CHAPTER- III

DEVELOPMENT OF LIBRARY AND INFORMATION NETWORKS IN INDIA

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3.0 Introduction

Computer and communication technologies have brought about revolutionary changes in the area of information in India. During the last decade there have been flurries of activities in every organisation small or big, private or government, to use computer for information storage, processing and retrieval. During the last 5 years there have been considerable improvements in the telecommunication front.

The idea of a network is not new. The emergence of new information and communication technologies has given an impetus and urgency. The Inter-library loan or bibliographic exchange in any form is the chief justification of a library network (Rab, 1994). Growing awareness of the need for resource sharing, the all round resource shortage, an increase in computer installations, an access facility in libraries, an enhanced skill base and improved telecommunication facility within and across the geographical regions have been responsible for the recent spurt in library networking activities (Lahiri, 1997).

No library would be financially strong enough to be self sufficient so far as information resources are concerned. Hence, the concept of resource sharing becomes the central theme of any networking system. The rise in the cost of publication, lack of adequate manpower to organize the same and the location of libraries at distant and remote places have necessitated
networking. The networking of libraries then is one way of achieving maximum results with minimum input.

Rapid advances made in the field of information technology have ushered in a number of advanced information products, technologies and services that can be conveniently harnessed by the librarian community for achieving the objective of networking. These are the computers, the vast communication network developed in the country with STD facility and the T.V. with its own national hookup via satellite and microwave links.

3.1 Library Networking

Allen Kent (1990) observes that the resource sharing is the focal point of library networking. The goals of networking create positive effect on the library user in terms of access to more materials and services and in terms of library budget. He sees it as a better service at less cost. These advantages are realized by all the participating libraries with some variations.

According to Markuson (1980), library network means a formally organized entity providing computer-based and related services to a defined member group linked by telecommunication.

Joseph opines that a network comes into existence when two or more libraries are engaged formally in a common pattern of information exchange through communications, for some functionally interdependent purpose (Quoted by DeJohn, W.T, 1980).
Butler (1975) defines Network as "a dependent organization and system providing duplex digital distribution" He explains network as a

1) A dependent system which operates multilaterally in response to the common desire of a group of member libraries as opposed to services offered unilaterally by vendors and other libraries;

2) Duplex element or feedback describes a two-way communication that differentiates a network from mere publication of information products or services;

3) Digital defines use of computers, telecommunications or digital data manipulation excluding those that operate manually: and

4) Many forms of distribution of information should constitute the essential service of a network.

3.2 Development of Networks in India

Networking of libraries/information centres using computer and communication facilities became a reality in the 1970’s. Networks of all types, i.e. local, national and global are operating in the world today. Though the computerization of information activities started in India in mid 60’s, the development of computerized library networks did not gather momentum till recently.
Despite many drawbacks, the Department of Telecommunication (DOT) is heading the telecommunication in India. In general, networks can be grouped into two categories (Haravu, 1993).

a) Infrastructural networks which provide the hardware, software, protocols and freeways for the flow of information. Networks like ERNET, I-Net, INDONET, and NICNET, fall under this category

b) Application networks which are set up by or for a specific community or for serving a well defined end-users. INFLIBNET, metropolitan/city library networks such as DELNET, CALIBNET, etc and the networks like RAILNET, SAILNET, RABMN, etc fall under this category.

3.2.1 Communication Networks

a) I-Net

I-Net is a network of DOT established in 1991. It is a packet-switched public data network. It is different from ERNET or NICNET in the sense that it does not provide the facility like e-mail, on its own; rather it helps in data transmission from one to the other end. In phase -1 of the project, I-Net nodes were set up in eight major cities, Viz., Mumbai, Delhi, Kolkata, Chennai, Bangalore, Hyderabad, Pune and Ahmedabad. In phase-2, I-Net nodes were planned to be setup in 89 cities in the country. Currently, I-Net nodes have been setup in 102 cities/towns in the country, with reliable
transmission media interconnecting all these centers. It has interconnectivity with Remote Area Business Message Network and access to international data networks through VSNL gateway. The Network provides customer speeds up to 9600 bps with inter-city node connectivity of 128 kbps. In phase-2, the customer speeds would be increased to 64 kbps (DOT, 1999, p.16)

In cities where I-Net nodes have been set up by the DOT, libraries can opt for X.28 dial-up or X.28 for X.25 leased connections. These connections do not require STD facility. Out of these, X.28 dial-up connectivity is available in a short period of time. In cities where I-Net nodes are not set up but normal STD facility is available, a library has to opt for 099 facilities. By this facility, I-Net can be accessed on a dial-up basis from any place having STD facility but not having I-Net nodes. A subscriber has to make a telephone call by using a fixed telephone number, viz., 0992212 or 0992224 by using a modem. The telephone charges are uniform irrespective of the location from where the call is originated and charged @36/48/48 sec. These charges are very much lower than normal STD charges. Once an I-Net node gets established in a city, the 099 account will automatically get converted to X.28 dial up account.

I-Net charges are not much dependent on the call charges but are basically dependent on the volume of data which travels on the line. The unit adopted for measurement of volume is a ‘segment’ which is equal to 64
bytes of information. I-Net subscribers have to pay bimonthly rentals and call charges.

(b) INDONET

INDONET is the first nation-wide computer network set up in India in the early 1980s by Computer Maintenance Corporation (CMC) Ltd., an Enterprise of the Government of India. It is a phased project, located in Six places, Viz., New Delhi, Kolkota, Mumbai, Chennai, Hyderabad and Bangalore which are connected through dedicated leased lines operating at 64 kbps. It has access points at Pune and Ahmedabad. Each of these also is connected to I-Net through X.25 backbone, thus extending the network facilities to other locations serviced by I-Net. Additionally INDONET offers international gateway through VSNL. This connection would facilitate entry to public data networks of other countries. In other words, access to international databases could be had through the utilization of INDONET. In recent times major technology upgradation has been undertaken and the Network has migrated to Open System Architecture based on X.25 packet switching from the earlier systems Network Architecture of IBM. Its services were recently extended on TCP/IP solution.

Any INDONET user can access the network services through (i) dial-up to terminal services (at the eight locations), (ii) X.28 dial-up or leased line PAD, (iii) X.25 connection on switch, and (iv) TCP/IP connection on router, whereas a user can send and receive multiple calls, using X.25
connectivity, the user with X.28 can send or receive only one call. Leased line access to terminal services provides SLIP connectivity. Services available on INDONET include X.400 e-mail services, file transfer, remote computing and database services for online information, Internet mailing and access, voice and video conferencing, credit card authorization, online payment transactions (for utilities, like electricity, water and telephones), distributed data processing, database services, and Web-based applications. INDONET is suited to corporate communications, information retrieval, and remote job applications. Future applications include Internet services, multimedia networking and mail dissemination facilities between India and USA (CMC brochure, 1998).

3.2.2 Infrastructural Networks

a) ERNET

The ERNET (Education and Research Network) was initiated in November 1986 with the assistance of Government of India and United Nations Development Programme (UNDP). It involved eight premier institutions in the country as participating agencies; the five IITs; the IISc, Bangalore; National Centre for Software Technology (NCST), Mumbai and Department of Electronics, New Delhi. The network operations started from 1989. It has made significant contributions in the field of networking in the country. It practically brought Internet to India. ERNET began with the TCP/IP and OSI-IP protocols; since 1995 only TCP/IP protocol is being
used. In January 1998, ERNET became an autonomous society called ERNET India with the main objective to provide state-of-the-art communication infrastructure and services to the academic and research institutions, other public and private R&D organizations, and non-commercial institutions (DOE, 1996 & 1998; www.doe.ernet.in)

ERNET is the first network in the country that provided access to global Internet. The user base of ERNET has grown to more than 80,000 users in 700 institutions providing access to about 120 networks in other countries. ERNET offers the whole range of Internet services through the eight nodes at geographically spread locations. ERNET uses both terrestrial leased line as well as VSAT network for its backbone. It is the first in the country to support both terrestrial leased line and satellite Wide Area Network (WAN) as a single composite network. The main sites are being interconnected through terrestrial links and the access to international gateway is presently through a 64 kbps link. With the successful commissioning of SATWAN Hub, ERNET sites are being progressively connected through VSAT network. 30 Web servers were in operations in 1998, with a few to be added. The network has international gateways at Mumbai, Bangalore, Kolkota and New Delhi connecting ERNET users to global networks with a total capacity of 6.64 MB. These gateways are linked to two local networks in US, and are helping Indian scientists to login to innumerable host databanks available on Internet. Later 2-Mbps access links
to VSNL were added from Delhi, Bangalore, Kolkota, Pune, Bhubaneswar, and Mumabi in 1997 enhancing the quality of services; 256 kbps transit links were added in a few cities. A high speed backbone of 8 Mbps/2 Mbps bandwidth connecting Delhi, Mumbai, Kolkota, Chennai, Hyderabad, Bangalore and Pune is expected to be in place by the end of 1999 for imparting distance education. Also, 2 Mbps access links for 100 institutions with an increase in the number of VSATs from 100 to 300, connecting all the 217 universities and all regional engineering colleges are envisaged in the near future (DOE, 1999).

b) **GIAS/VSNL**

Videsh Sanchar Nigam Limited India’s international telecom carrier is providing full Internet services GIAS (Gateway Internet Access Services) Network, the Internet backbone, in India, which has been offering internet services since 15 August 1995 VSNL is offering internet services are being connected to the Mumbai node through the inter-city links of the Department of Telecommunication. The GIAS enables users for a full Internet access through a normal telecom services. The user base of GIAS includes individual, corporate and educational institutions.

C) **NICNET**

National Informatics Centre is a premier organization of Planning Commission of India engaged in the field of information technology. It has
set up a satellite based nation-wide computer communication network called NICNET which is in operation since 1988. It consists of a master earth station connected to a host computer at New Delhi. The micro earth stations numbering around 700, are located at all regional, state, district, and selected commercial centers, which in turn communicate to the master earth station providing widest reach in the country. It is estimated that over half a million users from 8000 institutions are using NICNET.

Services

The services provided by NIC are wide and varied. It undertakes computerization, development and implementation of application and system software, computer-based information systems, and setting up of networks. NICNET provides e-mail, remote database access, EDI, access to international databases and Internet among others. It has developed more than 3,000 databases. It has regional centers at Pune, Bhubaneswar and Hyderabad. NICNET established the WWW server, the BASIS Web Server, in India and added a new dimension to the existing EDI and bibliographic services on NICNET.

E-mail: E-Mail service is provided through which subscriber can exchange mail with others through national and international networks (at concessional rates for educational institutions and students).
Bibliographical Information Services: NIC provides bibliographic and full text information of biomedical journals. The IndMed database includes data from 77 Indian journals. Databases including JUDIS, Patent Information, ADONIS, Cancer-CD, Drug information (full text), DRUGDEX, and many biomedical databases are available for online searching under the NICNET MEDLARS Service. Over 150 medical colleges are accessing the MEDLINE database. COURT NIC, an information system of the Supreme Court which includes over 2.5 lakh cases, is accessible to judges. NICNET also ports GISTNIC database containing information on national economy, statistical and non-statistical data.

3.2.3 Library Networks

The library networking in the developed countries owes its origin to the technological developments in the fields of computers, communications and microelectronics during 1960s and 1970s. In India, efforts in this direction were made in the late 1980s. NICNET came into operation in the beginning of 1988. This aroused keen interest in the library professionals as well as policy and decision makers in the activities of library automation, database development and networking. One major development is the establishment of metropolitan networks like DELNET, CALIBNET, ADINET, and others. The national bibliographic information networks like INFLIBNET, BTIS and the computer communication networks, like ERNET and NICMAIL/RENNIC which can be used for transmission of
bibliographic information, have also been established. The 1990s can be termed as the golden era of library networking in India. The decade has witnessed planning, development and establishment of library networks in the country. The NISSAT the real backbone of the metropolitan networks in the country was behind almost all library network initiatives except two. In fact, NISSAT is actively engaged in the database development and networking activities in the country for quite some time now. The Delhi Library Network (DELNET, registered in 1992) and Calcutta Library Network (CALIBNET, also registered in 1992) are the earliest library networks. These were followed by other city networks like Madras Library Network (MALIBNET, 1993), Ahmedabad Library Network (ADINET, 1993), Bombay Library Network (BONET, 1994), Mysore Library Network (MYLIBNET, 1994), and Pune Library Network (PUNENET, 1995). Most of these are supported by institutions like NISSAT, INFLIBNET, NIC, NCST, and INSDOC. In April 1991 the University Grants Commission (UGC) initiated the Information and Library Network (INFLIBNET), the largest library network at the national level, for networking libraries of all the institutions of higher learning and research and development. For the past couple of years, DELNET, CALIBNET and ADINET started providing some services. INFLIBNET also started functioning and was registered in 1996 as an autonomous society and as an Inter-University Centre of the University Grants Commission.
a) ADINET

Ahmedabad Library Network was inaugurated in February 1995 when a Memorandum of Understanding was signed between the NISSAT and ADINET at Ahmedabad. Although initially supported by NISSAT, at present ADINET is being supported by INFLIBNET. A Governing Council, an Executive Committee, a working Group, and a Coordination Committee have been formed to advise and monitor, for day to day management, planning, advice about activities, and coordination between members of the Network. At present, ADINET has 106 members, including individual members (Thakore, 1996; Lahari and Sunder Singh, 1998).

Services

Creation of a centralized database, i.e., a union catalogue of holdings of libraries in Ahmedabad is an important activity of ADINET. The centralized database contains a number of databases pertaining to serials, books, theses/dissertations, non-book materials and subject experts with their fields of specialization. Inputs are collected from various libraries and are constantly updated. These include:

Institute Master: This database contains information about 74 libraries in Ahmedabad. Information about more libraries will be added in phases.

Journal Database: This database includes bibliographic information about serials/journals titles currently subscribed by 76 libraries. It contains over
5,600 titles. The content pages of journals, abstracts of articles, and back volumes will be taken up for inclusion gradually.

**Book Database:** In the first phase it covers ten libraries in Ahmedabad which have already been computerized. These are having more than 1.8 lakh records in the database. The Engineering Database of two libraries contains 43,458 unique titles. Coordinated efforts in collection development by ADINET are expected to result in sizeable reduction of unnecessary duplication of subscriptions.

E-mail facility provided by ADINET enables the members to exchange information amongst them with others within the city and outside. ADINET offers the following services to users through the member libraries.

**Online Information Search:** The participating libraries can search information by accessing the Union Catalogue database. This catalogue initially will have the holdings of periodicals only, and gradually holdings of books, dissertations, reports and important non-book materials will also be added to it.

**Inter-library Loan:** ADINET will enable users to find the location of periodicals/books/reports their interest. Once located, they can then be borrowed on inter-library loan. The document delivery service has been functional for some time now.
Photocopying Service: When requests are received for journal articles, they can be photocopied and sent to other libraries at specified cost.

Current Awareness Service: This service can also be provided by commercial databases which are available in some libraries in machine-readable form. The Content Page Service is being utilised by 20 libraries in the city.

Information Service: By generating useful databases and procuring commercial databases, it can provide all the members access to the latest bibliographic and factual information.

E-mail Service: INFLIBNET has already installed an e-mail software in its computer. Mailboxes for ADINET members can be opened in this computer. Just by dialing into the INFLIBNET e-mail number, one can post messages meant for other members, and at the same time, retrieve messages received from others. It is proposed to subscribe to ERNET in order to enable ADINET members to exchange e-mail with others in India and abroad.

Bulletin Board Service: Information about popular lectures/talks, conferences, seminars, etc. that are organised by various institutions can be given on a bulletin board. ADINET will provide a facility for posting notices about such events so that others can read them. Members can also highlight breakthroughs achieved by them or pose problems faced by them on bulletin board so that other members working on similar fields can read and respond.
The Bombay Library Network sponsored by NISSAT was launched at the National Centre for Software Technology (NCST), Mumbai on 6th November 1992. The aim of BONET is to make available information to researchers at low cost and to enhance inter library cooperation using computer networking facilities. BONET facilitates access to the resources of the libraries in Mumbai many of which have made rich collections by offering links to all the libraries in and around Mumbai. BONET also benefits significantly from the experience gained, and facilities created by the ERNET at NCST. The BONET computer is connected by a leased line to the international gateway of ERNET located at NCST. This link provides BONET users connectivity with other ERNET nodes all over the country and makes it a WAN rather than a metropolitan network.

The activities of BONET include creation and updation of online catalogues of books, periodicals, and preprints/reprints for the region; facilitating resource sharing; providing e-mail interface for inter-library queries; information retrieval services and dissemination of information using e-mail, bulletin boards, etc.; courier service for inter-library exchange of materials; and organising training programmes for the staff of participating libraries (NISSAT Newsletter, 1993).

Besides providing e-mail services, BONET offers a variety of services which include online access to information on library holdings of
member libraries; access to Unicatalogue, an online catalogue of periodicals in participating libraries; inter-library lending of books and periodicals and inter-library requests for photocopying; online document delivery of items (such as technical reports) made available by participating libraries in machine-readable form; online access to commercial databases, foreign databases and catalogues; and online information retrieval for journals abstracts in the field of computer science and software technology. Besides these services, Internet tools and services like Gopher, Hytelnet, file transfer, etc are also available to the members.

(c) CALIBNET

Calcutta Library Network was inaugurated on 21st September 1993. Following a Memorandum of Understanding (MOU) in June 1994, NISSAT assigned the role of Network Coordination Agency to CALIBNET Society. The management of Network Services Centre (NSC) was entrusted by NISSAT to CMC Limited as long as the Society was functional. The CALIBNET Society formally took over the infrastructural facilities of NSC in November 1994 from CMC Limited.

The major objectives of CALIBNET are to network the libraries in Calcutta for facilitating remote online access to the holdings of data and other databases towards bibliographic resource sharing amongst libraries, and providing electronic access to globally available information.
CALIBNET was established to serve the collective interests of Calcutta's institutional libraries by means of computer-based library automation and networking. It aims at optimizing the utilization of bibliographic resources of these libraries by a mechanism of electronic access and resource sharing. The aim is to create systematic inter-library cooperation and document delivery amongst the libraries of Calcutta. The software MAITRAYEE for the Network was developed by CMC with support from NISSAT. CALIBNET is taking steps towards establishing an intranet with a central database of holdings of Calcutta libraries hosted in the Network for search by member libraries and others (Mitra, 1996).

Services

CALIBNET is essentially a computer-based network of Calcutta-based libraries, comprehending total automation of library operations and management functions and their interconnection through telecommunication lines. It provides online access to international databases at the NSC which provides centralised services such as online search of international databases as well as search of such databases held on CD-ROM at the NSC. The Central Database is hosted at NSC and can be searched online. It has about 30,000 records. It also ports index to contents of serials published by the Asiatic Society since the 18th century. The NSC also extends consultancy in library computerisation, manpower development and training assistance to nodal libraries on standardization, local automation, and retrospective
conversion, current Awareness and SDI services, and back-up support with full-text delivery to make CALIBNET function as a computer-based information provider. Within the member libraries, acquisition, fund allocating, cataloguing, circulation, serials control, and local user services will be automated. Users can locate books and serials through online public access catalogue (OPAC). The network services component enables CALIBNET libraries to query remote libraries hooked to the network, transfer files across libraries, exchange messages, and reply to queries from any of the libraries in the network through e-mail. CALIBORDER is a document ordering service, and facilitates requests for copies of original publications.

E-mail: Apart from the total automation and networking, CALIBNET supports a closed-circuit e-mail network known as CALIBLINK for its member libraries. Through e-mail, the member libraries can have online access to various databases within the network and information available through Internet resources, Dialog and CD-ROM databases; full-text documents through BLDSC, ASTINFO, Uncover, and other agencies and can avail centralised bibliographic support for name and subject authority control.

Software Development: A multi-user information storage and retrieval software named SANJUKTA was developed to support the centralized database of the network. It contains several inter-operative data files. It was
developed using 4GL code in FoxBase under UNIX environment and supports variable, multi-valued fields. It facilitates display of output in AACR 2 or USMARC or UNIMARC formats. A conversion software Parapar has also been developed to facilitate interchange of bibliographic information between CCF, USMARC and UNIMARC files as well as from non-standard formats. It also helps in importing records from CD-ROM databases.

(d) DELNET

DELNET has been in operation since January 1988 and was registered as a society in 1992. It was initially sponsored by the National Information System for Science and Technology (NISSAT), Department of Scientific and Industrial Research (DSIR), Government of India and is currently being promoted by the National Informatics Centre, Department of Information Technology, Ministry of Communications and Information Technology, Government of India and India International Centre, New Delhi. DELNET at present has 900 libraries as its members, of which 159 libraries are in Delhi, 729 outside Delhi in 28 States and Union Territories and 12 in overseas countries.

DELNET has been actively engaged with the compilation of various Union Catalogues of the resources available in member-libraries. It has already created the Union Catalogue of Books, Union List of Current Periodicals, CD-ROM Database, Database of Indian Specialists, Database of
Periodical Articles, Union List of Video Recordings, Urdu Manuscripts' Database, Database of Theses and Dissertations, DEVINSA Database, sample databases of language publications using GIST technology and several other databases. The data is being updated in each of these databases and is growing rapidly. All the DELNET databases have been resident of DELSIS, in-house software developed on BASIS Plus, an RDBMS, the product of Information Dimensions Inc. of USA which has been provided to DELNET by the courtesy of National Informatics Centre, New Delhi.

DELNET provides an array of facilities, including E-mail to its member-libraries both institutional and associate institutional members. DELNET'S relentless efforts in resource sharing have proved extremely effective. It has indeed been a big leap towards the modernisation of libraries in India.

**The Main Objectives of DELNET are:**

- To promote sharing of resources among the libraries by developing a network of libraries, by collecting, storing and disseminating information and by offering computerised services to the users;

- To undertake scientific research in the area of Information Science and Technology, create new systems in the field, apply the results of research and publish them;
• To offer technical guidance to the member-libraries on collecting, storing, sharing and disseminating information;

• To coordinate efforts for suitable collection development and reduce unnecessary duplication, wherever possible;

• To establish/facilitate the establishment of referral and/or research centres, and maintain a central online union catalogue of books, serials and non-book materials of all the participating libraries;

• To develop specialised bibliographic databases of books, serials and non-book materials;

• To develop databases of projects, specialists and institutions;

• To coordinate with other regional, national and international networks and libraries for exchange of information and documents;

To possess and maintain electronic and mechanical equipment for speedy communication of information and delivery of electronic mail

DELNET provides online access to GISTNIC (General Information Service Terminal of NIC) facilitating online information retrieval from its databases which are updated regularly (DELNET Brochure, 1998 and Kaul, 1996) and www.delnet.nic.in
Services

a) Union catalogue of Books

DELNET maintains an online union catalogue of books available in its member-libraries. This union catalogue is continuously updated and is growing in size. The information can be retrieved by author, title, subject, conference, series, etc. It has 33,83,657 bibliographic records. The request for inter-library loan can be placed through the online system.

b) Union List of Current Periodicals

DELNET has created union list of current periodicals in science and technology, social sciences and humanities. The database is available online to DELNET users. It now lists 24,008 periodicals and is regularly updated and new titles are added annually. It is a major resource for Document Delivery Services.

c) Union Catalogue of Periodicals

DELNET maintains a union catalogue of periodicals, which contains full holdings data of the libraries. At present, the database contains 19,289 records.
d) Database of Periodical Articles

The database has details of articles which can be searched under the title, author, compiler, name of the periodicals and subject. The database is being extensively utilized both researchers and scholars. At present the database contains 5,88,244 records.

e) CD-ROM Database

A bibliographic database of CD-ROMs available with the member-libraries is being compiled. It has 2,281 records.

f) Union List of Video Recordings

This is a database of video cassettes available in DELNET member-libraries and has about 5,000 listings.

g) Union List of Sound Recordings

This union list contains of audio cassette records available in member-libraries. This database has 748 records.

h) Database of Urdu Manuscripts

A database of Urdu manuscripts available in Delhi libraries has been prepared, and it lists 210 manuscripts.
i) Database of Theses and Dissertation

A database of Theses and Dissertations submitted to Indian Universities has been started. The database has 44,304 records.

j) Indians Specialists’ Database: A Who’s Who

DELNET has created a database of Indian specialists which is available online to the members. This database now has 2,000 records, and it is growing.

k) Union List of Newspapers

The database has 70 records and contains information about the newspapers, including title, name of the editor, publishers, E-mail address and also the web address of the INTERNET edition, if available on the www.

l) DEVINSA Database

DEVINSA (Development Information Network for South Asia) is a special database on socio-economic issues. It has nearly 20,000 records of periodical articles, books and unpublished material on socio-economic issues.
m) Profile of Member-Libraries

A Directory of member-libraries is available, and it contains information about them.

DELNET also provides access to

a. Cambridge Dictionaries online,

b. Networked Digital Library of Theses and Dissertation,

c. GISTNIC Database,

d. MEDINE and other database of NLM,

e. U.S. patents: Full Text,

f. Full Text Medical Journals,

g. Engineering and Technology E-Journals, and

h. Table of Contents etc.

Inter-Library Loan and Document Delivery Services

DELNET is offering inter-library loan and Document Delivery Services to its Member-Libraries. ILL requests can be registered online for books. For the resources not available in the union catalogues and journals articles, requests can be to DELNET through E-mail. DELNET has also
prepared ILL Guidelines for use by the member-libraries. The services are quite popular among the member-libraries

ILL Online (for member in Delhi) Rs 4000/- per year. Actual photocopying charge, if any and courier/postal charge for books procured from outside will be extra.

ILL Online (for members outside Delhi) Rs 4000/- per year. Actual photocopying charges and courier charges will be extra.

DELNET adopts the latest dependable technologies in information science. This helps to get from DELNET in order to adopt technologies that emerge periodically. This saves both expenses and time of the member-institutions.

Technical Support

DELNET offers technical support to member institutions in the selection of;

I. Hardware;

II. Software;
Professional Service/Training

DELNET arranges tutorials, workshops, lectures, and training programmes every year from time to time, besides a National Convention on Library and Information Networking (NACLIN).

(e) INFLIBNET

INFLIBNET is an autonomous Inter-University Centre of the University Grants Commission (UGC) of India. It is a major National Programme initiated by the UGC in 1991 with its Head Quarters at Gujarat University Campus, Ahmedabad. Initially started as a project under the IUCAA, it became an independent Inter-University Centre in 1996.

INFLIBNET is involved in modernizing university libraries in India and connecting them as well as information centres in the country through a nation-wide high speed data network using the state-of-art technologies for the optimum utilisation of information. INFLIBNET is set out to be a major player in promoting scholarly communication among academicians and researchers in India.
The objectives of INFLIBNET as envisaged in Memorandum of Understanding (MoU) are:

- To promote and establish communication facilities, to improve capability in information transfer and access, that provide support to scholarship, learning, research and academic pursuit through cooperation and involvement of agencies concerned.

- To establish INFLIBNET: Information and Library Network, a computer communication network for linking libraries and information centres in universities, deemed to be universities, colleges, UGC information centres, institutions of national importance and R&D institutions, etc., avoiding duplication of efforts.

- To provide document by establishing resource centres around libraries having rich collections and to optimize information resources utilization by encouraging cooperation among the libraries in the country.

- To encourage computerization of library operations and services;

- To evolve standards and uniform guidelines and to promote their adoption in actual practice by all the libraries.
Functions

In order to fulfill the broad objectives, INFLIBNET will:

- Promote and implement computerization of operations and services in the libraries and information centres of the country, following a uniform standard.

- Evolve standards and uniform guidelines and techniques, methods, procedures, computer hardware and software services and promote their adoption in actual practice by all libraries, in order to facilitate pooling, sharing and exchange of information towards optimal use of resources and facilities.

- Evolve a national network interconnecting various libraries and information centres in the country and improve capability in information handling and service.

- Provide reliable access to document collection of libraries by creating on-line union catalogue of serials, theses/dissertations, books, monographs and non-book materials (manuscripts, audio-visuals, computer data, multimedia, etc.) in various libraries in India.

- Provide access to bibliographic information sources with citations, abstracts etc. through indigenously created databases of the Sectoral Information Centres of NISSAT, UGC Information Centres, City Networks and such others and by establishing gateways for on-line
accessing of national and international databases held by national and international information networks and centres respectively.

- Develop new methods and techniques for valuable information available as manuscripts and information documents in different Indian Languages, in the form of digital images using high density storage media.

- Optimize information resource utilization through shared cataloguing, inter-library loan service, catalogue production, collection development by avoiding duplication in acquisition to the extent possible.

- Enable the users dispersed all over the country, irrespective of location and distance, to have access to information regarding serials, theses/dissertations, books, monographs and non-book materials by locating the sources wherefrom available and to obtain it through the facilities of INFLIBNET and union catalogue of documents.

- Create databases of projects, institutions, specialists, etc., for providing on-line information service.

- Encourage co-operation among libraries, documentation centres and information centres in the country, so that the resources can be pooled for the benefit of helping the weaker resource centres by stronger ones.
• Train and develop human resources in the field of computerised library operations and networking to establish, manage and sustain INFLIBNET.

• Facilitate academic communication amongst scientists, engineers, social scientists, academics, faculties, researchers and students through electronic mail, file transfer, computer/audio/video conferencing, etc.

• Undertake system design and studies in the field of communications, computer networking, information handling and data management.

• Establish appropriate control and monitoring system for the communication network and organise maintenance.

• Collaborate with institutions, libraries, information centres and other organisations in India and abroad in the field relevant to the objectives of the Centre.

• Create and promote R&D and other facilities and technical positions for realizing the objectives of the Centre.

• Generate revenue by providing consultancies and information services.

Services

Library Automation: INFLIBNET has funded 142 universities. Realising the importance of this basic necessity, INFLIBNET Centre,
through University Grants Commission, has provided grants (initial and recurring) to the universities identified under the programme. 142 universities were provided with this grant. Non-recurring grant enabled the university libraries to purchase computers, modem, telephone, printer, air-conditioner, softwares (OS) etc. They were also provided with recurring grant for the first five years after the installation of systems to help them maintain the same and convert the collection into machine readable form. With this INFLIBNET has been able to create an IT conscious environment in the university libraries.

To achieve these objectives, INFLIBNET has undertaken the following activities:

**Software Development:** Initially in collaboration with DESIDOC, an integrated Library Management Software (ILMS) was developed in COBOL to work in DOS 1 UNIX platforms and was tested in more than 50 institutions. Based on the feedback received from these institutions, Software for University Libraries (SOUL), compatible with Windows NT platform has been developed recently which works in client/Web-server mode, using MS-SQL server as back-end tool. This supports the multilingual database creation and Web access. Another software has been developed by using Sybase to mount the union databases on the Network. An interface by using C++ has been developed to transfer the data from ISO
2709 to Sybase. To retrieve data from union databases, search engines using CGI Scripts and PERL have been designed.

**Human Resource Development:** Training of manpower working in the universities and colleges in the use of Information Technology (IT) is an important objective of INFLIBNET and has been given due priority. Twenty training courses of four-week duration for operational staff working in the university libraries and seven workshops of one-week duration for senior library staff, focusing on the managing automation and networking, have been conducted so far.

INFLIBNET Regional Training Program on Library Automation (IRTPLA), a new series of training programs are conducted at different locations in collaboration with universities across the country to train library professionals from college and university libraries at regional level with emphasis on regional languages. More than 44 IRTPLA training programs have been conducted so far. More than 1100 College library professionals have been trained under these training programs.

Due to the technological advancement, the Centre has conducted specialized workshops on Network Management for Libraries, Website Designing and Hosting, Network Configuration and Management, E-Resource Management in using UGC-Infonet, Orientation programme on awareness of access to e-resources. All programmes have received good response from professionals and there was heavy demand for conducting
such special kind of training programmes/workshops on regular basis. Similarly various types of training courses are conducted from time to time to suit the requirements of the professionals.

Centre has conducted workshops on Library Automation in Hindi for the benefit of Hindi speaking states in the country.

Apart from these courses, several other collaborative training programmes were conducted for All India Radio Libraries, ICSSR/NASSDOC, ICAR-NATP and Kendriya Vidyalayas Sanghathan. Centre has also conducted collaborative training/workshop on Digital Library using D-space at Osmania University, Hyderabad, Birla Institute of Technology, Pilani and Aligarh Muslim University, Aligarh.

Centre has conducted two days duration of five National Seminars on UGC-Infonet and E-Resource in collaboration with universities for benefit of faculties, Research Scholars and Students. More than 1000 participants were benefited from these seminars.

Centre also conducts every year the national convention viz. CALIBER (Convention on Automation of Libraries in Education and Research Institutions) which helps the library professionals, as well as IT professionals to interact with each other and discuss the burning issues for mutual benefit. Eleven such conventions have been held on various topics of interest to profession. This event has got an international status and this year
the event will be held during February 2005 at Cochin University of Science and Technology, Cochin.

Though all the libraries in north eastern states have been covered under INFLIBNET program, in order to provide special attention to the problems and issues of these states, the centre is conducting two days annual program called PLANNER (Promotion of Library Automation and Networking in North Eastern Region) for the benefit of north eastern region libraries. The first PLANNER-2003 was successfully conducted at Northern states.

Development of Databases: The centre is currently engaged in creating and maintaining eight union databases that can be accessed online using internet through INFLIBNET Web Page at www.inflibnet.ac.in. These are mounted on Sybase servers and are updated on a regular basis. Books Database covers the holdings of participating libraries which is steadily growing; as of now the database contained over 7,00,000 unique records and more than 10,00,000 records received from the universities are being processed. Theses Database contains records of doctoral theses submitted to various Indian universities till date. More than 1,60,000 records are added to this database. Serials Holdings Database contains more than 8000 unique serial titles of various universities in the country. More than 140 university libraries have contributed their data about serials subscribed during 1998 for the Current Serials Database. It has now close to 10,000 unique titles with 26,000 holdings from various universities. Experts Database, started in 1997, covers
information about the senior level faculty members including university librarians working in Indian universities. This database has more than 6,500 records, and is growing steadily. Research Projects Database holds details about research projects funded by about 45 funding agencies. Currently this database has over 4,000 records. The Secondary Serials on CD-ROMs was started in 1998 giving the details of secondary (abstracts indexing) serials and bibliographic databases in CD-ROM subscribed by more than 106 universities in the Country. Many of these databases are being accessed by users from India and abroad over Internet. INFLIBNET has initiated a separate project covering five major libraries of University of Bombay, Mumbai; Banaras Hindu University (BHU), Varanasi; IISc, Bangalore; Jawaharional Nehru University (JNU), New Delhi; and University of Madras, Chennai. These libraries are being given extra grants from the UGC to convert their catalogues into machine-readable form in two years. These databases will be used for retro conversion of other university libraries as well as enhance holdings of union database and facilitate resource sharing amongst libraries.

Network Facilities: Currently libraries covered under the Programme are advised to subscribe to at least one network, viz., ERNET or VSNL (GIAS) or I-Net or NICNET. This enables the libraries to get access to resources on Internet and INFLIBNET, besides providing a channel for e-mail and associated services. Efforts are underway to establish a VSAT network with
64 kbps capacity extendable upto 256 kbps with 10 Mbps overall through put covering 170 universities institutions, to enable the libraries as well as individual faculty members and students to communicate across the world. INFLIBNET envisages establishment of campus LANs in universities and connectivity of affiliated colleges with the universities in the near future.

Bibliographic Standards: To maintain consistency and quality in databases created by the participating libraries, INFLIBNET brought out a 150-page document, INFLIBNET Standards and Guidelines for Data Capturing. Based on Common Communication Format (CCF), this has been provided to all participating libraries for adoption.

University Information System: INFLIBNET is engaged in creating Web pages for universities covering information relating to the courses conducted, eligibility, fee-structure, facilities available etc. More than 100 universities have responded, and information about 45 universities is in process. Web sites of 28 universities are already mounted on the INFLIBNET Web Server. It is expected that by the end of 2000 web pages of all universities will be available for online access.

UGC INFONET

Indian Universities constitute one of the largest higher education systems in the world. With 294 universities/institutions, 13150 affiliated colleges, 88.21 lakh students and 4.27 lakh teachers, it is a great challenge to ensure effective coordination and communication.
Fast changing curricula and frequent introducing of new subjects impose a great demand on the system in general. Indian Universities need to be given the required thrust to enter the third millennium with a leading edge.

Technology is a driving force in the contemporary education systems. University Grant Commission has launched an ambitious programme to bring about a qualitative change in the academic infrastructure, especially for higher education. Under this initiative UGC is modernizing the University Campuses with State-of-the-art campus wide networks and setting up its own nationwide communication network named UGC-Infonet.

INFLIBNET Centre is an autonomous Inter-University Centre of the University Grants Commission. It is the co-ordinating and monitoring agency in the UGC-Infonet Project. It liaisons between UGC, ERNET and universities. INFLIBNET is also responsible for providing training to university library professionals in the use of this network in order to enable them to provide variety of services to the users.

ERNET India, scientific society under the Ministry of Communications and Information Technology, in partnership with the University Grants Commission is setting up UGC-Infonet. Under this programme it is proposed to use information and communication Technology (ICT) and Internet to transform learning environment from a
mono-dimensional one to a multi-dimensional one. UGC-Infonet will be a boon to the higher education systems in several ways:

- UGC-Infonet will become a vehicle for distance learning to facilitate spread of quality education all over the country.
- UGC-Infonet will be a tool to distribute education material and journals to the remotest of areas.
- UGC-Infonet will be a resource for researchers and scholars for tapping the most up-to-date information.
- UGC-Infonet will form a medium for collaboration among teachers and students, not only within the country but also all over the world.
- UGC-Infonet will be an Intranet for University Automation.
- UGC-Infonet will encompass entire University Systems for most efficient utilization of precious network resources.
- UGC-Infonet will establish a channel for Globalisation of Education and facilitate the universities in marketing their services and developments. (www.inflibnet.ac.in)

(f) MALIBNET

The need for interconnecting libraries in Madras (now Chennai) was visualized by Indian National Scientific Documentation Centre (INSDOC) in 1991. A feasibility study undertaken by INSDOC, partially funded by
NISSAT, was completed in March 1992. Based on the support of major academic and research institutions, universities and industries in and around Madras (Chennai), MALIBNET was registered as a society in February 1993 and the Network became operational in June 1993. INSDOC is the executing agency for the MALIBNET Project (Raghavan and Raghavan, 1996, Viswanathan and Raghavan, 1994). The overwhelming support of institutions made MALIBNET and its services a success. With increased support it plans to reach wider user-base. A Governing Board with several eminent personalities as members directs the activities of the MALIBNET. It meets once in four months to review the activities of MALIBNET.

MALIBNET has been established with the following objectives;

- To bring about cooperative working amongst the libraries and information centres (LICs) in the city of Madras (Chennai) in particular, and in the state of Tamil Nadu in general;

- To evolve network of LICs in and around Madras (Chennai) region initially, and in other parts of the state later;

- To facilitate sharing of resources among the LICs and promote information dissemination;

- To establish appropriate linkages with other regional, national and international libraries, information and documentation centres and networks of such libraries and centres; and
- To organize conferences, lectures, workshops and seminars in the fields of interest.

Services:

Services are open to all categories of professionals, namely, academics, research scholars, practicing professionals, consultants and also industrialists. The services can be availed by members as well as non-members at Nominal tariff. Certain basic services are offered free of cost to members. At present, four databases are being supported by MALIBNET from its own resources. In addition, a number of databases from INSDOC are made available for MALIBNET members.

Directory Database of Current Serials. Starting from the year 1993, MALIBNET has created the Directory Database of Current Serials in Madras (DDCSM). This database is updated every year. A Union List of Current Serials is brought out in hard copy form and also as a publication in four disciplines.

Contents Database of Current Journals: This database is being annually updated from 1993. The Contents Database contains more than 1,00,000 records.

Automotive Engineering Database: This specialised database has been created by MALIBNET to meet the requirements of institutional members (industry). Apart from these, MALIBNET also ports databases of INSDOC
for online access by member libraries. These include the Medicinal and
Aromatic Plants Abstracts, (MAPA), Polymer Science Abstracts, NUCSSI
for Madras & Bangalore regions, Indian Serials Contents on Multimedia,
and Indian Patents Database. MALIBNET also supports INSDOC services
such as online searching of international databases, accessing internet
information, providing e-mail, contents abstracts and photocopy service,
document supply, creation of specialised databases, and training and
consultancy.

Electronic Mail: MALIBNET offers e-mail connectivity to all member
institutions.

MALIBNET Card: MALIBNET cards are issued free of charge to all the
members and at specified price to other users. This is extremely useful to the
user community for accessing all the resource libraries of MALIBNET.

Content Abstracts and Photocopy Service (CAPS) : It is a monthly
service operated for the benefit of the professional community. Each
subscription covers 20 journals of users' choice. Contents data is supplied
through e-mail or on diskettes along with retrieval software in hard copy
form as required by the user. Abstracts and full text of articles from journals
are supplied either on standing order or on demand basis. Photocopies of
journal articles from member libraries are supplied on request.

Express Document Procurement and Delivery. MALIBNET provides
journal articles from member libraries within 48 hours of request. Copies of
the documents, which are not available in MALIBNET member libraries, are being supplied through INSDOC at prescribed rates.

g) MYLIBNET

Located in the Central Food Technological Research Institute of the CFTRI, the Mysore Library Network is jointly supported by NISSAT and the Mysore Library Consortium. It was launched in 1994 with an aim to network 34 colleges located in the Mysore city out of a total of 116 colleges and institutions affiliated to the Mysore University. At present, it has 16 members (www.mylibnet.org.in).

The main objectives of the Network are:

a. To share the resources available with all the libraries,

b. To facilitate faster communication to the participating libraries through e-mail;

c. To develop software for better library management;

d. To create awareness in the field of IT by conducting seminars/conferences, etc., and to conduct surveys;

e. To set up an information base by collaborating with industries, and

f. To offer bulletin board services for flashing arrival of new documents and about professional events, member libraries to provide e-mail and access to databases on nominal charges imparts MYLIBNET offers assistance to computerise the in-
house operations of the training to the trainers in the field of IT, and assists in hosting home pages of member libraries. It uses Cybernet software and provides e-mail, forum service, bulletin board service, database service, FTP, etc. A VSAT has been installed to provide e-mail and internet connectivity to member libraries through ERNET. Member libraries can also share resources and search CD-ROM databases mounted on a CD Server. The home page of the Network has been hosted on Internet and efforts are on to include home pages of member libraries as well. A database of Union Catalogue of S&T Serials in Mysore City was updated (up to 1995) and is hosted on the Network. The database can be searched by title of the journal, library name and subject/topic. The software as well as the database can be freely downloaded.

(h) PUNENET

University of Pune, the Centre for Development of Advanced Computing and the National Chemical Laboratory of the CSIR and is managed by the consortium of these 7 institutions. It was established in 1995 with the financial assistance of NISSAT. Currently the Network has 61 participating institutions (www.punenet.ernet.in).

PUNENET (Pune Libraries Networking) Project is a joint programme of the resource centres available in Pune to its users.
The main objective of PUNENET is to open the information available in libraries databases of information resources available in the participating libraries to enable users to get up-to-date information at one place. The Network also aims at increasing cooperation amongst the participating libraries.

A number of centralized databases have been undertaken for porting on the Network via Internet. Books Database covers documents of participating libraries. Currently it holds about 1 lakh records. Periodicals Database is a union catalogue of journal holdings of about 60 libraries in and around Pune, and contains about 7,000 unique records. Libraries Database covers information 'of participating libraries of the Network. LIS Professionals Database covers experts from the library field. All these databases are continually updated and are available for online searching for the member libraries and users. Multilingual Database of Books as well as the Booksellers' Database are also being developed. The databases are created by using a standard format based on ISO 2709 and designed by PUNENET. PUNENET is providing current awareness service through bibliographic access to the Inside Information database of BLDSC. The search engine software has been enhanced for a better response time and improving retrieval capabilities.
(i) Other Library Networks

Apart from the library networks dealt in the preceding sections, Hyderabad Library Network (HYLIBNET) and Bangalore Library Network (BALNET) have also been conceived. Hyderabad city is having 7 universities and more than 50 S&T libraries in various fields, like agriculture, chemical sciences, engineering, life sciences, military science, and social sciences. These are from organizations, like DRDO, CSIR, ICAR, ISRO, ICMR, and academic institutions. A core working group met to look into the modalities of establishing HYLIBNET for resource sharing and to inter-library cooperation. NISSAT offered its help as in other such endeavors. A comprehensive plan and architecture of the Network has been made on this project. Similarly, Bangalore is a centre for aerospace R & D with many universities and national institutions of organizations like CSIR, ISRO and DRDO. Although Bangalore Library Network (BALNET) was proposed a few years back with some important libraries including that of IISc participating in it, no further activity has been reported. Some enthusiasts are trying to integrate institutions (and libraries) in the area of aerospace sciences. Some efforts are under way in this direction, including hosting of serials and library book holdings on Internet.

There are two information systems, the Environmental Information System (ENVIS) and the Biotechnology Information System (BTIS), which also can be considered as networks. These are WANs in that their nodes are
distributed all over the country. The ENVIS has 24 nodes connected to the ENVIS Focal Point in the Ministry of Environment and Forests. All these centres are creating and updating databases on various aspects of environment, ecology and biodiversity. Most of these centres have been connected through e-mail. ENVIS supports information dissemination and answers a number of queries on wide and varied topics.

The BTISnet, a national bioinformatics network, was launched in 1987 to provide a distributed database and network organisation for harnessing the inter-disciplinary areas of biotechnology. The network has 9 specialised Distributed Information Centres (DICs) and 23 sub-centres. The Department of Biotechnology (DBT) is the Apex Centre. To this, 15 Bioinformatics Centres are linked making in all 48 centres located all over the country. All these 48 Centres are connected through satellite and terrestrial links through NICNET and ERNET. The X.25 links of DOT/VSNL are also used for access.

The BTISnet permits remote login, file transfer, e-mail, bulletin boards, computer conferencing and also connectivity to internet as well as international networks in biotechnology, like ICGEBnet, EMBnet and MEDLINF: databases. The Network, besides supporting bibliographic information requirements, encouraged and facilitated establishment of Web-based information resources, and sharing of knowledge and greater interaction among the scientific community (DBT, 1992 and, 1998).
3.2.4 Other Application Networks

(a) CSIRNET

CSIR has more than 40 laboratories and research institutions spread over the country. In 1989, CSIR set up a computer communications network (CSIRNET) for exchange of information among different laboratories. The CSIRNET, an intranet of CSIR, when fully developed, is expected to facilitate optimum utilization of resources including indigenous online databases and services developed by CSIR laboratories. Broad services and teleconferencing facilities through the network are also planned to be provide apart from facilitating flow of information and sharing of library resources (Satyanarayana, 1996).

E-mail: SIRNET mail service was made operational by INSDOC which has developed an auto-dialling menu-driven software for the laboratories having user nodes. The software takes addresses and messages in the form of files. It also takes the dialing time as the input from the user. The dialing time may usually be sometime at night when the STD cost is less. After this the rest is automatic and no user intervention is necessary. At the specified time the software dials the nearest mail node and issues the necessary e-mail commands to transfer the mail and receives incoming mail, if any, pending at the server node. It also gives proper feedback to the user regarding the status of mails.
(b) SoftNet

Softnet was set up by the Department of Electronics for its Software Technology Park (STPs). It offers high speed data communication links and direct internet access. Soften was set-up by the Dept of Electronics for its Software Technology Parks at internationally competitive tariff. The services available include e-mail, file transfer, remote login, database access, and video conferencing. The main objective is to provide data communication facilities for promoting software exports. All connectivity to access points is through radio links that are very reliable. Each of the nine STPs at Bangalore, Bhubaneshwar, Chandigarh, Gandhinagar, Hyderabad, Jaipur, Navi Mumbai, Noida, Pune and Thiruvanthapuram has an earth station which acts as an international gateway.

The High-Speed Data Communications Facility of SoftNet offers three types of services: (i) SoftPOINT, international private leased circuits of data rates ranging from 64 kbps to 2 mbps for interactive applications, video conferencing and large business operations with specific clients or offices abroad; (ii) SoftLink, a TCP/IP-based multivendor network for providing full access to global internet, and (iii) SoftConf providing video conferencing facilities from Hyderabad, Bangalore and Noida to the rest of the-world. This facility will be extended to other centres in future based on demand. Services, like video, bandwidth and other value added services on demand, viz., authoring of Web pages and setting up Web servers for
providing single point service are on anvil. Currently more than 500 units are utilising Soften facility for software development, export, and Internet access.

(c) Others

The Remote Area Business Message Network (RABMN), established in 1991 by DOT, caters to the needs of the corporate sector. The data network provides communication to remote areas based on satellite communications. It has an installed base of more than 500 VSATS. RABMN is utilized by the manufacturing, financial, and service sectors including State Bank of India, BHEL, Oil and Natural Gas Commission, Tata Iron and Steel Co., National Hydro Power Corporation, etc. The master Earth Station of the Network is located at Sikandarabad (UP) and users C-band DMA or communication/sharing satellite resources. RABMN supports data transfer at 1200 and 9600 bps and offers interconnectivity to international data networks. It also provides access to Net, domestic and international telex and data networks, and supports railway and airline reservation systems. The BISNET of the FICCI was launched in 1993 to provide online information related to business and industry. It created many databases, including Policy Update, Business Profiles, Indian Business News, Business Directories, Data Scan, etc. The access is through I-Net via X.25 and X.28 protocols. A variety of membership options including permanent access membership are available to the users. An impressive
The application of networking in the country is the computerization and
Passenger Reservation System (PRS) of Indian Railways and the Airlines
Reservation System. Started as a pilot project in 1984, PRS connects all
major cities with the zonal railway hubs as well as central hubs at Delhi,
Secunderabad, Mumbai, Kolkatta, Chennai, and other cities. It is a
successful system that enables passengers to make real-time reservation
from a single counter for all trains from any station anywhere in the country.
Initially developed by CMC, the Advanced Railway Ticketing System has
been replaced by PRS, which accounts for over 94 percent of railway
reservations.

3.2.5 Current Status of Library Networks in India

The broad objectives of a library network in the Indian context are:
to provide access to a wider base of information resources, including
internet; to facilitate linkages with national and international networks, to
rationalize acquisitions and to optimize resource utilization to promote and
support adoption of standards in library operations, to generate new services
and improve the efficiency of existing ones, including housekeeping
operations, and to develop forums for interaction amongst professionals and
amongst and users to facilitate seeking solutions to common problems.

(Lahiri and Singh, 1998) seen in the light of these objectives, it is unlikely
that any of the functional networks has succeeded in achieving them.
However, a beginning has been made; some library networks are doing well
despite initial problems and may achieve success in true sense in the near future of the eight functioning networks, seven are local area (city) library networks, while INFLIBNET has a national character in geographical reach. DELNET, the most successful network among these too has a wider geographical reach; it has two international members and 44 of its members spread over 14 states. It enjoys a greater level of cooperation from its members. In fact, DELNET is a front runner in all the departments, viz. membership, geographical reach, database and software development, standardization, library services and resource sharing. Other networks are in different stages of development and so the level and quality of their services differ widely.

The library networks in the country are expected to plan an increasingly important role in providing online access to both indigenous and outside databases. However, to have Internet connectivity they are expected to subscribe to NICNET, ERNET or any other such public or private network. The participating libraries of metropolitan networks and the INFLIBNET will be over 600 and when all these access and utilize the internet resources, it would have a tremendous impact on the document acquisition, resource sharing, document delivery and information dissemination activates in the country.

Services offered by the library networks are OPAC, CD ROM Search, Online search, Inter library loan, CAS, Union catalogue, thesis holdings,
contents of journals, current journals and full text article etc. activities in the country Networks. Many of the library networks are linked to access internet and international databases. Although INDONET is available for information retrieval applications, being a commercial network, the costs are rather high.

As of now NICNET and ERNET are the two major backbone infrastructure networks which many of the library networks are linked to access internet and international databases. Although INDONET is available for information retrieval applications, being a commercial network, the costs are rather high. Further, due to its limited reach, it depends upon I-Net for providing connectivity to cities where it has no presence. Net, the packet switched data communication network of DOT, with its wider reach can be thought of as an ideal backbone for library networking. But, it has to be expected. Most of the library networks are subscribing to ERNET, although a few additionally subscribe to others like NICNET, GIAS (VSNL) or I-Net. INFLIBNET has connectivity to all the four infrastructure networks.

Some of the main problems faced by Indian libraries which resulted in the limited success of the library networks are:

(a) Lack of adequate resources, infrastructure, trained staff and lack of expertise in the database development and use of network hardware,
software are major problems which libraries generally face. These result in their passive participation in networking.

(b) The collections of big libraries will be used by others while they receive very little from others. Due to lack of incentives, large libraries tend to be disinterested in joining a network or do not play active role.

(c) Although library automation, database creation, inter-library cooperation and the like require additional manpower, no library gets assistance in required measure. These are to be looked after by librarian through other means such as sharing some activities with other libraries.

(d) More emphasis is being given for creating databases of library book holdings, etc.

(e) There is no agreement on standard format for data capturing (database creation and data conversion). CCF, UNIMARC, LCMARC and other formats are used by different networks and also by their member libraries. Similarly, there is no single opinion on the content of records. This is compounded further by the depth of indexing, assigning keywords, and the choice of indexing system. Output formats too differ from each other.

(f) There is a lot of reluctance from those libraries which have partially/fully created databases of their holdings to switch over to a
new standard format due to the financial implications and other factors, like manpower, time and priorities.

(g) Due to sheer volume and also due to financial considerations, retro conversion of book holdings of large libraries is becoming increasingly difficult. Many computerize current and active collections. In S&T libraries, due to obsolescence, it is easy to decide on a cut off year from which books procured can be computerized. This is not possible in large academic libraries.

(h) Although there are many software packages available for library automation, there is a lack of affordable software package customized to the needs of libraries.

(i) Most of the users of networks expect the services to be freely available. Many libraries are not in a position to pay for the internet connectivity as it needs high initial costs including infrastructure. Further, expectations in terms of high speed networking infrastructure and better user support are not met.

(j) The highly unreliable telecommunication backbone on which the networks operate coupled with narrow bandwidth makes users spending longer times which result in poor user satisfaction. This has lead to problems of speed and clarity. While accessing information telephone lines often break down and are a major bottleneck in the
communication system and also comparatively high license fee structure is a major threat for, vendors of value-added services.

(k) Inadequate telecom infrastructure, viz., X.25 LANS, leased lines and message switching systems in smaller cities and towns has been a major constraint in the rapid development of communication system and networking in the country.

(l) As of now network services are mostly urban-oriented and available only in some large cities of the country while smaller towns are devoid of such services. This has resulted in a major issue of information disparity in the country. Network operators/providers are not willing to extend their networks throughout the country due to non-availability of infrastructure facilities as well as economics of cost effectiveness.

(m) Lack of awareness among people about advantages of going online has been a major constraint in usage of networks. People are still using the conventional modes for communicating within organizations and with others although this situation is slowly improving.

(n) The legal status of network services and of network use (such, as copyright) is unclear to users who are not in a position to exploit the networks to the optimum level.
3.3 Conclusion

The central role of library is to promote and facilitate the effective use and recorded information in all forms by all of its clientele. Networks have potential to improve library services in several ways. The continuous improvement in the networking technologies helps the libraries to reduce the cost of information provision, thus creating new opportunities for the libraries to play their role in information provision to its end users.

During the recent period quite a large number of libraries and information centers are forming networks. The advent of computer networking as an accepted part of library and information centers has had a very significant impact on the way in which library and information systems are perceived. India is thus on the threshold of a new era of computer communication networks both for general purpose and for library and information purpose.
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