
WEB-BASED LIBRARY SERVICES

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Abstract

The emergence of the World Wide Web (WWW) and Internet as a new media of information storage and delivery provide an unparalleled media for delivery of information with greater speed and economy. The web technology and Internet has changed the way of information is stored, retrieved and communicated in the libraries. As more libraries move towards providing their services in a digital environment, the improved access to remote library collections is making the use of electronic information resources more realistic and more attractive. The paper explores what are web based services, why it is necessary and why it is so popular among users, with their advantages and disadvantages. Different web based resources have been highlighted. Future and conclusion have also discussed in the last.

Keywords : Digital Library Services, Electronic Reference Services, Web Based Resources, Reference Services

1. INTRODUCTION

The Due to the tremendous growth and continuous development of technology, the role of library becomes more responsive in making the users techno-savvy. Technological developments have affected not only the formats and sources of the information, but also how and where to provide library services. Libraries and their resources have partially moved to the virtual world of the Internet. As a result, library users can access the resources from outside the physical library. In an effort to reach users accessing the library via their computers, many libraries and library consortia are extending their services to include virtual reference. Technology now allows users to submit their queries to the library at any time from any place in the world. Web Based Services, Digital Library Services, Internet Library Services and Electronic Library Services are terms with similar meanings.

As more libraries move towards providing services in a digital environment, the improved access to remote library collections is making the use of electronic information resources more realistic and more attractive. Traditional online services had transformed themselves into internet-based online services using web-based technologies.

From traditional online services to today, four generations of information retrieval tools have passed that assist users in searching the World Wide Web.

The first generation of information retrieval tools was designed for use with bibliographic databases. The first generation provided access to references to the end documents rather than to the documents themselves, and indexing and searching were thus applied to document surrogates, such as titles or abstracts. These tools require considerable human efforts to collect, arrange, code, and annotate the various resources. A primary benefit of the first generation of tools is providing users with easy browsing capabilities.

The second generation of tools attempts to collect and index resources as an automated function. Automatic collection and indexing reduces the amount of human effort. The ability to search through massive amounts of information and locate the desired information for the user is the primary benefit of the second generation of tools. The third generation deals with World Wide Web Meta search engines, such as Harvester and Meta crawler.

The fourth generation involves new ideas such as search agent technology currently being developed to search for information on the web.

Web-based search engines are as a means of finding relevant pages on the Internet. Different search engines, directory, meta-search engines, gateways, subject portals, electronic journals and on line databases each type could be used in a different way, from simple keyword searching up to peer-reviewed web sites.

2. WHAT IS WEB BASED LIBRARY SERVICE ?

A digital Library service manages and develops electronic services, the library websites and library staff. According to White (2001), it can be defined broadly as 'an information access service in which users ask questions via electronic means e.g., email or web forms'.

3. WHY WEB BASED LIBRARY SERVICE ?

Library service on the internet requires many of the same qualities as traditional references: accuracy, promptness, courtesy, an understanding of the information need. It provides users with the convenience of accessing information in their own time, saving them traveling cost and time and new options for answering reference questions. The provision of these services is not constrained by the traditional opening hours but can be offered on a 24-hour, seven-days-a-week basis known as 24/7. And while there may be a disadvantage in not having a face-to face encounter, there are many advantages to this new medium and the greatest advantage is that many more users can be helped by using electronic library services. Advantages and disadvantages of electronic access over printed form access are showed in Table 1. Web based services are established due to the following reasons.

- ensuring the needs of users and the accessible information sources are suitable matched at all times.
- delivering those information sources to the user in a timely and appropriate fashion.
- ensuring the information provided is high quality, accurate and appropriate.
- assisting the user in interpreting the materials, if necessary.
- promoting user awareness of new services and information sources as they develop.
- providing users with individualized guidance and support as they build their information search and application skills.

S.N	Advantages of Print form	Electronic form
1	Format is tested and standardized	Format is in the early stages of development
2	Easy for users to use	Requires some training for users to use
3	No special equipment needed	Special equipment required (hardware, software, printers, etc.)
4	Easy to locate (if shelved properly)	Access is currently unreliable (URL problems, internet connection problems etc.)
5	Use is limited only to copyright laws	Use is limited by copyright laws and licensing agreements
6	Archiving is effective and permanent	Archiving is "up in the air"

	Disadvantages of Print form	Electronic form
1	Operating costs are considerable (ordering, cataloging, claiming, and binding)	Operating costs are minimal (no cataloging, binding, or claiming)
2	Requires shelving	No shelving required
3	Often mutilated, stolen, or misshelved	Cannot be mutilated, stolen, or misshelved
4	Requires extensive storage space	Saves considerable storage space
5	Allows only one user at a time	Allows for multiple users with simultaneous access
6	Slow delivery via "snail mail"	Immediate receipt of issue
7	Issues are easily lost in the mail or missing	No more missing issues
8	Slow publication	Fast publication

Table 1 : Advantages and Disadvantages of Printed Form over Electronic Access

4. WHAT ARE DIFFERENT RESOURCES FOR WEB BASED LIBRARY SERVICES ?

Today, users may have access a variety of textual information resources. There are different kinds of web-based reference resources and services for accessing information from libraries such as OPAC, Gateways, Portals, Subject Portals, Electronic Journals, Online Databases, Subject Directories and Search Engines. These resources overlap considerably in the type of information they cover, and sometimes it is difficult to distinguish between some of them. A library should have a good collection of these resources like selected Web links, subscription resources, and library materials in well-organized pages for serving better services to their users.

Many libraries and organizations are providing digital reference service through collaborative services. Existing library consortia are adding digital reference to current shared services, and networks of libraries. Some regional library consortia are offering member libraries the opportunity to share reference questions with each other using the Internet and other technologies.

4.1 OPAC

OPAS's - On Line Public Access Catalogues, form an important part of many digital library's collections. It allows users to search for the bibliographic records contained within a library's collections. Now days, some OPAC also provide access to electronic resources and databases, in addition to the traditional bibliographic records.

4.2 Gateways

A gateway is defined as a facility that allows easier access to network based resources in a given subject area. Gateways provide a simple search facility and a much-enhanced service through a resource database and indexes, which can be searched through a web based interface. Information provided by gateways is catalogued by hand. Gateways cover a wide range of subjects, through some areas, such as music and religious studies, currently lack subject gateways. Some well-known gateways are as follows:

- Internet Public Library (IPL),
- Bulletin Board for Libraries (BUBL),
- National Information Services and Systems (NISS),

4.3 Portals

In the library community, portals may be defined as an amalgamation of services to the users where the amalgamation is achieved through seamless integration of existing services by using binding agents such as customization and authentication services, search protocols such as Z39.50, loan protocols such as ISO10161, and e-commerce. The result is a personalized service which allows the individual to access the rich content of both print-based and electronic systems. Portals are either commercial or free web facilities that offer information services to a specific audience. The facilities include web search to communication to email to news etc. There are three kinds of portals; Consumer (or horizontal), Vertical and Enterprise.

- **Consumer** portals are aimed at consumer audiences and offer free email, games, chat etc. Examples are Yahoo!, MSN and AOL.
- **Vertical** portals, target a specified audience, such as a particular industry, and offer many of the consumer portal features. Example includes VerticalNet.
- **Enterprise** portals on the other hand are similar to consumer portals, but they are offered only to corporations or similar organizations. Examples include Epicentric and Corporate Yahoo! These portals can be best understood as electronic pathfinders for users, pulling together in one place in a web site selected links to subjects or interest-oriented resources located on the WWW.

4.4 Subject Portals

Web Search Engines had been developed initially by computer scientists, by borrowing techniques from information retrieval search such as best match searching and relevance ranking. Information professional are increasing bringing their skills to help organize the growing wealth of Internet resources. A good example of their influence is the development of subject-specific web search engines known as subject portals, where evaluation of material covered is a major concern.

Two prime UK subject portals are SOSIG Social Science Information Gateway, covering social science resources and OMNI Organizing medical networked information covering medical resources. Some popular subject portals with their web addresses are listed in Table 2.

SUBJECT PORTALS	WEB ADDRESS
ADAM: Art, Design, Architect and Media	http://www.adam.ac.uk
EEVL: Engineering Information	http://www.eevl.ac.uk
ELDIS: Electronic Development And Environment Information System	http://nt1.ids.ac.uk/eldis
History	http://ihr.sas.ac.uk
OMNI: Organizing Medical Networked Information	http://www.omni.ac.uk
SciCentral: Science Resources	http://www.sciencetral.com/index.html
SOSIG: Social Science Information Gateway	http://www.sosig.ac.uk

Table 2: List of Subject Portals

Subject portal sites can be very helpful, but they should be used with care. Users should bear the following points in their mind :

- The aim of the subject portal is to list and review the most important sites on the web relevant to that subject. The sites are usually constantly peer-reviewed to ensure that the site is relevant and up to date.
- New sites are appearing all the time. Relying on a subject portal site to find everything users require may mean that they miss an important site that has recently appeared and has not yet been reviewed by the producers of the particular subject portal.
- A subject portal is a one stop shop for information on the topic it covers. Users don't have to carry out extensive Internet searches in order to find the information require. They can simply go to the required subject portal site.
- Subject portals save users having to have long lists of bookmarks (saved addresses of web pages), which are often, cumbersome and time consuming to arrange and keep up to date. However, if users do prefer to use bookmarks they can arrange them in an order to suit the way they work and not have an order forced on them by the subject portal.
- A subject portal site is only as good as the reviewers who peer-review the site listed. The reviewers need to have a policy of keeping the portal sites up to date and of constantly reviewing the sites they list, to make sure that they are still relevant and still contain good, timely information.
- A subject portal may be available to everyone who needs to use it to only certain groups of users. A good portal should be publicly available to anyone who needs it.

4.5 Electronic Journals

Electronic journals form a large part of the collection of a library for providing web based services. Today many journals are available electronically - some are full text and some contain only bibliographic information with abstract. Major advantage of electronic journals is that they are constantly updated and easy to access but disadvantage is that breaching of copyright law is very easy. They are available as bitmaps, PostScript, PDF, ASCII, SGML and HTML. Library services may be delivering to users on CD-Rom, through email or through web. Some international societies and associations have developed their own digital libraries through which users can get access to all their publications. Services are available to the members of society or associations through subscription. Some of popular one is shown in Table 3.

ACM Digital Library	http://portal.acm.org/portal.cfm
EBSCO databases	http://search.epnet.com/
Elesvier's Science Direct	http://www.sciencedirect.com/
Emerald full text	http://iris.emeraldinsight.com/
IEL Online	http://www.ieee.org/
OCLC	http://www.oclc.org
Springer Verlage link	http://www.springerlink.com/

Table 3: List of Digital Libraries Providing Full Text on Line Journals

4.6 Online Databases

These are large collections of machine-readable data that are maintained by commercial agencies and are accessed through communication lines. Many libraries subscribe to them for easy access and use

of current information. The disadvantage is that only bibliographic data is presented and not full text. The information cannot be accessed when the system is down for any reason. Examples Ei Compendex, SciFinder Scholar, Web of Science, Current Contents etc.

4.7 Search Engines

Search Engines are huge databases of web page files that have been assembled automatically by machines whereas the subject directories are human-compiled and maintained. Search engine indexes every page of a website and subject directories linked only homepages. Search Engine is the popular term for an information retrieval (IR) system. A search engine is computer software that searches a collection of electronic materials to retrieve citations, documents, or information that matches or answers a user's query. The retrieved materials may be text documents, facts that have been extracted from text, images, or sounds. A query is a question phrased so that it can be interpreted properly by search engine. Depending on the type of software, it may be a collection of commands, a statement in either full or partial sentences, one or more keywords, or in the case of non-text searching, an image or sequence of sounds to be matched.

4.8 Subject Directories

Subject directories differ from search engines in that search engines are populated by robots that find and index sites whereas humans make editorial decisions that populate subject directories. Subject directories are basically index home pages of sites and can be classified as general, academic, commercial or portal. Among the well known subject directories are the Argus Clearinghouse (www.clearinghouse.net) and Yahoo (www.yahoo.com). Strengths include relevance, effectiveness and relative high quality of content. Weaknesses are that they lack depth in their coverage of the subjects.

5. NEW WEB BASED LIBRARY SERVICES

5.1 Virtual Library Tours

Websites of libraries provide virtual library guides to the physical facilities including collections, services and infrastructure available in the library. The combination of library maps and floor plans, library departments and photographic views are used for the tour. Virtual library tours are also using new technologies such as QuickTime movies etc and are beginning to replace image maps on main campus Web sites.

5.2 Ask-A-Librarian

Ask-A-Librarian services are Internet-based question and answer services that connect users with individuals who possess specialized subject knowledge and skill in conducting precision searches. Most "Ask-a-Librarians" services have a web-based question submission form or an e-mail address or both. Users are invited to submit their queries by using web forms or through e-mail. Once a query is read by a service, it is assigned to an individual expert for answering. An expert responds to the query with factual information and/or a list of information resources. The response is either sent to the user's e-mail account or is posted on the web so that the user can access it after a certain period of time. Many services have informative web sites that include archives of questions and answers and a set of FAQs. Users are usually encouraged to browse archives and FAQs before submitting a question in case sufficient information already exists.

5.3 Real Time Services

A new and exciting method of digital reference service that libraries are attempting to provide more and more now is live reference. These are real-time, interactive reference services in which the users can talk to a real, live reference librarian at any time, from anywhere in the world. User and librarian can interact using chat technologies, and unlike with email reference the librarian can perform a reference interview of sorts by asking the users to elaborate or clarify if needed before proceeding to answer the question. The librarian can perform Internet searches and push websites onto the user's browser, and can receive immediate feedback from the users as to whether their question have been answered to satisfaction.

5.4 Bulletin Boards

A bulletin board is an electronic communications forum that hosts posted messages and articles connected to a common subject or theme or interest. It allows users to call in and either leaves or retrieves messages. The messages may be directed to all users of the bulletin board or only to particular users. But all messages can be read by all users. Several libraries are using bulletin boards for their web-based library services. The bulletin board system is also used as an interactive interface to invite suggestions on activities and services of a library. It can also be used as an interface to distribute library services.

5.5 Web-based User Education

Web guides and teaching tools are found everywhere on the Web because they are easily updated, accessed, and printed on demand. The web-based user education provides a high degree of interactivity and flexibility to the users. The library web sites can use web-based user education for imparting training to users in teaching the basic library skills along with glossary of library terms, using Library OPAC, locating books, magazines, biographical data and other library materials, understanding how to navigate the libraries website and how to select the most relevant database, instructions for searching CD ROM and guidance in locating web-based databases and other electronic resources and instructions on subject searching training, using Boolean operators and searching internet resources through search engines (How to make efficient search strategies).

5.6 Web Forms

Library web sites have some web forms for suggestions and comments on the Library Services. Different types of Web Forms are available on web that may be an Indent form for acquiring some publications, interlibrary loan request form for document delivery, Ask-a-Librarian forms, on line reservation form or user survey form etc.

6 INDIAN SCENARIO

The Indian libraries also have realized to give web based services to users and they have recognized that working together can accomplish for more than they can do individually. Many Indian libraries in India are not geared up for accessing e-journals due to various reasons including user ignorance, infrastructure and initial funds. The library and information networks in India were initiated in early eighties. The growth during this period can be linked to some of the policies that Government of India pursued. Some institutions like CSIR, ISRO, DRDO, DAE, ICAR, SIRNET, NICNET, NISSAT, INFLIBNET, MHRD and IIM libraries are actively working continuously to improve the present situation. They spend annually a huge amount of money towards library acquisition, especially towards journals, e-journals and e-databases. Some initiative include, Indian Institute of Management for accessing bibliographic databases, CSIR laboratories for Science Direct, FORSA for accessing Astronomy and Astrophysics journals, Hyderabad Knowledge

park members of J-gate, INFLIBNET (UGC–INFONET) initiative for full text and databases like BIOSIS and CAS and INDEST for a host of full text sources and few bibliographic databases for the benefit of IITs, IISc, NITs and Engineering colleges. In India, library consortia are emerging as one of the important service to users. The Indian consortiums will help the library to provide better services to the users by investing meager amount. To expand the access for more number of e-journals, e-books and other e-resources, we have to develop the digital library infrastructure as a platform for e-learning.

6. WHAT WILL BE THE FUTURE OF WEB BASED SERVICES ?

Library Web services will continue to spread out, offering more full-text electronic journals and indexes that do not now include full text will begin to do so, or link to external resources. Bibliographic access to full-text periodicals either through cataloging, databases, or vendors will be in improved form. There will be more Web forms for user feedback, and perhaps a virtual librarian who interacts in real time chat or video conferencing. More Document delivery services to distance education or users and Savings on Interlibrary Loan and user convenience are incentives. Information resources through creative consortia purchasing will be popular. A well-developed user education modules or tutorials, especially to support independent exploration of library and Web resources. Somebody will have to figure out how to keep Word users from saving print documents as XML, without thinking in terms of Web, not print, space. XML will be embraced as a way to control page appearance and behavior, but it will take a while for people to figure out how to use it well and there will be trends we haven't thought of yet...

8. CONCLUSION

The standards for organizing web-based resources are still in the early stages of development, and librarians are forced to utilize standards for print resources that were not designed for electronic resources. Additionally web-based information resources are volatile in the sense that may be moved from one site to another or may be removed altogether from web.

Web-based library services will become more widespread and sophisticated as the web becomes common place throughout the world, and to be successful players in the E-world. Libraries must continue to address the web design and implementation issues. As we actively transfer library services, our central purpose remain the same, to serve and teach users to find, evaluate, and use information effectively. The librarians should be expert to hold the hands of the users who are moving towards new communication paradigm a shift from face to face human contact to human machine interaction, from paper to electronic delivery, from text centered mode to multimedia and from physical presence to virtual presence. Despite these changes in communication technology, the reference interview will remain at the heart of the reference transaction. To meet these challenges the librarians may play a leadership role in providing better Web Based library Services facilities to their current techno savvy users.

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Dr. Anjana Bhatnagar has been working at PK Kelkar Library at Indian Institute of Technology, Kanpur for the last twenty years and presently working in Computer Aided Reference Services of Digital Division of its library. She has been consistently involved in assisting the users by guiding them to use the databases according to the latest integrated technology. With the motive to expand and share her working knowledge and practical experiences about how to access the databases quickly and wisely, she wishes to provide information about searching retrieval, and user interfaces with the help of comparative study of databases commonly used in academic libraries.

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