

Role of Digital Libraries in the Present Scenario

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Abstract

Digital libraries are quite new- about 20 years of age. At the same time, there is no doubt in denying the fact that they have been growing at a rapid speed. Digital libraries store, preserve, distribute and protect contents in different formats as well as allow interaction between the user and the contents. These digital libraries always aim to present both graphically and overtime. By using digital mode, they can work internationally known, enhancing referencing and citations. The present work analyses some of the important aspects of digital libraries that make them suitable tools to support higher education.

Paper

A **digital library** is a special library with a focused collection of digital objects that can include text, visual material, audio material, video material, stored as electronic media formats (as opposed to print, microform, or other media), along with means for organizing, storing, and retrieving the files and media contained in the library collection. Digital libraries can vary immensely in size and scope, and can be maintained by individuals, organizations, or affiliated with established physical library buildings or institutions, or with academic institutions. The digital content may be stored locally, or accessed remotely via

computer networks. An electronic library is a type of information retrieval system.

The term *digital libraries* was first popularized by the NSF/DARPA/NASA Digital Libraries Initiative in 1994. These draw heavily on Vannevar Bush's essay *As We May Think* (1945), which set out a vision not in terms of technology, but user experience. 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). In the early days of digital libraries, there was discussion of the similarities and differences among the terms *digital*, *virtual*, and *electronic*. Many digital libraries offer recommender systems to reduce information overload and help their users discovering relevant literature. Some examples of digital libraries offering recommender systems are IEEE Xplore, Europeana, and GESIS Sowiport. The recommender systems work mostly based on content-based filtering but also other approaches are used such as collaborative filtering and citation-based recommendations.

Typically, digital libraries develop and maintain their own recommender systems based on existing search and recommendation frameworks such as Apache Lucene or Apache Mahout.

However, there are also some recommendations-as-a-service providers specializing in offering a recommender system for digital libraries as a service.

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.

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 cataloging 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; conventional libraries may consider that providing online access to their OP AC catalog 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 organizational affiliation.

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 access: 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, subject) to search the entire collection. Digital libraries can provide very user-friendly interfaces, giving click able 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 informations, 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.

Digital libraries are hampered by copyright law because, unlike with traditional printed works, the laws of digital copyright are still being formed. 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. In 2010, it was estimated that twenty-three percent of books in existence were created before 1923 and thus out of copyright. Of those printed after this date, only five percent were still in print as of 2010. Thus, approximately seventy-two percent of books were not available to the public.

There is a dilution of responsibility that occurs as a result of the distributed nature of digital resources. Complex intellectual property matters may become involved since digital 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, work to digitize out-of-copyright works and make them freely available to the public. An estimate of the number of distinct books still existent in library catalogues from 2000 BC to 1960, has been made.

The Fair Use Provisions (17 USC § 107) under the Copyright Act of 1976 provide specific guidelines under which circumstances libraries are allowed to copy digital resources. Four factors that constitute fair use are "Purpose of the use, Nature of the work, Amount or substantiality used and Market impact." 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 (see also above).

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. In this regard Thomas.H.Lapter says: "Only where the meaning and content of digital media and information systems are well understood is migration possible, as is the case for office documents."¹ However, at least one organization, the Wider Net Project, has created an offline digital library, the e Granary, by reproducing materials on a 4 TB hard drive. Instead of a bit-stream environment, the digital library contains a built-in proxy server and search engine so the digital materials can be accessed using an Internet browser.^[26] Also, the materials are not preserved for the future. The e Granary is intended for use in places or situations where Internet connectivity is very slow, non-existent, unreliable, unsuitable or too expensive. But, it also poses for the risk of online hazards which could be

disastrous as the physical natural calamities. Effective ways of prevention like that of maintaining a backup system are hence very much essential.

Copyright and licensing

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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. It criminalizes the attempt to circumvent measures which limit access to copyrighted materials. It also criminalizes the act of attempting to circumvent access control. This act provides an exemption for nonprofit libraries and archives which allows up to three copies to be made, one of which may be digital. This may not be made public or distributed on the web, however. Further, it allows libraries and archives to copy a work if its format becomes obsolete.

This is what Van Le Christopher says when he asserts "Copyright issues persist. As such, proposals have been put forward suggesting that digital libraries be exempt from copyright law. Although this would be very beneficial to the public, it may have a negative economic effect and authors may be less inclined"³

In traditional libraries, the ability to find works of interest is directly related to how well they were cataloged. While cataloging 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 items, there are many common catalog searches which cannot be performed using full text, including:

References

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3. Van Le, Christopher, "Opening the Doors to Digital Libraries: A Proposal to Exempt Digital Libraries From the Copyright Act," *Case Western Reserve Journal of Law, Technology & The Internet*, 1.2 (Spring 2010),145