

THE IMPACT OF DIGITAL LIBRARIES IN INFORMATION DISSEMINATION

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ABSTRACT

Digital libraries are organizations that employ and display a variety of digital resources and internet opportunity that are of paramount importance in information assemblage and dissemination. This paper is a frantic attempt aimed at looking at the impact of Digital Libraries in information packages and dissemination. The paper identifies the advantages which include elimination of physical boundary, all time economy, multiple access information retrieval, preservation and conservation, space added value. It also discusses the challenges of digital libraries in information Technology. The future of digital library is highlighted and the paper concludes that digital libraries will enhance quality research work and improve the national economic, cultural and educational development.

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 by electronic means. The digital content may be stored locally, or accessed remotely via computer networks. A digital library is a type of information retrieval system.

Depending on a specific library, a user may be able to access magazine articles, books, papers, images, and videos.

The DELOS Digital Library Reference Model (2001) defines a digital library as: An organization, which might be virtual, that comprehensively collects, manages and preserves for the long term rich digital content and offers to its user communities specialized functionality on that content, of measurable quality and according to codified policies.

Waters (1998) describes digital library as less transparent as organized electronic form, available on the internet or on CD-ROM (Compact Disk Read-Only Memory). Depending on the specificity of a library, a user may be able to access magazine articles, books, papers, images, sound files and videos.

The digital library is a term used to refer, collectively, to all content areas and collections. It is a collection of documents.

Digital libraries are full-text databases that replicate, in digital media, many of the functions of traditional libraries. They tend to contain a purposefully selected collection of texts.

Digital library is an integrated set of services for capturing, cataloguing, storing, searching, protecting and retrieving information.

The first use of the term digital library in print was credited to the corporation for National Research Initiatives in 1998 and was first popularized by the Digital library initiative in 1994.

On the Internet, the use of a digital library is enhanced by a broadband connection such as cable mode on or DSL. Digital-up connections can be used to access plain text documents and some documents containing images, but for complex files and those with animated video content. A downstream data speed of at least several hundred kilobits per second can make the users experience less tedious as well as more informative. Internet-based digital libraries can be updated on a daily basis. This is one of the greatest assets of this emerging technology.

Searching

Most digital libraries provide a search interface which allows resources to be accessed and retried. These resources are typically deep web (or invisible web resource since they frequently cannot be located by search engine crawlers.

Some digital libraries create special pages or sitemaps to allow search engines to find all their resources. Digital libraries frequently use the open archives initiative protocol for metadata harvesting (OAI – PHM) to expose their metadata to their other digital libraries, and search engines like Gospel Scholar, Yahoo scirus and also use OAI – PHM to find deep web resources.

There are two general strategies for searching a federation of digital libraries.

- Distributed searching, and
- Searching previously harvested metadata.

Distributed Searching typically involves a client sending multiple search requests in parallel to a number of servers in the federation. The results are gathered, duplicates are eliminated, and the remaining items are sorted and presented back to the client. Protocols like 23950 are frequently used in distributed searching. A benefit to this approach is that the resource – intensive tasks of indexing and storage are left to the respective servers in the federation. A drawback to this approach is that the search mechanism is limited by the different indexing and ranking capabilities of each database, making it difficult to assemble a combine result consisting of the most relevant found items.

Searching over previously harvested metadata involves searching a locally stored index of information that has previously been collected from the libraries in the federation. When a search is performed, the search mechanism does not need to make connections with the digital libraries it is searching – it already has a local representation of the information. This approach requires the creation of an indexing and harvesting mechanism which operates regularly, connecting to all the digital libraries and querying the whole collection in order to discover new and updated resources. OAI – PMH is frequently used by digital libraries for allowing metadata to be harvested. A benefit to this approach is that the search mechanism has full control over indexing and ranking algorithms, possibly allowing more consistent results.

A drawback is that harvesting and indexing systems are more resources intensive and therefore expensive.

Digitization

In the past few years, procedures of digitizing books at high speed with comparatively low cost have improved considerably with the result that it is now possible to plan the digitalization of millions of books per year for creating digital libraries.

MC Quail (200) identifies the process of digitization having immense significance to the computing ideals as it "allows information of all kinds in all formats to be carried with the same efficiency".

Wikipedia identifies digitization as the representation of an object, image, sound, document or a signal (usually an analog signal) by a discrete set of its points or samples. The result is called digital representation or, more specially, a digital image, for the object, and digital form, for the signal. Digitizing means capturing an analog signal in digital form.

The term digitization is often used when diverse forms of information, such as text, sound, image or voice, are converted into a single binary code.

Digitization is the integration of digital technologies into everyday life. Modern Cameras, television, phones and computers are all examples of digital technology.

Digital systems can more easily represent symbols, such as alphanumeric characteristics that represent data, than the analog system.

Digital technology has led to a process known as Convergence. Convergences are the merging of all types of information into one common digital form.

Converting all electrical impulses to digital has led to digitization, as digital

technology is used more and more in everyday life.

The computer is one of the biggest factors contributing to digitization.

Digitization allows people to have access to information instantly. Moreover, it presents opportunities that were unheard of in the past. People from various countries can communicate instantly online or over the telephone. Digitization serves many practical purposes, such as aiding law enforcement in finding and convicting criminals.

Digital Library Software

These are a number of software packages for use in general digital libraries; example is the 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's.

Advantages of Digital Library

The advantages of digital libraries as a means of easily and rapidly accessing books, archives and image of various types are now widely recognized by commercial interest and public bodies alike.

Waters (1998) identified that digital libraries are organizations that provide resources; they employ and display a variety of resources. Digital libraries are dependent almost exclusively on computer and electronic – network systems and systems-engineering skills, rather than the skills of traditional catalogers and reference libraries.

Traditional libraries are limited by strange 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 is much lower than that of a traditional library.

A traditional library must spend large sums of money paying for staff, book maintenance, rent, and additional books. Digital libraries may be more willing to adopt innovations in technology by providing users with improvements in electronic and audio/look technology as well as presenting new forms of communication such as Wikis and Blog; Conventional Libraries may consider that providing online access to their OPAC catalogue is sufficient. An important advantage to digital conversion is increased accessibility to users. They also increase availability to individuals who may not be traditional patrons of a library, due to geographic location or organization affiliation. In addition to the above comparative advantages the following will further illustrate the impact of digital library in information dissemination.

- **Elimination of physical boundary:** The users of a digital library need not to go a fixed location to access information; people from all over the world can gain access to the same information, as long as an internet connection is available.
- **All time availability:** A major advantage of digital libraries is that people can gain access to the information at any time from anywhere.
- **Multiple accesses:** The same resources can be used simultaneously by a number of institutions and patrons. This may not be the case for copyrighted materials: 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 resources can become inaccessible after expiration of the lending period.

- **Information retrieval:** The user is able to use any search term (word), phrase, title, name, subject to search the entire collection. Digital libraries can provide user-friendly interfaces, giving clickable access to its resources.
- **Preservation and conservation:** Digitalization 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.
- **Space:** whereas traditional libraries are limited by storage space, digital libraries have the potential to store much more information; simple because digital information requires very 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. Digitalization can enhance legibility and remove visible flaws such as stains and discoloration.

Challenges

The following are some of the challenges of digital library in information packaging and dissemination. These include digital presentation, copyright and licensing as well metadata creation.

Digital Presentation

Digital presentation aims to ensure that digital media and information systems

are still interpretable into the indefinite future. Typically lower levels of systems floppy disks for example are emulated, bit-streams (the actual files stored in the disk) are preserved and operating systems are emulated as a virtual machine.

Copyright and Licensing

Some people have complained that digital libraries are hampered by copyright law, because works cannot be shared over different periods of time in the manner of a traditional library. The reproduction of materials on the Web by libraries may require permission from right holders, and there could be a conflict of interest between the libraries and publishers who may wish to create online versions of their acquired content for commercial purposes.

There is a dilution of responsibility that occurs as a result of the spread-out nature of digital resources. Complex intellectual property matters may become involved since copy-right authority on digitalized material is not always owned by a library. The content is, in many cases, public domain or self-generated content only. Some digital libraries, such as project Gutenberg, Digitize out-of-copyright works and makes them freely available to the public.

The Fair Use Provision (17USC & 107) under copyright law provides specific guidelines under which circumstances libraries are allowed to copy digital resources. The four factors that constitute fair use are purpose of use, nature of the work, market impact, and amount or substantiality used.

Some digital libraries acquire a license to "lend out" 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.

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 moving a record for the print to the electronic item, with complex and born-digital works requiring substantially more effort.

To handle the growing volume of electronic publications, new tools and technologies have to be designed to allow for effective automated semantic classification and searching.

The Future

Large scale digitalization projects are underway at Google, the Million Book Project, and the Internet Archive, with continued improvements in book handling and presentation technologies such as optical character recognition and e-books, and development of alternative depositories and business model, digital libraries are rapidly growing in popularity as demonstrated by Google, Yahoo and MSN's efforts. Just as libraries have ventured into audio and video collections, so have digital libraries such as the internet archive.

It has been proposed that the future of libraries and of information is digital, the world's total yearly production of print, film, optical and magnetic content would require roughly 1.5 billion gigabytes to storage as has been estimated.

Conclusion

Technological development, particularly in the area of network information has proceeded at a rapid rate and has

inspired products and services that libraries find attractive to their services. However, the provision of Digital Libraries is very important and useful to users as it will provide or enhance access to information both internally and externally. It is useful for quality research work towards national economic development.

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