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# CHANGING ROLE OF ONLINE INFORMATION SERVICES IN THE DIGITAL ENVIRONMENT

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## Abstract

*Present Paper attempts to highlight the online information services, online infrastructure, online services, online search, cost and component of online searching, its advantages and disadvantages and also the online security in the changing context of digital environment*

**Keywords:** Online Information Service, Online Searching, Online Infrastructure, Network Security

## 1. Introduction

Online information services involve the services from remotely located databases through interactive communication with the help of computers and communication channels. The users can access the databases directly or via a vendor (Supplier of online services). Generally, online information services are those services, which are available through networks.

## 2. Growth and development of the concept "Online Information Service"

Searching online databases has been available ever since the early 1970's. Early database providers such as BRS and DIALOG had rudimentary form of gateway in the form of menus in which databases could be grouped and from which one or more could be selected for searching.

The first online services popularly came about in the early 1980's. CompuServe is considered the first major commercial online service. Utilizing a text-based interface, it allowed anyone with terminal program the opportunity to access their services. Members were charged a per-hour fee for access. Others text-based online services followed such as Delphi online service, and GENIE.

As the use of computers with GUI operating systems installed increased, such the Apple Macintosh and Microsoft Windows PCs, text-only online services were becoming outdated. Subsequently services such as CompuServe began to also offer a GUI-based program for accessing its service. Early versions provided a simplistic GUI, though they continued to offer text-based access for those who needed or wanted it. At the same time GUI-only online services such as Prodigy, MSN, and AOL sprang up. Apple computer would also join the fray, first with AppleLink, which was targeted mostly at Apple dealers, developers, and Mac computer consultants. Later, Apple offered the short-lived E-World, targeted at Mac consumers.

Starting in the early 1990's, the internet, which had previously been limited largely to government, academic, and corporate settings was opened up to the public. The invention of the world-wide-web in 1993 helped to spur development of the internet as an information and communication resource for consumers and businesses.

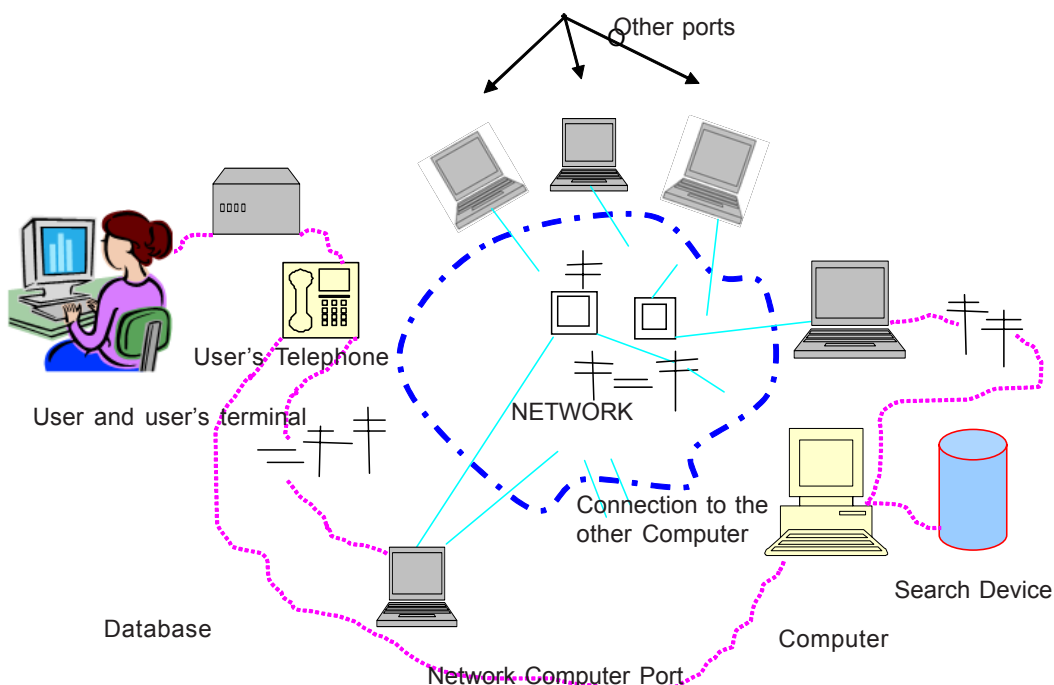
In 1994, the web became commonly available. It enabled libraries to start listing the electronic resources to which they subscribed or web pages, thus providing users with ready information. As the web's popularity increased throughout the nineties, most of the vendors converted their user interfaces into web-based format and made online databases web accessible. This enabled libraries to make their catalogs and web pages the basis for direct linking to the resources.

Popular online services such as CompuServe, AOL, and Prodigy began adding access to internet services on the side, such as e-mail, usenet newsgroups, ftp access, and the world-wide-web. At first, these online services continued to offer a great deal of content available to their members only but as the world-wide-web gained in popularity many of these online services began offering less and less of their own content and instead relying on various web sites to serve as a substitute for content they had previously offered. This eventually led many online services to largely cease being online services in the traditional sense and become more like their internet service providers counterparts. As internet became popular, many ISP's began offering flat fee unlimited access plans. This forced online services that had been charging by the hour to also offer flat fee unlimited access plans to compete.

First generation (until 1981)	Dumb terminals, slow transmission rate, bibliographic databases, intermediary searching, commercial online system such as CompuServe and DIALOG
Second generation (1982-1991)	PCs as workstations, Medium transmission rate, bibliographic, directory and ASCII full-text databases, specialized end-users and intermediaries
Third generation (1991-1993)	Multimedia PCs, higher transmission rate, ASCII and full-text databases, consumer end-users, intermediaries and specialized end-users
Fourth generation (1994- )	World wide web became popularly used as internet tool, web-based online services, flat fee access

### 3. Online infrastructure

Online services need the infrastructure of client-server environment, where client/user PCs are linked to the telecommunication network via Modem and through this network it can access to the databases of host servers which are geographically distributed through out the network (Fig-1).



Actually, we can get online services through three types of network environments:

- i) Client-Server Environment
- ii) Internet environment
- iii) Intranet environment

### 3.1. Elements of online search

There are nine basic elements of an online search namely Searcher, Search formulation, Input search formulation, Workstation, Link to computer system, Search software, Store of information, Retrieved items and the printer. The basics of an online search system with nine elements are shown with the help of flow diagram (Fig-2).

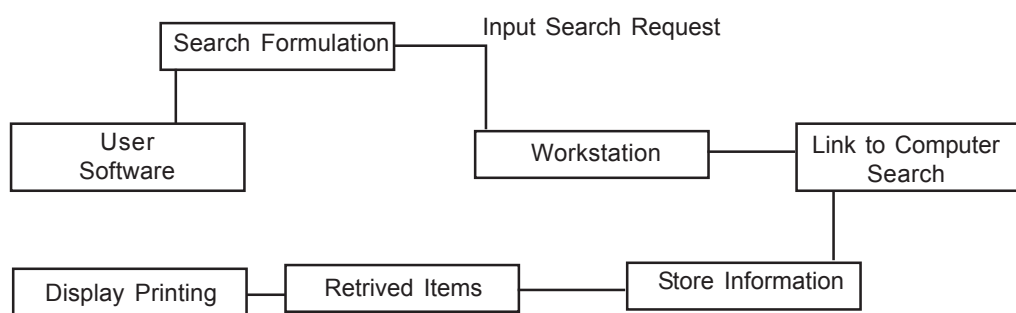


Fig.-2

## 4. Components of online service

There are five major components of online search service:

- i) Database producer or information provider
- ii) Online service providers
- iii) Telecommunication links
- iv) Workstation
- v) Linking tools

### 4.1 Database Producer

Database producers or information providers of online services are any organization or it may be an individual who produces databases containing current, updated information. These databases include both bibliographic and document databases. In many cases online service providers are database producer.

#### 4.1.1 Databases

One of the most vital issues of online searching is the selection of the appropriate databases. There are different factors to be considered during the selection of right databases for right information. The factors are:

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- i) Subject and source coverage must be appropriate
  - ii) Frequency of updating
  - iii) Appropriate search type
  - iv) Number of primary journals included in the databases
  - v) Nature of the search terms
  - vi) Need to formulate search phrases
  - vii) Fields or records available for searching
  - viii) Search output required in different formats
  - ix) Search costs
  - x) Access to additional resources
  - xi) Search experience

#### **4.1.2 Online service providers**

Online service providers are also called vendors, sometimes also known as online search service, online system suppliers, search services or online service spinners, are responsible for mounting databases on a computer and making the arrangements necessary for such databases to be searchable from a large number of remote user workstations

##### **4.1.2.1 So called online service providers.**

In case of client server environment the vendors or online search services are the service providers. These so called online service providers are of five types:

- i) The traditional supermarket online search services: Offer a range of 50-300+ databases on behalf of database producers. Examples include: DIALOG, DataStar and Questel Orbit.
- ii) Specialist online search services: Offer specific subject oriented information. Example include: ICC for financial database, DBE-Link for German language
- iii) Publishers as search services: Number of publishers have entered into the market as search serves: Examples are: EBSCO and UMI's ProQuest Direct.
- iv) Platform-independent search services: Provide access to databases on CD-ROM. Examples are: Ovid technologies and SilverPlatter.
- v) Bibliographic utilities: Offer access for specific communities to a select range of databases, often a special rates. Examples are: OCLC FirstSearch and BIDS.

##### **4.1.2.2 Internet service providers**

In the world wide web environment of internet the ISPs are treated as online service provider because they provide web sites containing web pages of different types of information. Examples are: VSNL, ERNET and Satyam online, etc.



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## 5. Costs of online searching

There are a number of costs that must be considered in assessing the cost of a search. Traditionally the costs involved in online searches included telecommunication costs, access charges for hosts, database access charge, cost of the searcher's time and the cost of training the searcher. The pricing of online service could be by:

- Subscription of digital objects like e-journal, e-books etc.
- Usage basis
- combination of subscription and usages
- Connect time internet resources
- Free of cost for the users of intranet
- Fixed fees for unlimited usages and times
- On the basis of information delivered

## 6. Advantages and disadvantages of online searching

There are several advantages and side by side also some disadvantages of online searching.

### 6.1 Advantages

- Interactive
- Ease with which terms can be coordinated
- Accessible across the network, not just in library
- More access points available than in the printed version
- Many search strategies possible
- Searching faster than with printed version
- Quality-controlled
- References printed out
- Staff become expert users
- Search software tailor-made for the data
- Constantly updated
- Specialist sources not available for any other sources
- Cost effective in the sense, if one was to spread the true cost of conventional materials over the number of uses, it might be found that these costs are higher than would be expected

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## 6.2 Disadvantages

- Special training in search software needed
- Can be expensive
- Difficult to browse to spot references not containing search terms but still relevant
- Archives don't search as far back as printed form
- May only be accessible via-staff, owing to the expense and or training needed
- Link slower than pre-cached CD-ROM over LAN
- Information are volatile in nature
- Difficult to search relevant information in the internet

## 7. Types of online information services

There are so many services through online. It will be better to enumerate these under different basis

### 7.1 On the basis of information sources

#### 7.1.1 Conventional sources

##### 7.1.1.1 Primary sources

These are the documents with nascent or most generic information. Some examples are given:

- i) Periodicals : Library Journal Digital <http://www.ljdigital.com>
- ii) Report : Follett Report: The management of Library and Information <http://bubl.ac.uk/archieves>

##### 7.1.1.2 Secondary sources

Secondary sources present the information taken out from primary sources.

- i) Bibliography: Bibliography of Writings on the History of Libraries, Librarianship, and Book Culture <http://www.spertus.edu/library-history/f95.html>
- ii) Monographs: IARC Monograph <http://dinu.wiz.uni-kassel.de/dain/ddb/x118.html>
- iii) Book reviews: Choice Book Reviews Summery [Http://www.lib.calpoly.edu/retriever/courses/legal/book\\_reviews.html](Http://www.lib.calpoly.edu/retriever/courses/legal/book_reviews.html)
- iv) Guides: The Collector's Guide: Rules and Copyright <http://www.collectorsguide.com/wingrul.html>

##### 7.1.1.3 Tertiary sources

Tertiary sources gather information from both primary and secondary sources.

- i) Directory : LIS Schools on the Internet <http://www.itcs.com/topten/libschools.html> Here schools are organized by country

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### 7.1.2 Non-Conventional sources:

These sources refer to the informal avenues of information such as discussions, releases from institutions etc.

- i) **Bulletin Board System (BBSs) and Electronic Discussion Groups (EDGs):** Electronic Discussion Forums discuss various topics like medicine law , politics etc. Bulletin Board System also act as a channel for continuous interaction among the members on a particular topic.  
Ex: OCLC-<http://www.oclc.org/oclc/forms/lstserv/htm>  
Lis-forum@ncsi.iisc.ernet.in
- ii) **Universities on the Net:** These are the home pages on the web containing detailed information about academic program, admission, recruitment etc.  
Ex: University of Chicago  
<http://www.uchicago.edu>
- iii) **Products information:** E-Commerce is now very much popular. Business on the Net is a potential area for marketing, advertisement, ordering etc.  
Ex: Multimedia Café-software reviews, feature articles and downloads  
<http://www.worldvillage.com/cafe/>

### 7.2 Online services for LIS professionals

Electronic resources through online are very much required for doing different functions and services of any library. Therefore, these are important for library professionals. The services along with functions are given below:

**7.2.1. Acquisition: Different publishers' catalogue are available through online, help** in acquisition of journals and books.

Ex: e-journals: Information today Inc.- <http://infoday.com/>  
IEEE Publications Online- [http://www.ieee.org/pubs/online\\_pubs.html](http://www.ieee.org/pubs/online_pubs.html)  
e-Books: Prentice Hall Publishers- <http://prenhall.com/>  
Oxford University Press- <http://www.oup.co.uk/>

**7.2.2 Collection development:** Different online references can be used for collection development so far the cost and storage of printed version is concerned.

**7.2.3 Bibliographic services:** Usually bibliographic services give information about locating information sources and information itself. Through online LIS professionals can provide bibliographic services to the users.

Ex: Library of Congress- It offers online access to its catalog and give links to many other important library sites on the Net. <http://lcweb.loc.gov/>

Uncover- It is powerful tool for users who need fast document delivery. <http://www.carl.org/uncover/>



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**7.2.4 OPACs:** Online Public Access Catalogues (OPACs) have brought entire library collection online.

Ex: OCLC-<http://www.oclc.org/oclc/forms/lstserv.htm>  
Dynex OPAC-<http://sulacco.library.ucg.ie/opac/opac.html>

**7.2.5 Consultancy:** Online consultancy and counseling by resource persons is now available on the Net.

Ex: SLISNET (Schools of Library and Information Science Network)  
<http://www.unesco.org/webworld/slisnet/slisnet.htm>

**7.2.6 Specialized Search Tools:** The search tools which are specialized in LIS are also available.

Ex: <http://www.infolibrarian.com>

**7.2.7 LIS School:** Library and information science schools host informative home pages on the web.

Ex: University of South Carolina CLIS-<http://www.libsci.sc Carolina.edu/>

### **7.3 On the basis of internet services**

There are basically four types of services provided by the Internet to its users.

**7.3.1 Electronic Mail:** The electronic mail service (Known as e-mail in short) allows an Internet user to send a mail (message) to another Internet user in any part of the world in a near-real-time manner. Message in e-mail service can contain not only text documents but also image, audio and video data in digitized format. For this, users must have e-mail address like postal address. The mail address will be like sibsankar\_jana@yahoo.co.in. There is also a provision of attachment file by which one can send file along with message.

**7.3.2 File Transfer Protocol:** The File Transfer Protocol service (known as FTP in short) allows an Internet user to move a file from one computer to another on the Internet. A file may contain any type of digital information – text document, image, art work, movie, sound, software etc. Moving a file from a remote computer to ones own computer is known as downloading and moving a file from ones computer to a remote computer is known as uploading. There are two types of FTP service namely:

i) Public or Anonymous FTP service

- Accessible to general public
- Login name use “anonymous”
- Password is the e-mail address of user

ii) Private FTP service

- Accessible only by private users, customers, members of the organization
- Logon using assigned names and password

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Various commands are used in FTP, such as

- Get- for downloading
- Put- for uploading
- Dir- for list of files with full information
- Ls- for of files with little information

**7.3.3 Telnet:** The Telnet service allows user to log in to another computer somewhere on the Net. Through Telnet a user can execute telnet commands on his/her local computer to start a login session on a remote computer. This process is also called 'remote login'.

Some of common uses of telnet service are:

- Using the computing power of the remote computer
- Using a software on the remote computer
- Accessing remote computer's database or archive
- Reaching public access account
- Accessing to multiple telnet through telnet
- Logging in to ones own computer from another computer

**7.3.4 Usenet:** The Usenet service allows a group of Internet users to exchange their views/ideas/ information on some common topic that is of interest to all the members belonging to the group. Several such groups exist on the Internet and are called *newsgroups*.

The Usenet news groups are organized into hierarchies, either by subject matter or geographically. There are three parts in Usenet groups:

- i) Top level (subject or geographical hierarchy)

Subject hierarchy:

- Comp computer related topics
- News about newsgroup
- Rec recreations
- Sci science and engineering
- Soc social science
- Talk discussion
- Misc miscellaneous topics
- Alt others

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#### Geographical hierarchy

- Alt others
  - De Germany
  - Fj Japan
  - Umn University of Minnesota
- ii) Broadest category: Broad group of the each subject like 'lang' for Language under computer science
- iii) Specific topic: Specific area of that particular broadest category like 'C' for language C

#### 7.4 Free online sources and services on the Net

There are so many free sources and services are available on the Internet. Some of these are just mentioned here along with the corresponding URLs.

##### 7.4.1 Free online sources

1. e-books
  - a) Electronic-version of printed books
  - b) Published only in electronic-formsex: <http://www.free-ebooks.net/> and <http://www.ebrary.com>
2. e-journals Ex: <http://jodi.ecs.soton.ac.uk/>
3. Directories of e-journals Ex: <http://www.doaj.org/> , It provides link to 550 free online journals.
4. Almanacs Ex: <http://www.infoplease.com/almanacs.html>
5. Atlas Ex: <http://www.infoplease.com/atlas/>
6. Newspapers Ex: <http://www.nytimes.com>
7. Conference proceeding Ex: <http://2003.InSite.nu>
8. Dictionary Ex: <http://www.infoplease.com/dictionary.html>
9. Databases Ex: <http://www.lngeneas.com/free>
10. Encyclopedia Ex: <http://www.wikipedia.org>
11. Thesaurus, Ex: <http://www.infoplease.com/thesaurus>
12. Newsletter Ex: <http://www.langa.com/newsletter.htm>
13. News digest Ex: <http://www.bridges4kids.org/newsdigest/3-8-04.html>
14. Virtual library Ex: <http://www.byu.edu/ipt/vlibrary/>

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#### 7.4.2 Free online services

1. Free online sample copies Ex: <http://www.sagepub.co.uk>
2. Free table of content service for books and journals Ex: <http://elsevier.com/locate/contentdirect>
3. Free abstract services Ex: <http://www.wkap.nl/kaphtml/TOCSEARCH>
4. Journal of the week service Ex: <http://www.emeraldinsight.com/jotw/>
5. Free online catalog Ex: <http://ww.amazon.com>
6. Free electronic notification service by e-mail Ex: give news bulletin

#### 7.4.3 Free trial of online sources

1. Electronic encyclopedia, Ex: <http://www.eb.com/>
2. Emerald journals Ex: <http://www.emeraldinsight.com>

#### 7.5 Reference information service on the web These can now be categorized into three broad groups

##### 7.5.1 Reference and information services from publishers, database search services and specialized institutions

- Contents page services from commercial publishers such as IDEAL Alert
- Information on new books from publishers and vendors like Amazon.com
- SDI services from online search service provider such as DIALOG Alerts
- Current contents and alerting services from ISI and so on

##### 7.5.2 Online reference services provided by librarians and experts

- Ask a Librarian- EARL Consortium for Public Library Networking
- Ask a Geologist-[http://www.nrcan.gc.ca/ess/esic/cgi-bin/askgeol\\_e.cgi](http://www.nrcan.gc.ca/ess/esic/cgi-bin/askgeol_e.cgi)
- Ask ERIC-<http://askeric.org>
- Ask Me-<http://www.askme.com>

##### 7.5.3 Web-based reference services where users need to search or browse:

- Britanica-<http://www.britanica.com>
- Library U-<http://www.libraryu.org>
- Internet Public Library Pathfinders-<http://www.pathfindersonline.org>

#### 7.6 Intranet: a new dimension for online services

- Offers Network fax and IntraMail

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- SDI services at the users' terminal
  - Allow direct posting of the results of research on electronic databases
  - OPAC of the particular library
  - Provide internal newsletter

## **8. Network security for online information:**

Network security is required for:

- Secrecy - For keeping information out of the hands of unauthorized users.
- Authentication – Deals with determining whom you are talking to before revealing sensitive information or entering into a business deal.
- Non-Repudiation – Deals with signature, how do you prove that your customer really placed an electronic order for some article.
- Integrity control – Verification of the correctness of the received data.

Several measures are taken for security:

- Passwords in each steps of entering into information
- Using Encryption-Decryption method
- Using Digital signature
- Using Watermarks embedded into the information
- Setting up of Firewall consisting of two packet filtering routers and one application gateway
- Lock and key of physical place of computers and servers

## **9. Conclusion**

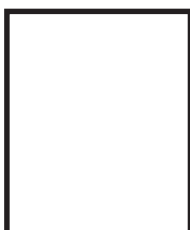
Although online information services existed before the arrival of the Internet, many more have appeared over recent years. Most of the online search services are converted to the web-based services. Some are provided by librarians and experts, but many organizations have also begun to provide web-based services.

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