NETWORKING OF MEDICAL LIBRARIES IN ANDHRA PRADESH: A PROPOSAL

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Abstract

The proposal interprets the importance of library network and the concept of medical library networking to facilitate information resource sharing and support activities in libraries has become a quintessential in Andhra Pradesh, India. This paper deals with an idea to motivate for networking and resource sharing in NTR University of Health Sciences, Vijayawada, Andhra Pradesh affiliated to medical college libraries. The present study briefly highlights some of the objectives, functioning, essentials, benefits, drawbacks, services, future prospects and implementation phases of completeness of proposal networking formation as crucial for "APMEDLIBNET". It also emphasizes the importance of information available be shared among the members libraries to make easy the user commodity. A networking concept of libraries in the state of Andhra Pradesh "APMEDLIBNET" is anticipated and discussed in this proposal for resource sharing.

Keywords: Network, Medical Library Networking, NTR University of Health Sciences, Andhra Pradesh, Hardware and Software and APMEDLIBNET.

1. Introduction

A network implies communication links that permit computers to communicate with each other and to share programmes, facilities, data and knowledge base. A network can be local, regional, national or international. It is for the electronic transfer of information between two or more points irrespective of distance. Networks have been developed to link industrial firms, banks, educational institutions, social welfare units, libraries and information centres, and so on. These networks provide resources and information to their users in larger volumes at greater speed than the other methods of resources sharing.

Stevens[1] defined network "as a formal organization of three or more autonomous organizations interconnected to achieve their common purpose through the joint use of communication and computer technology".

2. Library network

Owing to knowledge explosion and the consequent flood of information, no library today, however big, can dream of becoming self-sufficient. Information is being produced at such a great speed and in such bulk that even the biggest libraries are not in a position to procure all of them. The goal of self-sufficiency has, therefore, become unrealistic and impracticable. It is for this reason that someone has wisely suggested that the slogan, "No library can stand alone" should be adopted as the 'sixth law' of library science. Therefore, cooperation and sharing of resources among libraries is very essential for delivering effective library services.

The network should have:

- A telecommunication network; and
- As many databases as possible preserved on optical media.

Library resources are shared through automation and networking with the use of telecommunication technology[2].

The UNISIST defined information network as "a set of interrelated information systems associated with communication facilities which are cooperating through more or less formal agreements, in order to jointly implement information handling operation, with a view to pooling their sources and better services to the users. Basically information network is a mixture of computer and communication technology where distributed processing on intelligent machines in different locations is cooperated by means of networks[3]. In the words of Neelamegan[4], information network is "an arrangement to link information resources and information seekers/users such that the latter can obtain the information they need or seek from the information resources. The basic objective is the sharing of digital networks, web publishing and provision of other information services by and among the participating entities at an affordable cost".

3. Drawbacks of the medical college libraries in Andhra Pradesh

The following are some of the drawbacks in the existing medical college libraries in Andhra Pradesh, which were expressed by the medical students and librarians.

1. Twenty seven point seventy six per cent of medical students are neither satisfied nor dissatisfied and 15.97% of them are dissatisfied with overall service and facilities of medical college libraries.

2. Most of the medical students (80.61%) are unaware of open access electronic journals.
3. The majority of the libraries (72.73%) did not subscribe to Indian and foreign periodicals as per the norms of Medical Council of India.
4. Most of the libraries (81.82%) have not been automated.
5. A considerable percentage of librarians (36.36%) do not get training in application of computers in libraries.

Hence there is need for automation and networking of medical college libraries to share the resources among themselves.

Today academic libraries including medical libraries may not be able to provide all the information services to the users from their own collection. Library networking is meant for promoting and facilitating sharing of resources available within a group of libraries with the purpose of providing information services optimally to all the potential users and also to make use of national and international resources.

The concept of networking implies a higher degree of functional interdependency, resources pooling, responsibility of sharing, and commonality of systems, standards and goals. A network developed with the help of computer, communication and networking technologies ensures availability of, and accessibility to, a vast variety of information that is needed for scientific decision making, research and development in all walks of life. This will consequently ensure optimum exploitation of information sources lying dispersed in different institutions at different places.

The proposed network of medical universities and medical college libraries (APMEDLIBNET) envisages a wider accessibility of its resources, facilities and services to students, faculty, practitioners and researchers spread all over the state of Andhra Pradesh.

The NTR University of Health Sciences, Andhra Pradesh, has 32 constituent medical colleges. Out of the total 32, 11 are government and 21 are private medical colleges. In addition to them, there are two more medical institutes, namely, Nizam Institute of Medical Sciences (NIMS), Hyderabad and Sri Venkateswra Institute of Medical Sciences (SVIMS), Tirupati, in Andhra Pradesh. Networking of all these institutes' libraries will facilitate access to large amount of information sources. Such a state level network progarmme can extend access to the health literature to all the health/medical institutions in the country.

4. Review of Literature

Ramesh Babu and Ashok Kumar[5] discussed a prototype design of the public library networking 'PUBLIBNET' linking the State Central Libraries, District Central Libraries and other branches.

Mannan[6] examines the need and importance of networking and resource sharing, including its existing status and problems, in the context of Bangladesh. An empirical survey of 25 libraries and 100 users from different categories was made to identify the collection status of books, periodicals, and other non-traditional items required for networking and resource sharing. The availability of human resources, computer hardware and software, tele and electronic communications, and reprographic facilities are evaluated.

Keeran[7] describes the kind of information required for planning, implementation and evaluation of health service programmes. He highlights the importance of health of the people and the health problems they are facing due to climatic conditions, religious practices and social factors of their area. According to him, most of the rural health problems would automatically be solved through health education of the rural people. He makes out a case for national network of health information system in India. He mentions the nature of services and modern equipment required at different levels of information centres/libraries. He pleads for legal status for National Medical Library.

Satapathi[8] states that there are more than 40 medical libraries in Calcutta city which, on the one hand, procure multiple copies of costly foreign journals and, on the other, cannot satisfy all the requirements of the users due to non-availability of many important journals. The situation can be enormously improved if these libraries form a network. This will enable them to avoid duplication and, at the same time, acquire other important journals without incurring extra expenditure. The essential features and requirements of such a network have been discussed.

Laxman Rao[9] reports that information is the sixth basic need of human being. Quality of information increases its value. The latest technological developments provide an opportunity to improve information communication. Information Technology (IT) is the result of convergence of computers and telecommunications. Developments in IT had resulted in networks such as LAN, MAN and WAN. Existing analogue telephone system will be replaced by digital networks to have faster and accurate data transmission.

Developments in Integrated Services Digital Network (ISDN) and Open Systems Interconnection (OSI) made an impact on information services and information communication. A brief account of networks in India is presented.

Jotwani and Mehla[10] highlight the need for a national information network which could contribute significantly to the national effort of achieving 'Health for All' by 2000 AD. The role of National Medical Library (NML), World Health Organization Southeast Asia Regional Office (WHO SEARO) and Medical Library Association of India in setting up of a network of Health Science Literature Library and Information Services (HELLIS) in India is discussed. Responsibilities and functions of the National Focal Point, i.e., NML, and other participating Libraries have been discussed. Regional Medical Libraries (RMLs) and Resource Libraries (RLs) are listed. The support provided by NML with the help of WHO SEARO in the form of equipment and training to RMLs and RLs has been enumerated. To

develop the HELLIS network into a computer communication network, a future plan of action is outlined.

Satpathi[11] presents a study of networking of the health science libraries in West Bengal State of India as a case study. Health science libraries have been selected for the study as they have greater chance of success because of the homogeneous nature of their collection. The study uses questionnaire method for data collection and is supplemented by personal interviews.

Ravindra Kumar[12] makes a perspective study of networking among Indian medical research institutions and primary health centres in rural areas, based on the literature published in Indian Science Abstracts, published by INSDOC.

Lyon and others[13] conducted a survey at National Library of Medicine (NLM), which extends access to its products and services by making them available on the Internet. More accurate information about current and future access in medical libraries is needed. They reported the results of a questionnaire survey, undertaken by the National Network Office of the NLM of all member libraries of the National Network of Libraries of Medicine, to determine the extent of connectivity to the Internet and the barriers preventing 100 per cent connectivity. Respondents called a toll free number and using interactive voice technology, answered questions concerning Internet access in their library. Seventy eight per cent of the network member libraries responded. Four per cent of academic libraries, 27 per cent of hospital libraries, and 10 per cent of 'other' libraries reported that they were not connected. Computer cost, lack of in house expertise and lack of management support were the highest ranked barriers to connecting to the Internet. The NLM and the Regional Medical Libraries will use information from this survey to develop strategies to help all member libraries achieve full connectivity.

Kulanthaivel and Ravichandran[14] focus on the network and Internet technology, MEDLINE database and sharing of health science information in a networked environment with shared Internet connectivity.

5. Need for the APMEDLIBNET

In view of the current developments in information technology, it is necessary that the Government of Andhra Pradesh should establish a network of medical university and college libraries to pool and share the information sources and disseminate the medical information to the users.

6. Objectives of APMEDLIBNET

The objectives of the proposed APMEDLIBNET are:

- To promote sharing of resources among the libraries of medical institutions in Andhra Pradesh;

- To coordinate efforts for suitable collection development and to avoid unnecessary duplication wherever possible;
- To develop a wide range of medical information services and enhance the quality of medical services using by the latest Information and Communications Technology (ICT);
- To evolve standards and uniform guidelines in techniques, methods, procedures, hardware, software and services for adoption by the participating libraries to facilitate pooling, sharing and exchange of resources and services;
- To establish a referral centre for maintaining a central online union catalogue of books, serials, project reports/dissertations/theses, institutional repositories, medical records and non-book materials of all participating libraries;
- To coordinate with other national and international networks for exchange of information and documents; and
- To take initiative for promotion of medical research and development.
- To coordinate efforts in the creation of institutional repositories and medical records.

7. Establishment of Governing Board for APMEDLIBNET

APMEDLIBNET is to be housed at NTR University of Health Sciences, Vijayawada. It acts as Central Information Facility (CIF) which controls other participating libraries. A governing body for APMEDLIBNET is to be established with representatives from Medical College Libraries and Medical University Libraries. The board should consist of 16 members comprising:

1. Vice-Chancellor of NTR University of Health Sciences, Vijayawada
2. Librarian of NTR University of Health Sciences
3. Five Principals (selected on rotation basis for a period of two years)
4. Six librarians from medical colleges (selected on rotation basis for a period of two years)
5. Librarian of NIMS, Hyderabad
6. Librarian of SVIMS, Tirupati
7. Director of National Informatics Centre, Hyderabad

The Vice-Chancellor of NTR University of Health Sciences will serve as the Chairman of the Board. The University Librarian of NTR University of Health Sciences will act as Member-Secretary for governing of the APMEDLIBNET. The main function of this governing board is to see that the objectives of APMEDLIBNET are fully implemented.

8. Recommendations for suitable library software for medial college libraries

The INFLIBNET of UGC has developed a library software package known as SOUL (Software for University Libraries) and made available to all academic libraries and

the R and D libraries in the whole country. The following are the important reasons for recommending the SOUL to the medical libraries of the Network.

1. This software is prepared mainly for the benefit of university and college libraries and followed standards and formats such as the CCF, AACR 2, and LCSH.
2. It is now being used by all university libraries in India, which have already been covered under financial assistance of the INFLIBNET.
3. It enables maintenance of uniformity in database creation among medical universities and medical college libraries for better information dissemination.
4. This software also included network feature, which is important for library network activities.
5. This software is available at a lower cost compared to other commercial library software packages. INFLIBNET offers free technical advice to the librarians wherever the SOUL software is used.
6. The SOUL is also user-friendly software and does not need elaborated training on use.

9. Pre- requisites for medical library network

In planning a medical library network, the following factors are considered as most important.

- Member medical university and medical college libraries must justify the need for a network in the region. Further, the development of viable network demands planning not only among the network members but also between the members and users themselves.
- Member medical libraries must agree upon a network policy, to be implemented. The policy must clearly state the objectives of the network, network structure, etc.
- Member medical libraries must identify the funding agencies and mobilize their financial resources in advance so that they freely flow, while implementing the system. If necessary, network fee may be collected from each of the member medical university and medical college libraries. Experience of several libraries in the Western countries suggests that all networks based on a fee structure can be maintained without grant and are viable in the long run.
- If there is no adequate trained manpower in the member medical libraries, attempts should be made to provide training to the existing librarians/library staff.
- Member medical libraries must have a full-fledged automation programme and a machine-readable catalogue for their respective document collections for the purpose of creating databases.

- Member medical libraries must agree upon an indexing system to be followed. Each library may have the freedom to adopt an indexing system of its choice. In such cases, the software must be so developed as to enable switching from one system to another while searching. However, in a centralized database system, it is preferable to adopt a single system of indexing, i.e. the POPSI, Chain indexing or any other similar hierarchical system.
- In addition to the databases (machine-readable catalogue), hardware, software and trained manpower, it is preferable to have certain other communication facilities such as E-mail, Fax, Telex and Telephones etc. as part of the network.
- It is necessary to develop and agree upon performance on certain procedures to evaluate the working of the network.

10. Network architecture of APMEDLIBNET

10.1 *Communication*

There are three types of networking LAN, MAN and WAN. APMEDLIBNET comes under Wide Area Network (WAN), where the data transmission rate is 100 Kbps. The channel of communication can be categorized as:

- Through dedicated telephone links.
- Through satellite links.

As APMEDLIBNET is a state wide network, it could begin operations with telephone lines initially and later with satellite based communication.

10.2 Topology

10.2.1 *Star topology*

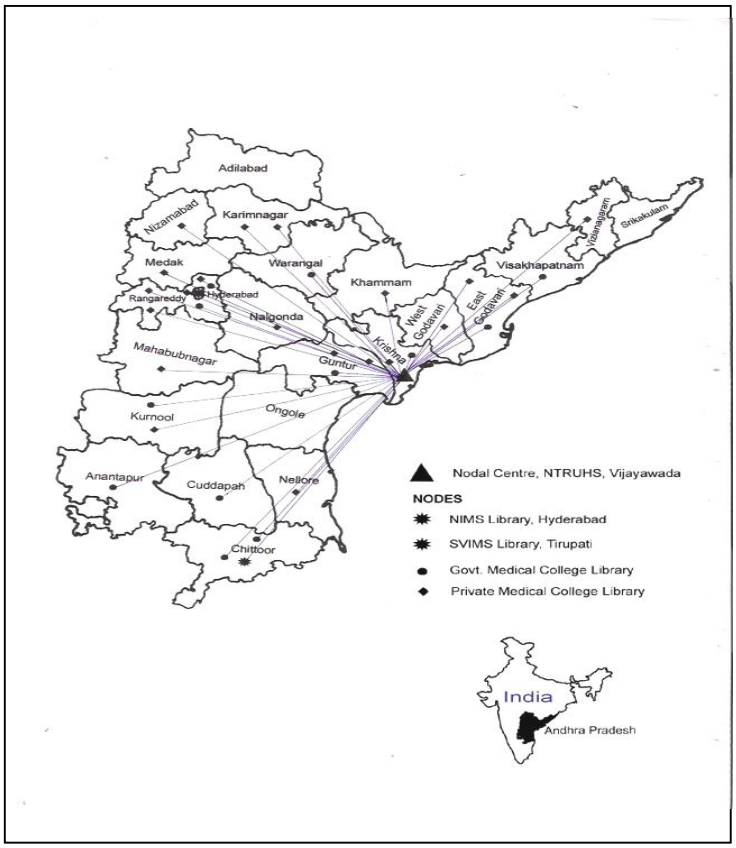
In Star network of computers, each computer is linked with the server. Therefore, whenever data is to be transmitted among any two, it should always be routed through the server. The networks are typically found in cases where a large scale central computer is connected to many terminals. Hence, star topology is the most preferred typology from the point of view of trouble shooting and suitability for newer networks. Some of the advantages are given below:

- Passing of data packet through unnecessary nodes is prevented by this topology.
- Each device is inherently isolated by the link that connects it to the hub.

- The central network also allows the inspection traffic through the network. This can help analyze all the traffic in the network and determine suspicious behaviour.
- The topology is easy to understand, establish, and navigate.

LAN or WAN are usually based on any one of the network topology like Star Network Topology, Ring Network Topology and Bus Network Topology. Star Network Topology is feasible and recommended for APMEDLIBNET. The nodes in APMEDLIBNET that have to be connected to the nodal centre 'NTRUHS' are shown in Fig.1.

Fig.1 Structure of APMEDLIBNET



10.3 Hardware and Software requirements for server at nodal centre

10.3.1 *Software requirements*

- Windows 2007 Service Pack 2+ Security Rollup
- Microsoft SQL server 2007 or above
- MDAC 2.6 Service Pack 2

- Library Software Package
- Visual Studio Packages
- MS-Office 2007
- Photoshop 7.0 or Coral Draw 11.0 or above
- Multimedia software
- Networking tools
- MS Internet Explorer
- Oracle 9i or above

10.3.2 ***Hardware requirements***

- Intel Xeon Processor
- 128 GB RAM
- Network Interface Card X2 10/100/1000 Mbps
- SCSI 1 to 10 TB Hard Disk
- Database Backup Solution
- UPS with at least 1 hour battery backup time or above
- DVD-RW
- Optical Mouse, Key Board
- Scanner
- Laser Printer Network Compatibility
- High Speed Internet connectivity

10.3.3 Hardware and Software requirements of the network nodes (clients)

10.3.3.1 ***Software requirements***

- Windows XP Professional
- Graphics Software
- MS-Office 2007
- Library Software Package
- Microsoft SQL Server 2007 or above

10.3.3.2 ***Hardware requirements***

- Intel P IV Core 2 Duo
- 2 GB RAM
- Network Interface Card X2 10/100/1000 Mbps
- SCSI 160 GB Hard Disk
- Optical Mouse, Key Board
- DVD-RW

10.4 Monitoring and feedback at Nodal Centre

To achieve the objectives of APMEDLIBNET, an effective monitoring of network is very essential. For the maintenance of it, sufficient funds should be made available and monitoring must also ensure that:

- Data conversion/generation in machine readable form.
- Memorandum of understanding should be signed by the members from libraries.
- Proper publicity is required so that the user gets up-to-date services offered by APMEDLIBNET.

10.5 Proposal for implementation

In the earlier part of the proposal, the structure of APMEDLIBNET has been presented with the requirements of hardware and software. Now a proposal for its implementation is presented here.

Successful implementation of the proposal for medical library network depends upon the following factors:

- Computer facility in each medical university library and college library.
- Adequate skills for the librarian to maintain computerizing activities and Internet services.
- Collection context and methods of database creation.
- Reliable telecommunication facilities such as phone and Internet connectivity, and
- Minimum infrastructure such as accommodation, furniture and equipment.

10.5.1 Phase - wise implementation

Implementation of the proposal for medical college library network is based on the following conditions:

- Introduction and development of computer awareness among readers i.e. students and staff of the medical university and college libraries.
- Creating awareness about the benefits of resource sharing among medical college libraries and the university libraries.
- Keeping to a minimum and within the reach of students and teachers the cost of information (or) the cost of service charges so as to encourage their use of library networking to have information access.

The proposal may be implemented in three phases, as shown below:

10.5.2 Phase I of implementation

- Establishing computers in the medical institution's libraries.
- Acquiring suitable library software.
- Data creation.
- Establishing offline queries through CDs.
- Developing computer culture among students, teachers and staff of the college library.
- Obtaining Internet connectivity through the DOT, VSNL, etc.

10.5.3 Phase II of implementation

- Setting up the central host to establish medical college library network.
- Procurement of hardware required for the network and site preparation for each individual medical library.
- Establishing network connectivity from nodal centre NTRUHS, Vijayawada to medical universities and all medical college libraries in Andhra Pradesh.

10.5.4 Phase III of implementation

- Conversion of offline query to online query for the users of libraries which have machines set up connected to the network
- The automation of all medical university and college libraries can be undertaken as one network and the necessary training facilities may be extended from time to time by NTRUHS, Vijayawada.

11. Conclusion

In a developing country like India, steps are being taken to disseminate medical information to medical professionals. Due to information explosion and limited financial resources, the resource sharing among libraries located in different geographical areas became a necessity. For better resource sharing, networking of libraries using Information Technology is essential. This proposal for medical library network is designed based on new technologies available for networking. This proposal will be of much use to any type of college library to go for networking, resource sharing and exchange of electronic information to meet the new challenges in the field of library and information services.

A feasibility study to implement this networking and to identify the gaps must be taken up so that the existing model could be suggested to the Andhra Pradesh Medical Libraries.

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