

ROLE OF DIGITAL LIBRARIES IN THE ELECTRONIC INFORMATION ERA

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Rapid advances in information processing, storage and communication technologies have revolutionized the role of world wide libraries in disseminating information services to their users. Libraries are reconsolidating their positions, building digital collection, redesigning their services and information products to add value to their services in order to satisfy changing information needs of users. The paper gives a brief description of digital Library; highlights the methods of building digital collection; use of digital libraries and the problems of digital libraries and concludes with a brief description of the digital library projects initiated in different parts of the world.

KEYWORDS/DESCRIPTORS: Digital library, Information and communication technology, Electronic information era

1 INTRODUCTION

It is observed fact that when the collection grows beyond certain size, or the users increase in number and range of interest beyond certain degree, there seems to be a sudden change in the character of the library and of its service. Information explosion and Information Technology (IT) revolution lead to the emergence of electronic information era. Rapid advances in information processing, storage and communication technologies have revolutionized the role of worldwide libraries in disseminating information services to their users. As a result, libraries are facing new challenges, new competitors, new demands, new expectations and variety of information services from users tailored to their wants and needs. Libraries are reconsolidating their positions, redesigning their services, and information products, incorporating new technologies, upgrading information resources, training people, changing information objects, modes of communication and information delivery in order to add value to their services and to satisfy the changing information needs of user community.

Libraries provide information services that must fulfill the information needs of present and future library users. Traditional libraries are still handling largely printed materials that are expensive and bulky. Information seekers are no longer satisfied with only printed materials. They need to supplement the printed information with more dynamic electronic and multimedia documents. The users' demands for information delivery in digital form at their desktop are increasing in recent times. In the present environment where there is a wealth of information resources being published and transmitted through electronic media, libraries must take proactive measures to develop digital collections to cater to digital information needs of their users.

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Recent developments in technological capabilities such as high resolution capture devices, dramatic increase of digital storage media; explosive growth of Internet and WWW; sophisticated search engines, fast processing power and reducing cost of computers, high bandwidth networks and increasing number of electronic publications make it possible for the establishment of digital libraries.

2 DEFINITION OF DIGITAL LIBRARY

The word digital library evokes a different impression in each reader. To some, it simply suggests computerization of traditional libraries. To others, who have studied library science, it calls for carrying out the function of libraries in a new way, encompassing new types of information resources; new approaches to acquisition. To some people it may connote new methods of storage and preservation; new approaches to classification and cataloguing, new modes of interaction with and for patrons, more reliance on electronic systems and networks, and dramatic shifts in intellectual, organizational and economic practices.

To many computer professionals, a digital library is simply a distributed text – based information system, a collection of distributed space or interlinked information, or a networked multimedia information system. It may have materials that are mostly from outside an organization that are generally of high value, and that have had special electronic services added to its quality during creation, collection, organization, and/or use.

According to Cleveland “Digital libraries are libraries with same purposes, functions, and goals as traditional libraries- collection development and management, subject analysis, index creation, provision of access, reference work, and preservation. A narrow focus on digital formats along hides the extensive behind the scenes work that libraries do to develop and organize collections and to help users find information.”

The institution involved in the American Digital Library Federation came up with a similar notion of digital library as:

“Digital libraries are organizations that provide the resources, including the specialized staff, to select structure, offer intellectual access to interpret distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities.”

There are many definitions of digital library as there are projects using the term. The Association of Research Libraries (ARL) defines concept of digital library as:

- The digital library is not a single entity;
- The digital library requires technology to link the resources of many; and
- The linkages between the many digital libraries and information services are transparent to the end users.

The modern day users of the WWW suggest more of the same, with sure-to-come improvements in performance, organization functionality and usability. Those working on education technology see digital libraries as support for learning, whether formal or informal.

3 NATURE OF DIGITAL LIBRARIES

Digital libraries are an evolving area of research. Digital libraries may be defined as electronic information collections containing large and diverse repositories of digital objects, which can be accessed by a large number of geographically distributed users. Such repositories would exist in locations physically nearer or remote from the users. Digital objects include text, images, maps, sounds, videos, catalogues and indices, and scientific, business and government data sets as well as hyper textual multimedia composition of such elements.

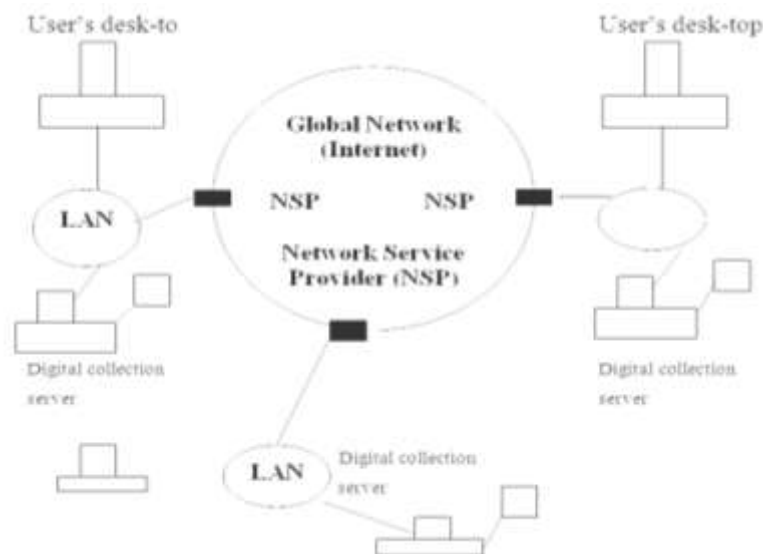
Operationally therefore, digital libraries will network based distributed systems with individual servers responsible for maintaining local collections of digital documents ranging from sets of electronics text to video-on-demand services. From the users point of view, however, there should be single digital library system, integrating personal information, work group and organizational information collections and public digital libraries. Digital library system should therefore provide a coherent, consistent view of as many of these repositories as possible and allow users to seamlessly connect and interact with information with no geographic location or time.

There is also general acceptance of the fact that digital libraries would need to span both print and digital materials. For the foreseeable future print on paper publications are expected to be around and thus digital libraries are expected to provide integrated coherent access to materials. Key components of digital libraries are therefore:

- Geographically distributed digital information collections;
- Geographically distributed users;
- Information represented by a variety of digital objects; and
- Seamless access.

These key components of digital libraries reveal that the digital libraries have digital information collections, geographically distributed users, information represented by a variety of digital objects, large and diverse collections and seamless access. The schematic representation of the emerging global digital library environment is shown in the following Figure.

The personal computers in the library are connected to the global network via institutional area networks and internet service providers. Using powerful, but very user friendly browser programs on their PCs, users will be able to seamlessly connect to and extract information from digital libraries distributed over a geographical area.



4 ASSUMPTIONS OF DIGITAL LIBRARIES

In the context of digital library, four assumptions can be identified as below:

- Digital library is totally a paperless system with computer networks and communication facilities;
- Digital library is a supplementary facility to traditional library for better retrieval and faster communication;
- Any individual can have a direct link to electronic publishers, their agents/through computer–communication facilities, with or without knowledge of librarianship; and
- Any commercially interested organization or an individual with or without knowledge of librarianship, having a direct access to electronic publisher/ can become local promotional trade agent in information service, like one of the IST/STD centres, electronic typing centres, reprography centres etc.

5 KNOWLEDGE ORGANISATION SYSTEM IN DIGITAL LIBRARIES

Once the user's needs have been analysed it is necessary to establish knowledge organization system to meet the needs. An alternate system can be built locally and it is preferable to find an existing knowledge organization system for several reasons as below:

- It is costly and time- consuming to build a knowledge organization system; and
- Knowledge organization system often benefits by having been built over time.

Many of the systems described have been built over decades; some existed before digitization. The value of a knowledge organization system form its acceptance by the user

community, sources built by noted authorities such as learned societies, trade associations, or standard groups which will be viewed as more trustworthy than those built internally.

The networked environment has resulted in both an explosion of primary materials, including documents, electronic journals, and web-based databases, and in an equivalent explosion of knowledge organization systems on the web. There are several ways to identify knowledge organization system that may be of interest. Many users are already aware of knowledge organization systems on the web within their disciplines. Developers may also turn to directories, librarians in the field, and reference sources or they may perform a general search of the internet.

6 USE OF DIGITAL LIBRARIES

Digital libraries can store large volume of information in digital form. They provide immediate access to the rapidly growing information stored in digital form. They provide fast access to multimedia information quickly and interactively through the integration of technologies. They offer remote access to expensive and special collections of information from many locations to many users simultaneously. Protection for old, rare and unique documents for posterity is an important function of any library. Paper deterioration and its consequences are a major threat to documents held in libraries.

Digital libraries offer new dimensions of easy access to their resources. When information sources are in digital form and stored electronically on digital media, they can be used and re-used. They can be retrieved easily to answer an information enquiry. They can be used to create multimedia application, or used for resource sharing in either a network environment or for electronic publishing on the Internet, or the World Wide Web. As long as the resources are in digital form regardless of whether they are still images, video or sound – or on a web server, one can obtain this information almost instantly from anywhere in the world. The use of multimedia and the knowledge of the navigator permit the delivery of national and international information to users at their desktops. In this kind of environment, printed information sources such as books, journals, archival materials cannot meet a highly competitive technology. The digital information sources become essential for that reason.

According to Hulser (1997) the key functions of digital library are:

- To manage large amounts of digital contents of information;
- To preserve unique collections through digitization;
- To perform searches that are impractical manually;
- To protect content owners' information;
- To improve access to information;
- To deal with data from multiple locations; and
- To enhance the distributed learning environment.

7 IMPACT OF DIGITAL LIBRARIES ON INFORMATION TRANSFER

The impact has been observed as below:

- Digital libraries combine technology and information source and allow remote access of its resources to other libraries by breaking down the physical barriers through national and international computer networks;
- Digital library provides rapid communication from author to the user;
- These libraries offer Boolean search of the full text to browse and read only the selected information;
- Electronic communications are now creating new electronic scholarly communities in response to the elementary need for intellectual collaboration;
- Digital libraries change the mode of transmission of information, video servers with stored lectures by outstanding scholars, electronic access to interactive reading materials, Video and computer conferencing hypertext books and new forms of experiencing knowledge will gain importance in the place of campus based higher education;
- The impact of digital accessibility on organizational hierarchy is noteworthy. Until the advent of modern information technology, an organization's structure was a relatively inflexible hierarchical channel, through which information flowed. Electronic mail, electronic bulletin boards, shared files and other similar systems allow information transfer without the typical channels of hierarchy, breaking down rigid organizational structures;
- Significant growth in the use of Internet to share and gather information will enhance rapidly due to advent of digital libraries;
- Computer networks make it easy to locate the exact sort of specialist or product we want. In the past, poor communications often made it impractical or even impossible to retrieve information exhaustively and expeditiously. In the cyber society it becomes easier;
- Inter-personal relationships are likely to be increasingly unstable in view of the emerging technologies. However, it will be possible for people to exchange and evaluate their ideas through e-mail, Internet and Tele conferencing; and
- A digital library enhances the quality of services offered by a library and information centre of any type.

These are the developments that can be anticipated. A host of social, economic and managerial uses are likely to crop up in addition to these.

8 IMPACT OF DIGITAL LIBRARIES ON EDUCATION

Library is fundamentally an organized set of resources, which includes human services as well as the entire spectrum of media (e.g., text, video, hyper media). Libraries performance three roles in learning. First, they play a practical role in sharing expensive resources; physical and human resources and support instructional programs by responding to the requests of teachers and students. Secondly, libraries performance a cultural role in preserving and organizing artifacts and ideas. Third, libraries performance social and intellectual roles by sharing resources, and

providing a physical place for teachers and learners to meet outside the class room. Thus allowing people with different prospective to interact in a knowledge space that is both larger and more general than that shared by any single discipline or affinity group.

Digital libraries extend such inter-disciplinarily information support by making diverse information resources available beyond the physical space shared by groups of learners. One of the greatest benefits of digital libraries is bringing together people with formal, informal and professional learning missions.

In addition to expanding the formats of information (e.g. multimedia, simulations), digital libraries offer more information than most individuals or schools have been able to acquire and maintain. Remote access allows possibilities for virtual field trips, virtual guest speaks and access to rare and unique materials in classrooms and at home. The promise is one of better learning through broader, faster and better information and communications.

9 CONCLUSION

Digital libraries provide a new format of library and information service interface to end users. The library staff have to be more specialist, highly technical and better equipped to provide high-tech services. The reader should become computer literate and develop the skills for exploiting computerized information services to the maximum.

In future, the libraries, for their survive and success, have to change the role from store house of fixed printed materials to the digital libraries of dynamic electronic multimedia documents in order to satisfy the changing information needs of the users. The establishment of digital library is a complex task and does not happen easily and cheap. It depends upon several factors such as organization's goal, value of timely information, availability of necessary infrastructure and resources for conversion.

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