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DIGITAL LIBRARY WHAT AND WHY?

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INTRODUCTION:

We are in the midst of the third great cultural revolution of mankind, the move towards a digital environment for all information. Living through a revolution is never pleasant; things can change in unpredictable and catastrophic ways. For those that work in the information industries never has the traditional Chinese werse 'May you live in interesting times!' been more appropriate.

Change and adaptability are the hall marks of nature. Twenty first century is expected to change the entire scenario of information science. This is an electronic era or information technology (IT) age.

Information technology is the convergence of various specialized technologies, like computer, telecommunication optical digital systems Which are based on electronics.Therefore, electronic information systems are now synonymous to information technology. Information technology has a great influence in all walks of life. Its application can be seen in education, research, industry, healthcare, and government, etc. i.e. all most all the sectors. The developments in electronic information systems also influenced libraries in a big way and helped the professionals to disseminate the information quickly, exhaustively and expeditiously out of deluge of information. Information technology revolution has converted information to power. So Louis Joinet has aptly said, "Information is power and economic information is economic power."

The changing world of education:

Undoubtedly there are profound there are profound changes going on in the educational system. The changes are needed because of over growing pressure in the school system themselves, partly because society it self is changing into one in which knowledge work becomes ever more important and partly because of the very information and communication technologies which are transforming our economics.

By confronting trends and technological developments, Education arrives at a vision of "global learning infrastructure" in which the role of schools and universities will be drastically changed.

Information is no doubt an essentially required commodity in any research activity because of its potential value in decision–making. Medical information as an essential resource infiltrate the public health activities of any nation. Health care of a society depends to great extent on how best the professionals are aware of the current information. In laboratories and hospitals, the clinicians were highly need of information support of their practice of medicine and research and the

week of collecting, storing, organizing and disseminating the same become one of the primary activities of medical institutes. Literature and information were generated at massive rates in the way of the present expanding knowledge and information explosion. It is observed that the most frequently used of all the sources of information are Journals, which carry up to date information on current advances in medical science and technology.

It is seen that the information needs of professionals or the clinicians working in hospitals need to have quick access to very nascent information being the support of the clinical activities of the hospitals. Their requirements is relatively specific and timely and the rendering of the relevant information definitely influences the care of patients. Here the specificity of relevance and the time of rendering are vital. For all these aspects E-sources in the digital library provide the information at fingertips.

The term 'Digital Library' may be defined ad follows :

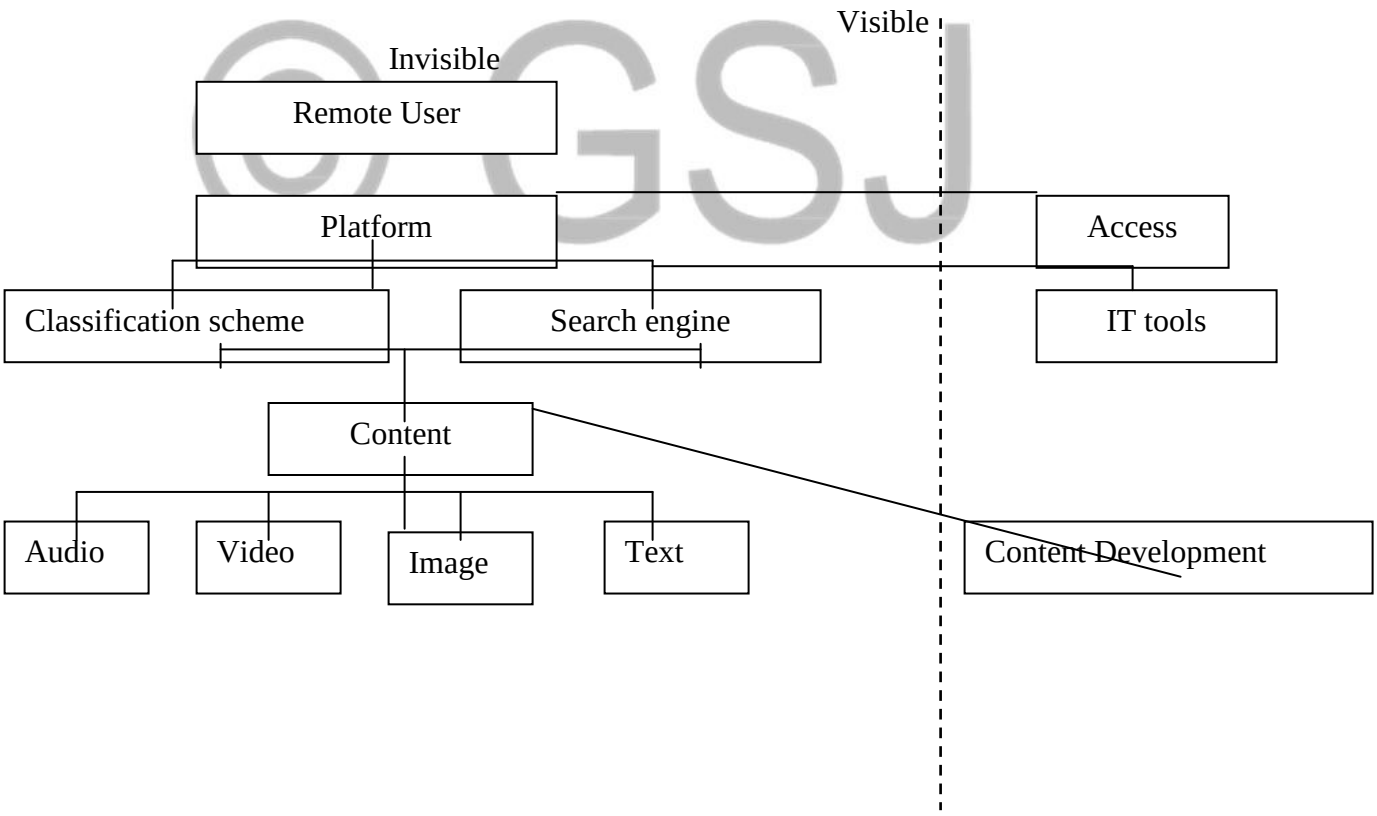
1. The working group of the U.S. Governments Information infrastructure Technology and Application defined as, " Digital Libraries are systems providing users with coherent access to very organized repository of information and knowledge".1
2. According to Berkeley digital library project, " The digital library will be a collection of distributed information sources. Producers of information will make it available and the consumers will find it perhaps through the help of automated agents".2
3. Ray R. Larson of California University defines, " Digital Library is a global virtual library – The library of thousands of networked electronic libraries. 2
4. The stand ford Digital Library project States that, "integrated digital library will create a shared environment linking everything – personal information collection to collection of convectional Libraries to large data collection shared by scientists. Integrated Virtual libraries provide an array of new services, uniform access to networked information collection". In other words we can say that in digital library, the information arrives as needed at the users screen, like the ever- attendant waiter filling water glass before we know it is empty.2
5. Larson defined digital Libraries as, " not single, standalone repositories of digital data. Instead they are a heterogeneous collection of network based repositories using a variety of protocols for user interaction, data encoding and transmission".
6. According to Association of Research libraries a digital library is " not a single entity requires technology to link the resources of many, linkages transparent to the user, permits universal access, not limited to document surrogates but extended to digital artifacts. "3
7. William Saffady in his paper on " Digital Library concepts and Technologies for the management of library collections," has given the following useful definition.

" A digital library is a library that maintains all or a substantial part, of its collection in computer processible form as an alternative, supplement or complement to the conventional printed and microfilm materials that currently dominate library collections."4

A Schematic structure for a generic digital library is illustrated in the following figure. This structure shows the user visible elements as well as user invisible modules that are required. The digital library vision is for a single, continuously available inter operable platform. Work on the generic expectations of its potential users suggests they want (inter alia):

- A one-stop-shop platform that is inter operable accessible remotely for 24 hours a day and 7 days per week:
- Information that is interconnected, for example be reference linking ;
- A system that allows easy searching and browsing possessing down label and printable files ;
- Multimedia applications ;

Trying to achieve these stringent demands in the context of the other player in the information chain is the challenge facing information professionals.
Schematic generalized digital library



Based on common aspects among these definitions. Digital Library could be referred to as computerized network system where all the information is stored in electron format which can be accessed and transmitted through networks enabling retrieval of desired information by a large number of users. Users will

normally access the information they desire using terminal desktop computer at their place of work

3.2.2 : Need for Digital Libraries :

In 1990 Alvin Toffler estimated in his book, " Power shift" that in one year the United States runs out 1.3 trillion documents. By now the number of documents may have risen to four trillion. According to another estimate there are close to 50,000 periodicals in science and Technology. This information explosions not confined to any particular subject and is also taking place in Social sciences and Humanities and in every country. With libraries facing manpower and monetary constraints, it is impossible to acquire every publishers document under one roof and thus evolved the concept of resource sharing and networking. The technology for electronic transfer of information is developing rapidly ; Electronic publishing Electronic storage, processing and delivery of information including text and images are feasible and operational. The legibility of documents, which are reproduced, is poor, and the transmission of the same to other users is difficult. More over it requires a large amount of storage space. Since there is a demand for information with a facility for searching tailor made information at faster speed. Hence digital library seems a suitable solutaion at the moment.

3 Objectives of Digital Library:

The main objectives of digital library are :

- To capture, store, manipulate and distribute information.
- To introduce and provide new services
- To provide need-based and retrospective search services to the user.
- To have large number of database in CDs
- To avoids routine and redundant activities
- To provide facility for networking and resource sharing.
- To access national and international journals which are being published only in machine-readable form.
- To digitize the documents for preservation and for space saving
- To support library functions such as circulations, serial control, stock maintenance and developing in house database, and
- To improve the cost effectiveness of library operations.

3.3.1 : Characteristics of Digital Library :

The transformation effects that digital technology brings into information system are as follows.

Collection :

Digital library collections are fixed, permanent documents. Not only those current libraries have more dynamic collections but digital environment will enable of quick handling and/ or ephemeral information.

Work:

Digital libraries are to be used by individual working alone. There is work oriented perspective focusing on a group of information analyst, work being done and the documents and technologies that support it.

Technology:

The digitization requires certain technologies. They are basically grouped as:

i. Computer technologies with input devices that collect and convert information into digital form. Such devices include keyboards, touch screens, voice recognition systems, flatbed scanner, reprography copy stand, high resolution digital camera, image navigator software etc.
ii. Storage technologies – a variety of devices to store and retrieve information in digital form such as magnetic tapes / cassettes, floppy disks, hard disks, DAT Tape, CD-ROD, smart cards etc.
iii. Processing technology: creating the systems and applications software that is required for the performance of digital network.
iv. Communication technologies : Primarily to communicate information in digital form
v. Display technologies: Varieties of output devices.

Trans bordering of information:

Breaking the physical boundaries of date transfers within and outside the countries. It is viewed that the support for communications and collaboration is as important as information seeking activities.

In the light of the above characteristics discussed we can briefly sum up as follows:

1. Digital library is heterogeneous library, which contains hard copy to online systems.
2. The full fledge digital library is one in which all the information is available in the digital form.
3. Digital library consists of mostly electronic documents which are of the references type and the queries and received and processed are also of reference type in nature.

Key features of Digital library:

Provide access to very large information collections including access to primary and complete information, not merely, surrogates or indexes.

- ❖ Supporting multimedia content
- ❖ Network accessibility
- ❖ User friendly interface
- ❖ Use of declarative representation of documents e.g. tagged SGMA
- ❖ Unique referencing of digital objects.
- ❖ Enabling ‘link’ representation to local / external objects, hypertext

- ❖ Clearly separating the digital library and the user interface by employing client server architecture.
- ❖ Advanced search and retrieval
- ❖ Availability for long time i.e. not dependent on specific soft ware and hardware.
- ❖ Supporting traditional library missions of collection development organization access and preservation
- ❖ Integrate personal, group, enterprise pubic digital libraries.
- ❖ Supporting publishing, annotation and integration of new information
- ❖ Accessibility from anywhere home, school libraries during travel hotel etc.
- ❖ Providing access to more information than possibly too physically acquires and maintains
- ❖ Supporting both formal and informal learning
- ❖ Media integration, remote access to expensive and rare material and
- ❖ Greater opportunity for publishing.

3.3.2: COMPONENTS OF DIGITAL LIBRARY

Digital libraries require well-tested, and proven information technologies including the multimedia kit. Much of the work in digital libraries in achieved through E-mail service, by participating in Usernet(s) by accessing the databases or servers through network, little Internet. Locally developed database will contribute a lot to develop digital libraries.

In other words components of digital libraries are :

1. DATA – Technical data: This consists of books and Journals stored in a digital form in a computer disk store. There are two ways of storing this information. One way is to photograph a page and scan the image with a scanner. This form of storage is called a bit mapped form. It is practical way of storing old manuscripts, texts, and journals. The image of the page may be retrieved and displayed on the video screen of the computer. The other way of storing a text is to present each character by its ASCII code.
2. NUMERIC Data: Consists of tables of various types such as physical propriety data of various materials from experiments, astronomical tables etc.
3. Graphic data : May be photographs, maps, drawings, etc. The simple way storing such data is to scan the image and store it as a biff patterns. Data store in this form eases retrieval.
4. Photographs: Colour and monochrome are stored in bit mapped form using compression algorithms and stored. A musical scores may also be coded and stored with audio data.
5. Audio - data: It is digitized compressed using a commonly accepted standard comprehension algorithms and stored. A musical scores may also be coded and stored with audio data.
6. Video - data : Requires enormous storage space due to the need for repeating frames at least 30 minutes per second. Thus the data is

compressed in such a way that when decompressed the original data is recovered.

7. Indexing: Indexing and inter-linking multimedia data is extremely important for ease of retrieval. Key words in textual documents are selected and linked to related words with logical links by appropriate software. This is called hypertext. For materials in other media also related elements are selected and linked in what is known as hyper media.
8. Linking : The information collection of the digital library will normally not be stored in one computer. It will be distributed in many computers known as servers. All these are linked by high speed communication links. A user gets easy access to the information based on his/ her request regardless of its geographical location.
9. User " Access the library from any where using a terminal or computer connected to the network to which the information servers of the library are connected.

3.3.3 : METHODOLOGY :

Thus, the methodology carried out in digital libraries can be summaries as follow:

The first major process is to digitize the entire physical medium. This may get started with the use of optical character recognition (OCR) to convert the captured digital images to text content Next the content has to be catalogued and indexed so that the repository can be easily made available to users, allowing them to make searches for information through bibliographic description of content. In case of multimedia collections such as video, catalogues would have a preview of a video clip described the contents of the actual video file.

3.3.4: "Service Rendered By Digital Library."

The objectives of the digital library could be fulfilled by offering the following services.

1. Shared- cataloguing: It enables the librarian to use the catalogue information available in a major university library or a resource centre for a cataloguing new publication added to the library. A document is catalogued once at the time of entry into the network. Other libraries which procure that document later need not spend time in cataloguing it but can download at cataloguing information from the network.
2. Union Catalogue: A Union catalogue of serials, books and non book materials held in different libraries of the country is created. It enables one to know also about the missing volume. Using a network a user will be able to locate precisely the libraries where the sought document is available.
3. Online catalogue of Library / Information Centre: The machine readable catalogue of the library or information centre can be made available through internal web.
4. The document supply / delivery service: It will enable a library to request another library for a copy of document to be transmitted via e-mail or fax. This service many be largely used for transmitting a few pages from documents say journal articles.

5. Inter Library Loan service: This service will enable a library through the network for one or more books on I.L.L. basis for meeting the demands for its users. This may also include facility for reserving a book, if is on loan in the lending library. Libraries with richer collection will be major providers of this service.
6. Referral service: Request for provision of information, which cannot be satisfied by a library can be referred to another source where from this information can be had in this service the users will informed about the source to be approached to get the required information.
7. Electronic - Mail : E-mail is an imp. Communication based service it enables participant in the network to transfer / receive messages from any part of the world using data networks to which they are subscribing. E-mail provides facilities through which other services like I.L.L. requests location search in the Union catalogue, document delivery, request transmission, referral service and academic communication can be implemented.
8. Bulletin Board : It is proposed to provide this facility to display / view news, announcements etc. with constant updating of information in an electronic bulletin board. The UGC circulars can be made available in the networks for each specific category of user discipline.
9. Current Awareness Service: List of latest additions to the library namely books, periodicals, patents, standards, audio visual materials or any other can be put into the internal web for user education.
10. Selective Dissemination of Information : User requests are collected through E-mail. The descriptors are matched against latest available documents and the required users are contacted through E-mail.

3.4 : Advantages of Digital Library

1. Ability to search : The ability to search provides an enormous advantage to electronic materials when an ASCII version is available. Online searching has for same years been replacing printed abstracts journals. Since most current materials is now produced via computers it can generally be provided in ASCII form and be searched.

2. Ubiquity: another key advantage is ubiquity, many simultaneous users can access a single electronic copy from many locations. Copied can be delivered with electronic speed, and it would be possible to reformat the material as per the reader preference since readers get a screen display of the object, rather than a physical object, loss rates by theft are eliminated.

3. Support Wider range of materials: Digital storage also permits libraries to expand the range of material they can provide to their users. Digital material can permit access to videotapes and new kinds of multimedia materials that are created only on computer an have no equivalent in any traditional format.

4. Preservation: Digital information can be copied without error. As a result, preservation in a digital world does not depend on a permanent

object and keeping it under guard, but on the ability to make multiple copies, assuming that at least one will service.

5. Access to current information: For researches digital libraries provide access to up to date current literature and there by help them to be aware of current trends.
6. Storage : A digital library can store unconventional information such as reading obtained from some scientific instruments e.g. spectrometers. All modern instruments incorporate microprocessors and experimental data are already in digital form. A repository of experiment data can be stored in a server and made available to others to assist in their work.

From the above mentioned factors, the advantages can be summerised as below :

1. Promote University accessibility
2. Access to more information than is possible to physically acquire and maintain.
3. Protecting rare books that are rapidly deteriorating due over use and poor storage conditions
4. The user can pursue them instantly
5. The e-books and journals provide key words subject and various other searches
6. Provide multiple access and access through the campus LAN
7. Facility for the down-loading and printing
8. Saving the cost and manpower required for publishing and bringing out new edition
9. One copy of the documents could be viewed by any number of persons simultaneously.
10. Saving space which is required for physical documents.
11. A tool for preservation of heritage.

Conclusion :

The paradigm is shifting, our world is increasingly built on information. So there is a pressure to adopt new technologies. The warnings are clear and loved. ‘adopt or die’. Evolutionary is however a slow process especially for long established reactionary hierarchical organization and professionals. Resistance to change cannot be under estimated and in the electronic arena there are always waiting in the wings, keen to replace those who fall by the way side.

Digitizing and networking of information resources and services means creating a global community with a vast storehouse of knowledge and a continuous dialogue among its members to solve various problems related to the lives and work of people across the globe. The librarian needs to have parallel touch with cutting edge developments. He has to overcome the most laudable security shock which are the most of database, copyright infringements, viral invasions, parallel satellite networking, stress are some of the issue Digital library to be conformed as a way of routine.10

Therefore, the main objective of the profession of Librarianship should be to exert a cohesive fork that will promote communication and understanding among the constituent part of the totality of librarianship so that, the profession will not be fragmented into a variety of isolated and even discordant specialists.

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