material on the web by libraries may require permission from rights holders, and there is a conflict of interest between libraries and the publishers who may wish to create online versions of their acquired content for commercial purposes[10].

Some digital libraries acquire a license to lend their resources. This may involve the restriction of lending out only one copy at a time for each license, and applying a system of digital rights management for this purpose. The Digital Millennium Copyright Act of 1998 was an act created in the United States to attempt to deal with the introduction of digital works. This Act incorporates two treaties from the year 1996.

Metadata Creation: In traditional libraries, the ability to find works of interest was directly related to how well they were catalogued. While cataloguing electronic works digitized from a library's existing holding may be as simple as copying or moving a record from the print to the electronic form, complex and born-digital works require substantially more effort. To handle the growing volume of electronic publications, new tools and technologies have to be designed to allow effective automated semantic classification and searching. While full text search can be used for some searches, there are many common catalog searches which cannot be performed using full text, including: i. finding texts which are translations of other texts, ii. linking texts published under pseudonyms to the real authors, iii. differentiating non-fiction from parody

Conclusion

The information and communication technology has changed the complexion of today's libraries on a large scale. In developing a digital library, librarians will have a hard task to do. They will need the help of technologies to understand better the possibilities being created by digital technologies, and technologists will again need the help of librarians to make the process a successful one. When planning a digital library many factors like management support, adequate financial resources, staff co-operation, standard format and security are to be maintained and adopted. Then there is no doubt that digitization will work well and promptly in any type of environment. Digitization in all aspects of life including libraries will save time, energy, manpower, space etc. Everybody in the society must be aware of the need of Digitization Science and Technology.

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