DIGITAL LIBRARIES IN ELECTRONIC ENVIRONMENT OF THE NATION:

AN OVERVIEW

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Abstract

This paper discusses the new activities, methods and technology used in digitization and formation of digital libraries. It set out some key points involved and detailed plans required in the process, offers pieces of advice and guidance for the practicing librarians and information scientists. Digital Libraries are being created today for diverse communities and in different fields for e.g. education, science, culture, development, health, governance and so on. With the availability of several free digital library software packages at the recent time, the creation and sharing of information through the digital library collections has become an attractive and feasible proposition for library and information professionals around the world. The paper ends with a call to integrate digitization into the plans and policies of any institution to maximize its effectiveness.

Keywords: Digital Libraries, OPAC, INFLIBNET, IGCA, TIFR,IGNCA,

1.0. Introduction

Digital Libraries are being created today for diverse communities and in different fields e.g., education, Science, Culture, development, health, governance and so on. With the availability of several free digital Library software packages at the recent time, the creation and sharing of information through the digital library collections has become an attractive and feasible proposition for library and information professionals around the world. Library automation has helped to provide easy access to collections through the use of computerized library catalogue such as On-line Public Access Catalog (OPAC). Digital libraries differ significantly from the traditional libraries because they allow users to gain an on-line access.
to and work with the electronic versions of full text documents and their associated images. Many digital libraries also provide an access to other multi-media content like audio and video.

1.1 Digital Libraries

A digital library is a collection of documents in organized electronic form, available on the Internet or on CD-ROM (compact-disk read-only memory) disks. Depending on the specific library, a user may be able to access magazine articles, books, papers, images, sound files, and videos. On the Internet, the use of a digital library is enhanced by a broadband connection such as cable modem or DSL. Dial-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 (Kbps) can make the user's 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. On CD-ROM, the amount of data is limited to several hundred megabytes (MB) per disk, but access is generally much faster than on an Internet connection. Several CD-ROMs can be combined in a set, and because the disks are small, a large library can be accommodated in a reasonable physical space. The main limitation of CD-ROM is the fact that updating cannot be done as frequently as on the Internet. In addition, producing and distributing CD-ROMs involves overhead costs that are largely nonexistent in Internet-based libraries. Some institutions have begun the task of converting classic books to electronic format for distribution on the Internet. Some files can be viewed directly in HTML format; others can be downloaded in PDF format and printed.

1.2. Benefits of Digital Libraries

i. Improved access: Digital libraries are typically accessed through the Internet and Compact Disc-Read Only Memory (CD-ROM). They can be accessed virtually from anywhere and at anytime. They are not tied to the physical location and operating hours of traditional library.

ii. Wider access: A digital library can meet simultaneous access requests for a document by easily creating multiple instances or copies of the requested document. It can also meet the requirements of a larger population of users easily.
iii. Improved information sharing: Through the appropriate metadata and information exchange protocols, the digital libraries can easily share information with other similar digital libraries and provide enhanced access to users.

iv. Improved preservation: Since the electronic documents are not prone to physical wear and tear, their exact copies can easily be made, the digital libraries facilitate preservation of special and rare documents and artifacts by providing access to digital versions of these entities.

1.3 Functional Components of Digital Library
Most digital libraries share common functional components. These include:

i. Selection and acquisition: The typical processes covered in this component include the selection of documents to be added, the subscription of database and the digitization or conversion of documents to an appropriate digital form.

ii. Organization: The key process involved in this component is the assignment of the metadata (bibliographic information) to each document being added to the collection.

iii. Indexing and storage: This component carries out the indexing and storage of documents and metadata for efficient search and retrieval.

iv. Search and retrieval: This is the digital library interface used by the end users to browse, search, retrieve and view the contents of the digital library. It is typically presented to the users as Hyper-Text Mark-up Language (HTML) page. These mentioned components are the important characteristic of digital library, which differ it from others collections of online information.

1.4 Why digitization?
There are three main needs for digitization; two or all the three of them may apply to your digital library project.

- To preserve the Documents: That is to allow people to read older or unique documents without damage to the originals.

- To make the documents more accessible: This is to serve the existing users better;
e.g. to allow the users to search the full text of the documents or to serve more users than envisaged in remote locations, example, more than one person at a time.

- To reuse the documents. It means to convert documents into different formats; for example to use images in a slideshow and to adopt the content for a different purpose.

- Digitizing documents can take a lot of time, effort and money. Smith (2001), narrated the following reasons that should be considered before going into digitization.

1.5 Reasons to be considered

i. Is it worth digitizing? : Do the documents contain the information that is valuable enough to warrant the costs of digitization? There is no point digitizing the documents that are already out of date, no matter how bulky they, but it is worthy to digitize the old, unique documents that can be easily damaged so that the people can be allowed to use them without handling the originals. These unique documents are sometimes called the heritage documents.

ii. Who is your audience? : If there are only few users, or may be there are large numbers of potential users, but they do not have computers to access the digital library, they can be served by sending them photocopies. It may be difficult to judge the demand for documents. It is, however, wise to get other people's opinions. Ask the potential users of the documents what they see as their priorities.

iii. Do the documents form a collection? : It is important to verify if the documents form a collection. In fact, the documents in a digital library should have something in common like a common subject focus

iv. How easy is it to digitize documents? : Another important factor to take into account is how easy it will be to digitize the documents. Not all the hard copy documents can be easily converted to electronic format. There is the need to check the physical characteristics of the documents to understand how easy it will be to digitize them. If you have a lot of documents that are hard to digitize, you might choose not to include them in the digital library. It is advisable to put them in the image files, rather than in the searchable text document.
1.6 Implementation:

Planning is followed by implementation. That is getting down to the actual steps required to set up the collection. This means that there must be a need to obtain the management approval for the plan and the required resources before proceeding with the implementation. There is a need to identify and designate a project manager to lead the implementation of the digital project. For large digital library projects, it is essential to have a full time project manager for the project period. The Implementation of a digital library involves the following activities.

1. Establish the project team
2. Set up the Information Technology (IT) infrastructure
3. Procure and install digital library software
4. Finalize policies and specifications
5. Complete arrangement of workflow for digitization
6. Setup the digital library collection site in case of Internet distribution
7. Obtain copyright permissions and

1.7 Different stages in digitizing documents

- Registering:
- Scanning documents:
- Optical Character Recognition (OCR):
- Proofreading:
- Reformatting:
- Final Version:

1.8 Technology infrastructure and personnel:

Several resources are required for the creation of digital library collections, their maintenance and provision of services. The two major resources needed are technology infrastructure and personnel.
a. Infrastructure

Access to a digital library collection can be provided on-line or off-line. The On-line access today typically means that the client uses a web browser on a desktop computer or laptop and access the collection by connecting to the digital library website over the Internet.

The On-line access requires a connection to the Internet or to an internal network (Intranet). In Off-line access, the digital library is not accessible over a network. One way of providing an Off-line access to a digital library collection is to receive and respond to the user queries over e-mail. Another way is to distribute the digital library collection on a CD-ROM. A digital library project would typically require the following equipment: Server computer, Desktop computers, Digitization equipment, Network connectivity and other equipment.

b. Personnel:

Personnel are most important digital library’s resource, not only during its initial creation and set up, but also for its operation, maintenance and provision of services. It is therefore important to assign the personnel with the right skills and attitude to handle the various tasks associated with the digital library project. Broadly speaking, the personnel will be required for the following tasks:

1. Project management.
2. Selection and preparation of source material
3. Digitization and conversion
4. Cataloguing and metadata assignment
5. Quality assessment
7. System analysis / programming for digital library application/interface development
8. Promotion and provisions of services.

Moreover, the rapid changes in the digital library technologies require constant re-training and re-positioning of staff for an effective practice in technological application.
1.9 Directory of digital library resources

a. E-Prints at IISc: www.ncsi.iisc.ernet.in :: The National Center for Science Information in Bangalore hosts e-library facilities and provides full-fledged comprehensive set of e-publishing tools set up as part of the Open Archives Initiative Protocol for Metadata Harvesting. This is one of the very first initiatives to provide online publishing facilities for research scholars and academia.

b. TIFR Digital Library Initiative: www.tifr.res.in/~library/ :: The TIFR online public access catalog provides access to several standard international publications and journals such as IEEE and Springer. This resource is also involved in the process of providing digital access to materials, e-books. It uses Dublin Core metadata for this purpose.

c. IGNCA Digital Library: www.ignca.nic.in/dgt_0001.htm :: This digital library created in 1999 by the Indira Gandhi National Centre for the Arts (IGNCA) affords a varied documentation of resources such as digital images, audio and video recordings, animations, electronic books and so forth related Indian arts and culture. The main objective behind establishing this online tool is to encourage preservation of art and culture through digital documentation of works.

INFLIBNET: Information and Library Network Centre: www.inflibnet.ac.in :: Developed by the UGC in collaboration with NISSAT, this digital library network is probably one of the more full-fledged steps towards digital libraries in India. Major Activities of this association include Library Automation, Database Creation, Software Development, Human Resources Development, Information Services and Networking. They have created a software SOUL that is based on a relational database management language, which is used for cataloguing, archiving as well as online public access of resources. http://www.artistudio.narod.ru/india_in_nature/schools/page_01.htm

1.10. Conclusion

Digitization has opened up new audiences and services for libraries, and it needs to be integrated into the plans and policies of any institution to maximize its effectiveness. Digitization is a complex process with many crucial dependencies between different stages.
over time. Utilizing a holistic life-cycle approach for digitization initiatives will help develop sustainable and successful project. It is hoped that the approach of the issues outlined, the software mentioned in this paper and the references to more detailed source and past project will contribute to the future success of initiating digitization of library resources.

References


