

Master of Library and Information Sciences
Second Semester
Types of Library and Information Networks

The library and information networks perform multiple activities including providing access to full-text and bibliographic databases, creation, maintenance and updating of catalogues on member libraries, document delivery services and promotion of resource sharing activities amongst member libraries.

The library and information networks can be grouped into following three categories based on their size, subject specialty and activities:

1. Large networks concerned primarily with computerized large-scale technical processing, e.g. OCLC, RLIN, etc.;
2. Small networks or consortia concerned with acquisition of electronic resources for member libraries and training of staff;
3. Limited-purpose networks cooperating with respect to limited special subject areas, e.g. FORSA;

Limited-purpose networks concerned primarily with inter-library loan and union catalogue activities.

A. Based on Geographical Region

The library and information networks can be divided into the following categories based on their geographical regions they serve:

i. City or Metropolitan Library Networks:-

The library networks. Confining their activities and membership to a given city or metropolitan area can be categorized as Metropolitan Library Networks, such as ADINET, PUNENET, BONET, etc. in India.

ii. Regional Library Networks:-

There are regional academic groups founded by the member institutions for specific purposes. APSONET in Andhra Pradesh is one such example.

iii. National Library Networks:-

Library networks whose activities are spread over the entire country can be categorized as National Library Networks. INFLIBNET in India is a national network in terms of its membership and spread of activities.

iv. International Library Networks:-

The library networks like OCLC can be considered as international networks with 50,540 libraries as its members in 84 countries.

B. Based on Their Activities

The library networks can also be grouped under the following categories based on activities undertaken by them.

i. Umbrella or Supermarket:-

Some of the networks, such as OCLC, are “Umbrella” or “Supermarkets” type covering all fields and offer multitude of services. Libraries can take membership of such networks for accessing selected databases or for using its union catalogue.

ii. Bibliographic Utility Networks:-

The most common purpose of a library network is library automation and resource sharing which generally take multiple forms. Most other activities, such as creation of union catalogues, document delivery services and copy cataloguing are its by-products. They consist of a large union bibliographic database of member libraries, accessible online to members for copy cataloguing or for creation of new bibliographic records for new books. Such networks also provide cataloguing information on magnetic tapes or CD ROM for retro-conversion of manual library catalogue into machine-readable catalogues. The largest bibliographic utilities, such as OCLC provide a database for cataloguing records created by member

libraries, these records are used for copy cataloguing, interlibrary loan and other functions.

iii. Online Search Service Networks:-

Online search networks host a number of databases in machine-readable form which are accessible online through telecommunication links. A user can directly interrogate the databases mounted on host's computer through a computer terminal using a communication package and communication links in two-way interactive mode. These databases are hired / leased to the online search services (also called vendors, spinners or retailers), from their owners (information provider - often the publishers of the printed version of databases). Some of the important online bibliographic search services networks include: DIALOG, ORBIT, STN, BRS and Datastar in USA; BLAISE and Pergamon Infoline in UK; DIMDI in Germany; Euronet and Diane in Europe; ESA-IRS in Italy; and CAN/OLE in Canada. Most of the online search services networks are now accessible over the Internet with web interface.

iv. Service Centre Networks:-

Service centre networks concentrate on providing services to the member library in a networked environment. Such services may include cataloguing, literature search, database access, news service, etc. These networks act as a distributor or aggregator for online databases for offering computer-based online information retrieval services. Pennsylvania Library Network (PENLIN) and Illinois Library and Information Network (ILLINET) are examples of service centre networks.

v. Networks for Subscription to Electronic Resources:-

Although most library networks undertake multiple activities, group licensing / purchasing of electronic resources is one of the major activity of modern library networks also called consortium. OhioLink, for example, is a state-wide network which first automated all the publicly-funded academic libraries in Ohio state of

USA, then added access to jointly purchased databases as one of its key activities. OhioLink now includes many other libraries and is a leader in group purchasing of and access to digital information. Group licensing / purchasing of electronic resources is one of the key activities of INDEST Consortium in India.

Based on funding source, membership of a library network may be mandatory for certain category of institutions because it is associated with a government body such as a state. For example, all CSIR laboratories are members of CSIR Consortium because the Department of Scientific and Industrial Research, Govt. of India fund it. On the other hand, FORSA Consortium in India is a voluntary organization and its membership is open to institutions interested in subscription to resources in astrophysics and astronomy. The INDEST Consortium, on the other hands, has Government-funding and therefore, its membership is mandatory for IITs, NITs and IIMs.

Activities and services of library Networks

A library network can offer a number of services depending upon its objectives. It is advantageous for a network to take-up multiple numbers of activities and services since the cost incurred on these services get distributed amongst members. Moreover, since a library network represents a large number of institutions, it has better bargaining power and economy of scales. A library network, therefore, can provide a large number of services in a highly cost-effective manner. Important services that a library network can provide are given below.

1. Cooperative Cataloguing

Catalogue of a library is an index to its collection. Likewise a union catalogue of libraries in a network serve as an index to combined collection of libraries in the network. The union catalogue was, therefore, taken up as one of the first activity taken-up by most of the resource sharing initiatives. The sharing of cataloguing services began with centralized cataloguing and distribution of printed catalogue

cards by the Library of Congress in 1901. The British National Bibliography (BNB) was launched in 1950 accompanied with catalogue card service though on a more limited scale than that of the Library of Congress. Fully automated library networks offer interfaces for online cataloguing that allow member libraries not only to access the database but also create bibliographic records online for new books or download records for books that already exist. The centralized cataloguing saves times, avoid duplication, encourage inter-library loan and facilitates downloading of cataloguing information directly into the local library catalogue. At the same time the participating libraries have to follow the same rules and standards decided upon. Many times all the details may not be required by individual libraries. Some of the important catalogue-based services that library networks can take-up include:

- i. Shared cataloguing of monographs, serials, and non-book materials
- ii. Union catalogue of books, serials, theses & dissertations, non-book materials
- iii. Online catalogue access for shared cataloguing and location identification
- iv. Catalogue production in card, book, magnetic tape, floppy, CD-ROM form
- v. Retrospective conversion
- vi. Preparation of authority files

2. Cooperative Cataloguing of Internet Resources: Subject Gateways

The portal sites or gateways redirect a user to the holders of the original digital material. A subject gateway can be defined as a facility that allow easier access to web-based resources in a defined subject area. The simplest types of subject gateways are sets of web pages containing list of links to resources. Some gateways index their lists of links and provide a simple search facility. More advanced gateways offer a much-enhanced service via a system consisting of a resource database and various indexes, which can be searched and / or browsed throughout a web-based interface. Subject gateway is an important component of a

library web site designed for the library users so as to help them discover high-quality information on the Internet in a quick and effective way. In the traditional information environment human intermediaries, such as publishers and librarians, filter and process information so that users can search catalogues and indexes of organized knowledge as opposed to raw data and information. Subject gateways work on the same principle, i.e., they employ subject experts and information professionals to select, classify and catalogue Internet resources to aid search and retrieval for the users. Users are offered access to a database of Internet resources descriptions which they can search by keywords or browse by subject area. A description of each resource is provided to help users assess very quickly its origin, content and nature, enabling them to decide if it is worth investigating them further. In the process users get benefited from the expertise of librarians and subject experts with subject gateways rather than having to locate, evaluate, filter and organize the resources themselves.

Library networks can invite member institutions to commence collaborative cataloguing of Internet resources involving participation of member its institutions. Specialized software are now available as freeware or as priced software to create and maintain professionally developed subject gateways in a collaborative environment avoiding duplication of efforts.

3. Database Services

The library networks can subscribe to electronic resources (including bibliographic databases, full-text electronic resources and reference sources) on behalf of member institutions on cost-sharing basis, host them locally on their own computer infrastructure and provide access to resources hosted locally to their member libraries on payment basis. Besides being economic, local availability of international databases make the access faster and reliable, reduces transpacific network traffic and bandwidth congestion, and cost incurred on it. Depending upon

the licensing arrangements, local hosting of databases also ensures availability of archives of databases locally. The local hosting of databases was practiced regularly by several library networks in developed countries before advent of the Internet and availability of web-based electronic resources. It is still practiced by several library networks and library consortia like CALIS (China), CONCERT (Taiwan) and OhoiLink and OCLC (USA). The library networks can also build value-added services around subscribed resources including retrospective searches (bibliographic services) for member institutions, citation analysis for individual researchers and institutions, current awareness, alert services, etc.

4. Document Delivery Services

The libraries depend on inter-library loan and document delivery services to meet the demands of their users for research articles that are not available in their collection. The libraries cooperate with other libraries to provide these services to their users. Library networks can offer document delivery service as one of its services to member institutions. The library networks can offer document delivery service from journal articles that are accessible or physically available in the libraries of member institutions. Document delivery service widen access to all journals subscribed in member libraries to all users across the library network. The library networks may develop customized databases that provide content-level access to all journals available amongst member libraries. The INDEST Consortium in India, for example, uses JGATE Custom Contents for Consortium (JCCC), which provides content-level access to 4,500 journals available / accessible in all the IITs, IISc and IIMs and facilitate semi-automated document delivery service. Besides, IISc, IITs and IIMs, the JCCC is made accessible to all other core members of the INDEST Consortium.

5. Inter Library Loan

Document collection in a library can broadly be classified in two groups, i.e., collection that caters to the core interest of the institution and the other that serves peripheral interest of its users. With the financial crunch, the library could curb its acquisitions in the peripheral areas and depends on inter-library loan for demands of their users in areas of peripheral interest to the institute. Professional associations like IASLIC have developed Inter Library Loan Code to facilitate the activity. The primary mechanism for sharing materials being practiced for centuries is known as inter-library loan that involves mutual lending and borrowing of materials among libraries. Resource sharing through formal and informal arrangements helps a library to deliver wider range of services. Library networks with their union catalogue of books and journals are instrumental in promoting inter-library loan. Such networks can work proactively to facilitate inter-library loan amongst member libraries by checking the availability, getting the book issued and returned on behalf of member libraries. The library networks may deploy specially trained staff, courier service and transportation for this purpose. Technological advancements offer new dimensions to resource sharing with shift from sharing bibliographic information to sharing full-text electronic resources. Most electronic publishers allow inter-library loan wherein a library subscribing to a given electronic resource in full-text can take a printout of a paper and send it to the requesting library. Fully automated comprehensive inter-library loans and document delivery management system like VDX (Virtual Document eXchange) and ARIEL are now available that facilitate resource sharing between libraries and deliver documents directly to users.

6. Shared Electronic Reference / Real-time Reference Service

Electronic reference service / live reference service can be offered by a library network. Digital reference service, also called “Ask-An-Expert” or “Ask-A-Librarian” services are Internet-based question and answer service that connect users with individuals who possess specialized subject knowledge and skills in conducting precision searches. As opposed to static web pages, digital reference services use the Internet to place people in contact with people who can answer specific question and instruct users on developing certain skills. The people who serve as digital reference experts (also called volunteers or mentors) are most of the time information specialists, affiliated to various libraries. “Ask-a-Librarian” services have a web-based question submission form or an e-mail address or both made available through the web sites of library network. Users may submit questions by using either form. Once a question is read by a service, it is assigned to an individual expert for answering. An expert responds to the question 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. A number of library networks have started experimenting with offering real time digital reference service using chat software, live interactive communication activities, bulletin board services, interactive customer assistance services using related technologies. The Internet chat technology serves as an innovative method to extend and enhance traditional and remote reference service. While digital reference service is asynchronous method of information delivery, the Internet chat provides the benefit of synchronous

communication between a user and a reference librarian (or mentor). Interactive reference services facilitate a user to talk to a real, live reference librarian at any time of day or night from anywhere in the world. Unlike with email reference, the librarian can perform a sort of reference interview by seeking clarifications from the user. The librarian can conduct Internet searches and push websites onto the patron's browser, and can receive immediate feedback from the patron as to whether his or her question has been answered to his satisfaction. Most libraries currently involved in real-time reference service are part of a collaborative library network so that they can share staffing and work around the clock to truly provide reference service any time. Library of Congress Collaborative Digital Reference Service (<http://www.loc.gov/rr/digref/cdrshome.html>) is one of such services. Several institutions including Cornell University, Internet Public Library, MichiganState University, North Carolina University are offering Internet chat-based service using software like LivePerson, AOL Instant Messenger, Conference Room and Netscape Chat. The librarians have observed that their relatively new chat-based service logged significantly more questions in a relatively short time than did their well established e-mail digital reference service.

7. Collective Acquisition of Resources

The goal of a library network is to share equitably the collective resources of member libraries. While the existing resources can be shared through inter-library loan, library networks can achieve greater benefit by implementing centralized resource acquisition program and by rationalization of its acquisitions. While multiple copies of frequently used documents can be acquired at discounted rates, inadvertent duplication of expensive resources or expensive resources can be avoided. Collective acquisition of resources through library networks not only brings-in transparency and accountability but also demonstrate a commitment to greater collaboration. The collaborative building and distribution of information

resources provides the best solution for improving the quantity of, and access to resources essential for conducting research, teaching and in rendering service.

The process and operations where collaboration can be achieved includes: i) pre-order searching; ii) integration of new bibliographic records in OPAC; iii) account keeping; iv) maintenance of address file for supplier / publisher name, etc; v) negotiations for purchase of multiple copies of books ; and vi) updation of databases when the documents are withdrawn.

8. Consortium Purchase

Consortia-based subscription to e-resources is a way of maximising access to e-resources at minimum cost. It is a feasible strategy to increase the access to electronic resources across institutions at a lower cost. The consortia-based subscription can be successfully deployed to meet the pressures such as diminishing budget, increased user's demand and rising cost of journals. The libraries all over the world are forming consortia of all types and at all levels with the objective to take advantage of current global network to promote better, faster and more cost-effective means of providing access to electronic information resources to the information seekers. The collective strength of consortia members facilitates the libraries to get the benefit of wider access to electronic resources at an affordable cost and at the best terms and conditions. Moreover, the technology has changed the expectations of researchers. Consortia based services helps library networks to:

- i. Increase the cost-benefit per subscription for participating institutions;
- ii. Promote the rational use of funds;
- iii. Ensure continuous and long-term subscription to the subscribed resources;
- iv. Provide opportunities of local storage and hosting of subscribed information resources;

- v. Help in developing local expertise in operation and handling of electronic resources;
- vi. Prompt institutions with common interest to come together and purchase e resources in a consortia mode at reduced cost; and
- vii. Provide improved resource sharing amongst member institutions.

9. Joint Archives and Cooperative Storage Facilities

Cooperative storage of documents is a recent trend, whereby a group of libraries finances the construction of a high-density facility with advanced climate-control systems. Materials stored in such a facility are considered important for research but are not used often enough to justify space in the prime-use area. Sharing of documents is in-built in the concept of cooperative storage since there is a little point in storing multiple copies of commonly owned documents. Dedicated remote-storage facilities have the potential for superior storage conditions because, in the absence of user interaction, the environment is much easier to control. Cooperative storage facilities need not be necessarily a repository for discarded or duplicate materials, it may also be an active facility that organize, house and disseminate materials too expensive or perhaps too little used to justify acquisition in an individual institution.

Besides printed documents, members of a library network can also have joint computer storage facilities that can be used for hosting archives and back files that can be made accessible to the members of the consortium. Such joint facilities may also be implemented for setting up e-print archives across members of a library network. The responsibility of digital archives can also be taken-up in a distributed mode by members of a library network.

10. Shared Core Collections

Besides subscription to full-text electronic resources and bibliographic databases, the library networks may invest in purchase of back volumes of journals and costly

reference sources. Several publishers, including Elsevier Science (Science Direct), Wiley Inter science, Institute of Physics (IoP) and Macmillan offer their electronic backfiles that may be loaded locally onto Intranet servers for local access. NetLibrary (OCLC), Wiley and Kluwer offer e-books to members of a library network wherein each member may buy a definite number of e-books and all members of the network may share such electronic books.

11. Shared Digital Library Project Development

A library network may extend its activities towards shared digital library projects. Some of the important activities that a library network may take-up are:

- i. Setting-up Interoperable Electronic Submission of Theses and Dissertations
- ii. Electronic Preprint Server for Members of a network
- iii. Web-based Union Catalogue of Journals and other Serial Publications
- iv. Web-based Union Catalogue of Books; and
- v. Cooperative Cataloguing of Internet-based Electronic Resources.

Member institutions of a library network may be prompted to set-up e-print servers for depositing electronic theses and dissertation, preprints of research papers, technical and research reports and other similar research material of mutual interest. These institutions as policy may be asked to use OAI-complaint software to ensure interoperability of digital collections. Several OAI-complaint software are available in public domain. Some of the important OAI-complaint software are: D-Space, E-print Archives, CDSWare, etc. IGNOU has taken initiative to establish consortia for OAI. The essence of the open archives approach is to enable access to web accessible material through interoperable repositories for metadata sharing, publishing and archiving. Moreover, while individual institutions in a library network may set-up their digital repositories and function as electronic publishers and data providers, the library network may take-up the role of service provider, i.e., it may harvest bibliographic data from all OAI-complaint institutional

repositories set-up in the member institutions and provide a unified index to all institutional repositories with link to respective repositories for full text. In effect, these servers would act as a unified index to digital libraries distributed member institutions.

12. Training of Users and Library Staff

Training program is a crucial requirement for functioning of library and information network to facilitate optimum use of subscribed electronic resources. It acts as a bridge to facilitate better communication amongst members of a library network and find answers to common problems. Educational programs are essential both for the user as well as for the library staff. Such programs make users competent to conduct their own searches more effectively. “On-the-job” training programs are better not only because it benefits large number of users but it also solves localized technological problems that can be solved with the availability of experts at the time of imparting training.

13. Technology Support to Member Institutions

It is a major challenge for libraries to select appropriate technology from several technological alternatives that are now available in the market place. All libraries invariably require consultation and expert advice in implementation of new technologies. Open systems and standards are accepted norms to ensure interoperability. Existing library systems, which are generally proprietary systems, may not have the capacity to interface with developing open systems architecture. It is often difficult to balance local library systems development and collaborative solutions with other libraries. Since most traditional library systems use proprietary standards, it is important to work towards finding solutions or developing interfaces that facilitates traditional system to interoperate with other systems, including those provided by commercial service providers. Software and systems capable of providing this interoperability are now available in the market place.

14. Communication Services amongst Members

Continuous communication amongst members of a library network is considered its life-line. Effective communication motivates members to cooperate, commit to the cause of a library network and align members toward a shared vision. Continuous communication is necessary to link each member with the practices of the consortium and to involve them at policy and operational level as a team. A library network may promote communication using the following communication media:

Listserv or Mailing List

List serves are electronic groups for sharing of e-mail message sent to the mailing addresses of a group of people. A listserv or mailing list with archival facility facilitates communication amongst members of a library network.

Web Site

Maintenance of web site of a library network provides an opportunity to propagate its services and facilities. Of course, it should be updated regularly.