Paperless Society: A Digital Library Future

Parveen Babbar Seema Chandhok

Abstract

21st century web savvy people believe that one day everything ever created by humans will be available online. Call it the myth or a truth it is the future of Digital Libraries. Because there is unlimited real estate in cyberspace and because media can be digitized, we can fill cyberspace with all human knowledge and give everyone access to it. Information in all forms is recognized as a very valuable and powerful resource, forcing information management disciplines to become highly professional and technologically updated. All information in any recorded format can be conveyed in one common format—digital. This paints the vision of a sweeping and awesome potential of "Paperless Society". This paper is intended to describe the technology trends in digital libraries, discuss key issues involved in digital library implementation, and provide some new future trends of digital library. The paper takes up the future concepts like Digital Classrooms, Digital Talking Books, Verbal Society, Paperless Society and Untethered Communication.

Keywords : Digital Library, Paperless Society, E-Learning,

1. Introduction

The concept of Digital Library is already a comfortingly familiar not in world but also in India. Every single institution is hosting its own Digital library, so they have been omnipresent all over. However, a single isolated Digital Library is valueless till it is not connected to the world.

The library, historically a cornerstone of scholarly endeavor, is reinventing itself in today's networked society to meet these new demands. Instead of a building that holds books, the library is evolving into an electronic portal to a growing global collection of digital content. The doors to this virtual library are now open 24 hours a day, seven days a week, and the library's holdings come to the user when needed. Today's library includes sophisticated tools that make it easy to find the best information resources, delivering them to one's desktop or mobile computing device at the push of a button.

The potential of the internet offers the possibility of universal access to everything. According to DELCOS "Digital libraries should enable any citizen to access all human knowledge anytime and anywhere, in a friendly, multi-modal, efficient, and effective way, by overcoming barriers of distance, language, and culture and by using multiple Internet-connected devices"[1]

Digital Library future has become complex due to increasing number of digitization initiatives taken all over the world. The increased diversification of requirement, expectation and usage amongst user communities through the widespread engagement has made the concept of Digital Libraries composite.

A digital library can be defined for future as an organisational entity that brings together a wide range of intellectual assets, including metadata, catalogues, primary source materials, learning objects, datasets, and digital repositories - in a structured and managed way. It will help its clientele to search for these intellectual assets through various modes. It will also recognise and support the core authoring functions of creation, iteration, finalisation and publication.

2. Digital Libraries and its Future

Digital Libraries can provide text, voice, and image (animation, graphs, photographs, and video), to the end users timely and boundlessly through the Internet. The goal of it is 24 x 7 services anytime and anywhere. The World Wide Web (WWW) plays an essential role in the process. Emerging technologies have made it possible to provide services anytime and anywhere. Libraries, museums and archives are trying to utilize technologies to preserve and distribute valuable information for their users in the form of Digital Libraries.

The future Digital Libraries are not a science fiction or the librarian's nightmare, it is actually a dream come true. So the future Digital Libraries can be visualized as a library without a single physical lending item on the shelves, without books in print, library without shelves, just large cooled servers, whirring digital archives linked through digital networks with machines for copying and distribution.

The components of Digital Libraries which will play a significant role in near future include: digital objects, metadata, repositories and harvesting, rights management, indexing, resource discovery, searching and retrieving, linking, interfaces and interaction, architectures, and interconnections. DLs are developed in highly distributed environments.[2]

The future has long been the subject of speculation and debate, especially in terms of how knowledge and information will someday be represented, stored, and accessed. Fiction writers, essayists, and library professionals have presented their visions for the future of Digital Libraries as advancement in technology with potential totalitarian states more capable of suppressing knowledge.

The vision of digital libraries can be explained as integration and use of computing, communications, and digital content on a global scale, combined with the increasing possibility of cost effective digitization and convergence of formerly separate media types to create the conditions for new infrastructure/environments to support humans as individuals and organisations in distributed knowledge-based activities.

The DLs support individuals or organisations in a broad range of distributed knowledge based activities from electronic commerce to scientific collaboration. They support teaching and learning, especially in the context of distance or lifelong learning. Now the digital libraries are there at universities, publishers, government agencies and public libraries.

It is correctly said that the user of the library of the future need not be a person it may be another knowledge system or any intelligent agent with a need for knowledge. Library will have metamorphosis into a network of knowledge systems in which people and machines collaborate. [3]

The prospects for development after 1960 were foreseen (Pekelis 1984) as follows[4]:

Year	Forecasting
1970	Translating machines
2000	Artificial intelligence, Global library
2020	Logical languages
2030	Robots, Contacts with extraterrestrials
2050	Memory playback
2060	Mechanical educator
2080	Machine intelligence exceed man's
2090	World brain

The role of the library 20 years from now is still a mystery, so libraries should put together creative spaces so staff members, library users and the community at large can experiment and determine what ideas are drawing attention and getting attraction. Some possible uses for these creative spaces include:

a. Band practice rooms
b. Podcasting stations
c. Blogger stations
d. Art and Creativity studios
e. Recording studios
f. Audio/ Video studios
g. Imagination rooms

3. Paperless Society

The image of a paperless society appears in both science fiction and science research. As computers have dropped in cost, increased in storage capacity, and become easily connected to each other, it seems that the dream of a paperless existence will become a reality.

Lancaster and others envisioned a paperless society in which electronic publishing would eventually replace use of the printed word [5]. Data are now available that confirm this trend. Using the total volume of words in broadcasting, publishing, the mails, and telecommunications, it has found that the use of electronic and digital media has grown rapidly, whereas the supply of words in print has leveled off or even declined.

The publication of scholarly information-namely digital publications leads to Paperless society. It is as simplistic to say that all print will be replaced by digital texts as it is to say that library buildings will disappear anytime soon.

To support this Gordon Bell and Jim Gray of Microsoft, predicted that in fifty years "almost all information will be in cyberspace . . .including all knowledge and creative works. All information about physical objects including humans, buildings, processes, and organizations will be online. This trend is both desirable and inevitable."[6]

As libraries are moving towards paperless society they are facing a plenty of issues and difficulties of archiving electronic publications. The most critical issues in a digital archiving strategy are not technical, although these are formidable, but economic, societal, and organizational.

The notion of Paperless Society and Future of Digital Libraries holds with the new trends which will be seen in coming decades. Some of these are discussed below:

4. Untethered Communications

Developments in untethered communications will most likely help to achieve the vision of "anytime, anywhere" access to digital content, removing the walls we still have in the traditional and hybrid library setting, despite a decade of DL research. The capabilities for Untethered Communications refer to the union of wireless and mobile technologies. It also includes a variety of personal information appliances and wearable computing devices, which have shown extraordinary growth in the last decade. Cellular Telephones or Mobile Phones which were nearly unheard of in 1980's are now used by several hundred million subscribers worldwide. According to market research, the subscriber base for wireless communications services is growing 15 times faster than the wired services. It is expected that very soon number of mobile users will exceed the number of wired system users. Such public demand for untethered communications is causing intense activities in R&D, technical standards and policies both in industry and government. Thus these will lead to a new future of Digital libraries i.e. "libraries without walls".

5. Digital Classrooms

As we move further into the second decade of 21st century, digital services will continue to proliferate. Classrooms that are equipped with the latest digital media have the potential to provide more memorable and stimulating educational experiences. Digital classroom and availability of the wireless laptops makes the library an even more attractive and accommodating space for teaching and study. By increasing the convenience and range of technology available, the library can become a preferred place of study. Students with help of upcoming Digital Libraries will be able to go online and immediately access and play a video that has the exact moment in which was captured. If a student has his iPod he/she can instantly play his online educational course material videos in classroom. The demand

for digital content in the classroom will in coming years will increase pressures on Digital Libraries to mount more content. In coming years educators and students will reap the benefits of digital libraries that can be updated in real-time and are not hampered by storage restrictions.

Present technology allows academic libraries to provide services that were not possible ten years ago. Professors/ Teachers can post their class syllabi and reading list on their institution Web site. The reading list can be linked to full-text articles which may reside in the library's server or somewhere else. Librarians can develop online tutorials to meet the needs of students whether onsite or at remote locations. Librarians can also develop Web sites to keep academic faculty current on their teaching and research disciplines. The interaction may go virtual, but because of the diverse background and information competency level possessed by our users, human contact remains vital in this information exponential age.

6. Digital Talking Books

The first steps toward the worldwide transition from analog to digital talking books were taken in Sweden in 1988, when the Swedish Library of Talking Books and Braille (TPB) initiated a project to develop a digital talking book.

In 1996 DAISY (Digital Audio-based Information System) Consortium1 was formed to take advantage of new digital opportunities. For a decade now this has given birth to an international standard for digital talking books, which is now becoming a multimedia standard.

The talking book software was built on the DAISY concept (Digital Audio-based Information System), which specified the demands that needed to be met to create a functional, high-quality digital talking book. The core of the concept was the phrase-based storage of audio. Digital talking Book was based on following abilities:

- ability to skim the text, phrase by phrase or section by section, where each section is a collection of phrases;
- ability to search for different elements in the text-based table of contents;
- ability to search for specific pages in the talking book;
- ability to place and search for bookmarks in the book; and in a future version,
- ability to "underline" and make notes in the talking book. [7]

Initially, the above DAISY standard was established and developed to benefit people who are unable to read print due to a disability, but over the years it has also proven to have broad applications for improved access to text for mainstream users. DAISY aims to become part of the mainstream market.

DTB (Digital Talking Book) users are able to navigate through a book by moving between the headings, chapters, and pages. Depending upon how the book is produced, images with descriptions may be

included, along with even more detailed navigation. Reading devices for these materials enable users to place bookmarks for later reference.

These Talking Books consisting of navigable audio files may be accessed with a portable player or via computer. The DTB offer eyes-free reading experience without sacrificing the ability to skim and note passages of particular interest. These books with electronic version of the text can also be searched with ease. The DTB will give a reading experience that can be equal to or better than the experiences of those offered by reading traditional books or by present conventional commercial e-books.

Today publishers, newsrooms, libraries, educational institutions, and others who need to communicate or disseminate complex volumes of text in userfriendly ways will be able to profit from DAISY technology and can move in a world of Digital Talking Books.

It is correctly quoted that "The pioneering work being done to serve their special needs today could have widespread benefits for every user tomorrow-and keeping the two closely connected will help lower costs and speed development."[8]

The Digital talking Books technology will undoubtedly be the cornerstone in the development of the global library for people with special needs and mainstream users. The technology experience harvested by DAISY will prove to benefit other types of libraries in coming future. Thus we can say that we are entering into the digital age with open eyes and minds.

7. Transitioning to a Verbal Society

Keyboards remain as our primary interface between people and electronic information even though inventors have long felt there must be a better way. The days of the keyboard are numbered. It is predicted that soon we will be witnessing the end of the keyboard era and by 2050 literacy will be dead. End of Keyboard era will lead transition to a verbal society.

Duration of transition from literacy to a verbal society may be debatable but there will undoubtedly be a strong trend towards verbal information. Computers will become more human-like with personalities, traits, and other characteristics that will give us the sense of being in a room with other humans.

8. Conclusion

Digitization is no longer a mere buzzword; it has become hard reality, including in the library world. To fully exploit technologies and to maximize their impact, suppliers, distributors and users, and library managers and employees now have to acquire a new and more comprehensive "digital mindset": thinking digitally and being flexible and innovative. The knowledge society has revealed a new and different reality, displaying a broad range of perspectives for future library development.

The digital reality is no longer just a question of e-business or e-service; it is also e-production. Today our society is a "knowledge society" which stress on the fact that the most valuable asset is investment in intangible human and social capital and that the key societal factors are knowledge and creativity. Library and information centres are in a state of metamorphosis. Networked information has shifted the onus of information search from librarians to the users. Library related technologies allow direct interaction with the users, leaving very little or no intervention from librarians. Exploring the IT potential, and using the IT-Library synergy to render qualitative services, should be the mission of every information manager today. There are still many challenges to realizing the potential of digital information, digital library technologies and practices have developed enough so they are within reach its every user.

Libraries whether they are Hybrid, Electronic or Digital are icons of our cultural intellect, totems to the totality of knowledge. To claim, as some now do, that the "Paperless Society" will make libraries obsolete concept is as silly as saying shoes have made feet unnecessary. Libraries will have a prominent role to play in the era of "Paperless Society".

References

1. www.delos.info
2. Sornil, O.A. Distributed inverted index for a large-scale, dynamic digital library. Virginia Tech Computer Science: Blacksburg, 2000.
3. Kalyane, V. L. and Kalyane, S. V. Librarianship in 2000 AD. University News. 30(35), 1992. 73-74.
4. Pekelis, V. D. Foreseeing the Future: The Formula of a Collective Genius, Cybernetics Today: Achievements, Challenges, Prospects, (Editor: I. M. Makarov). Mir Publisher: Moscow, 1994. P.291.
5. Lancaster, F W. Toward paperless information systems. New York: Academic Press, 1978.
6. Bell, Gordon and Gray, Jim. The Revolution Yet to Happen, Technical Report MSR-TR-98-44, (Redmond, WA: Microsoft, March 1997) http://research.microsoft.com/~gray/Revolution.doc.
7. Tank, Elsebeth and Frederiksen, Carsten. The DAISY Standard: Entering the Global Virtual Library. Library Trends. 55(4), 2007. 932-950.
8. http://www.microsoft.com/presspass/features/2004/nov04/ll-151ibrarysummit. mspx.

About Authors

Mr. Parveen Babbar, Assistant Librarian, Indira Gandhi National Open University, Delhi-110068, E-mail: parveenbabbar@ignou.ac.in; parveenbabbar@yahoo.com

Dr. Seema Chandhok, Deputy Librarian,Indira Gandhi National Open University,Library & Documentation Division, Maidan Garhi, New Delhi-110068.
E- mail : schandhok@ignou.ac.in; seemachandhok@yahoo.com