5.0 Introduction:

In the present knowledge or information society, whatever we may call it, is dominated by the largest global Resource sharing and network offered by Internet technology. Networking is the pre-requisite of the present society to be member of it. Therefore, to become the member of the library, Resource sharing and network has become essential without any scope for any option or alternatives. Inadequacy of resources of even biggest library of the world is the main feature of any library or resource center. Therefore, augmentation of resources at the minimum cost is the aim not only by adding own resources but use resources of other libraries.

The present professional challenge is that resources may not be available in own collection, but are to be made accessible wherever these are available. As such dependence on external resources is increasing day by day. We have to borrow what we don’t have or develop a common repository by collective efforts, which require not only willingness to begin the process but mission to achieve the objectives. Keeping in view the researcher has designed a proposed model for resource sharing and networking of college libraries affiliated to Gulbarga University, Gulbarga. Further it enumerates issues involved in establishing such network, point out the constraints and finally the suggestion for the success of such networks.
The present study is designed to understand the various resource sharing activities, prevailing among the college libraries and how the existing practices and methods can be re-engineered to intensify such activities.

No library or resource center of the world is self sufficient to meet the various information needs of the users. With the rapid growth of publications, knowledge explosion, shrinking resources, escalation of prices and ever increasing expectation of users compelled the library and information centers to go for networking for resource sharing. The most important goal of networking is to maximize the availability of resources and services at minimum expenses. Most of the academic libraries are struggling for continuation of current periodicals and purchase of new books. These academic institutions can cope with this problem only by networking and resource sharing. Networking of library and information centers has been recognized as the de facto standard for better resource mobilization in the libraries. Advancement in computing technologies for standardization of bibliographic resources has contributed the steady growth of bibliographic databases in the Library and Information Centers.

A networked system of libraries bears promises to achieve common benefits i.e. sharing of resources, designing better access routes to remote resources, by adopting the best standard for bibliographic databases. Considerable progress has been made in the areas of library networking in India. Several local, metropolitan, regional and national level library networks have already been established in India for resource sharing. The main purpose of all these networks is to acquire reading materials collectively, avoid duplication, consortia approach for costly foreign journals and databases, maximum utilization of reading materials available in libraries of a particular locality or region by the users. In last few decades the concept of library and information networks in India has
been introduced and the LIS have started thinking about the resource sharing and
consortia approach for acquisition and use of library resources either in print or electronic
medium and other resources like manpower and equipments etc. In this direction Govt. of
India has established NICNET and NISSAT, and CMC also established INFLIBNET’s
UGC- Info Net and INDONET, which have introduced the concept of networking of
organizations. Therefore professional’s bodies like ILA, IASLIC have started promoting
the benefits of library networks and concept of consortia approach for collection
development and its utilizations by the academic communities.

5.1 SWOT Analysis of College Libraries:

The findings of the present study reveal the following strengths, weakness of
degree colleges and opportunities and threats they have in near future.

5.1.1 The Strength of the Colleges lies in the Following Features:

1. Homogeneity among the user categories of degree colleges.

2. A collection of print resources in colleges and majority of colleges located in
urban areas.

3. Dissertations, Project reports of students, and teachers are preserved and made
available for users in some college libraries.

4. Good infrastructural facility including computer systems and related peripherals is
made available in many libraries.

5. Automated library operations in majority colleges.

6. Internet facility is available in the majority of college libraries.
7. Professionally qualified staff with adequate IT skills is working in the majority of the college libraries.

8. Growing willingness of the libraries to share the resources and services through network systems.

5.1.2.1. **Weakness/Limitations:**

1. Lack of cooperation, exchange of resources or resource sharing activity among the libraries.

2. Limited financial resources in all college libraries.

3. Inadequate print and electronic resources in some of the colleges particularly institutions located in rural areas.

4. Lack of uniformity in the bibliographic formats used and bibliographic information provided in individual libraries databases.

5. Inadequately trained staff is recruited in some of the libraries established during recent past particularly in rural areas.

6. The absence of union catalogue of information resources is the major lacuna in college libraries.

7. Lack of uniformity in the software packages used for creation of bibliographic databases of library holdings as well as other library operations—many libraries are using different commercial software packages.

5.1.3 **Opportunities:**

With the advances in technology, resources they possess and the nature of institutions themselves, the libraries of the institutions have the following opportunities.
1. Widening resources accessibility through sharing of existing and forthcoming information resources among libraries.

2. Enhancing information resources accessibility, particularly electronic forms of information through consortia approach.

3. Enhancing the variety of information services to the users at minimum cost.

4. Minimizing the duplication of resources wherever necessary and there by saving the overall expenditure on collection resources.

5. Reducing duplication of technical processing activities in individual libraries and there by enhancing the productivity and enabling those libraries that do not have the skilled manpower to organize the resources in a systematic order.

6. Greater opportunities to interact mutually to seek solutions to day to day problems if any in handling information services.

7. To develop capabilities to enter into National and global network systems of similar nature, and thereby further widening the capability of information access at optimum cost.

5.1.4 Threats:

Libraries that remain independent and continue to carry on the existing type of services are mainly depending on the resources of their own would face some of the following threats:

1. Serve inadequacy of resources to meet the information requirements of their users resulting in increasing the numbers of disappointments and disrespect to the library.
2. Deterioration in the collection of resources (both quantitative and qualitative) in view of the decreasing budget and the increasing cost of publications.

3. Wastage of meagerly available finance and the manpower resources of the library as it call for duplication of resources and technical processing activities.

4. The possibility of looking for alternative means by those users who are information hungry, and who continue to be disappointed with lack of resources and services.

5. Whole information accessing capabilities is being enriched with newer approach and technological advances. The library that fails to move this with wind would remain constantly as a store house of existing resources and finally the users would suffer that would result to remain library as neglected center.

5.1.5 Summary of SWOT Analysis:

The study shows that the strength of libraries in private institutions is large. Homogeneity among the users category and collection of resources in the libraries. The libraries have infrastructural facilities including computer and peripherals in the institutions. Automated library operations in majority colleges. The librarians are willingness to share the resources and services through network library systems.

The lack of cooperative in exchange of resources or resource sharing among the libraries is a major problem. Lack of uniformity in bibliographic formats for creation of databases is another problem.

Libraries have the opportunities widening resources accessibility through sharing of existing and forthcoming information among the libraries and of enhancing the variety of information services to the user with minimum cost.
The libraries would face the threats. Especially to mention a few the inadequacy of resources and services to meet the information requirements of the users resulting in the increase of the number of disappointment and disrespect in the library.

5.2 Network Approach to Information Sharing:

Information is the currency for the knowledge economy. Revolution in information has lead to the technological power that derives digitization of the libraries. Growth of information has also resulted to literature scatter, rising prices of documents, technological evolution to preserve them, growing demand of users, inability of library staff to organize and handle them causing wide gap in the use of information and knowledge as the individual library finds difficult to acquire all the materials needed by the users. Rapid changes in the ICT have opened up an entirely new environment for providing improved information services. The librarians’ inability to handle the rapid changes in the technological advancement that has brought quick changes in the information management system has also become a matter of concern to the users. This condition is forcing the library professionals to seek alternative ways of providing information outside the sphere of traditional existing conditions. Libraries find it difficult to handle the growth due to lack of updating in the knowledge and renewing the information.(Lata 2011)

The advances in IT and e-media related fields made it necessary to change the traditional image and adapt to the threats and challenges posed by these technologies. The availability of competent and skilled personnel, computers at affordable prices to institutions, universities, colleges, school and individual made them tools for accessing information. The laborious, time-consuming conventional publishing is giving way to the instant e-publishing, resulting in digital and online publications.
Consortia based subscription to electronic resources is a part of library consortium, as it can be available solution in order to increase access to electronic resources across institutions at lower cost. College libraries need to form consortia of all advantage of global network to promote better, faster and more cost effective ways to providing electronic information resources to the users of the library. A consortium provides the union strength to negotiate with electronic publishers for the best possible price and rights. The collective strength of consortia members facilitates the libraries to get the benefit of wider access to electronic resources at affordable cost and with best terms and conditions. UGC’s INFONET consortium coordinated by Information and Library Network (INFLIBNET) provide a seamless network of information resources and Indian Digital Library in Engineering Science and Technology (INDEST) consortium set up by Ministry of Human Resource Development (MHRD). Developing Library Network (DElNET) is also functioning in this direction. Consortia based subscription should be seriously considered by all degree college libraries.

To gain maximum advantage of networking, it is proposed to establish a center that will procure important databases on consortia basis, and the expenditure could be shared by the participating libraries. All the participating libraries will have right to access the databases so procured.

5.3 Architecture for Proposed Networking Model:

The salient features of the resource sharing and networking architecture are as follows:

1. The prime aim of the network is to link the resources of Gulbaraga University and the affiliated colleges of Gulbarga University and build the union catalogue. This
will enable the resource poor libraries to help their users with complete information.

2. The metadata resources of the Gulbarga University and all the affiliated colleges of Gulbarga University will be known to all students and faculty in the entire network via the Union Catalogue database that will result out of the network with the above architecture.

3. New types of materials (web resources, multimedia, tutorials, learning objects, lecture presentations, full text of reference and costly materials) can be selectively acquired and made accessible to all stakeholders of the network.

4. The library network will enhance the value of the different libraries to the academic community as such a network can truly participate in the teaching and research activities of the Universities and other colleges more effectively than at present.

However, it is necessary to state that any such effort will require a commitment on the part of the managements of participating institutions. To equip their libraries with suitable computer hardware, to equip their libraries with the means to make copies of articles and/or other documents that are required, to ensure that their library resources are made available to any other user in the network on demand, subject to well defined rules for the sharing of hard copy as well as photocopy services.

5.4 Nodal and Regional Centers for Proposed Networking Model:

Resource sharing and networking of college libraries affiliated to Gulbarga University requires a nodal center from where the network will operate. So it is necessary to identify the potential nodal center for colleges. The Gulbarga University library has
rich technological infrastructure. Hence, the nodal center for the proposed network shall be established in Gulbarga University Library.

At present the Gulbarga University has 274 affiliated colleges. The libraries of many of these institutions are well equipped and providing various services to its users with a good collection of printed and non-printed materials. Therefore computerized resource sharing of these libraries is very much essential to utilize the resources in a better way and generate new services and to improve the efficiency of existing ones. With this background a feasibility study is carried out to identify the prospects and limitation in the juncture towards lining up a road map to a network facility of academic libraries affiliated to Gulbarga University.

Out of 158 colleges affiliated to Gulbarga University 5 colleges are identified as regional centers and Gulbarga university library acts as nodal centre. The study propose the nodal centre and five colleges are regional centers are as follows; N. V. College Gulbarga, BRB College Raichur, Karnataka College Bidar, Veerashaiva College Bellary and Gavisiddeshwar College Koppal.

NutanVidyalaya (N.V College) Gulbarga was established in the year 1982. The college is offering B.A., B.Sc., and B.Com courses and affiliated Gulbarga University, Gulbarga. N.V College is having more than 2000 students and 100 teachers. The college library has more than 35,000 rich collections of documents relating to science, humanities and social sciences. The library has rich technological infrastructure and fully computerized housekeeping operations. Local Area Networking (LAN) facility is also available within their campus.

Bankatlal Rajaram Buba (BRB) College, Raichur was established in 1964 and it was only one college offering B.Com course in Raichur region. Now BRB College is
offering many undergraduate courses. The college library has more than 30,000 rich collections of books relating to commerce, business management and humanities. The BRB college library has rich technological infrastructure and fully automated of their housekeeping operations.

In the year 1945 Veerashaiva College Bellary was established and affiliated to Gulbarga University, Gulbarga. The college is offering B.A., B.Sc., and B.Com courses and combinations available in B.A History, Economics and Political Science (HEP), History, Economics, Sociology (HES), History, Economics, Kannada (HEK). In B.Sc the combinations are Chemistry, Biology, Zoology (CBZ), Physics, Chemistry, Mathematics (PCM), and Physics, Mathematics, Electronics (PME). B.Com and BBM courses are offering in Veerashaiva College, Bellary. The college library has more than 40,000 rich collections of books relating to science, commerce, business management, humanities and social sciences. Library has better IT infrastructure and all housekeeping operations have been automated.

Karnataka College, Bidar was established in the year 1970 and this was the first college providing undergraduate education in Bidar district. Karnataka college is offering B.A., B.Sc., and B.Com courses. Karnataka College is having more than 3000 students. The college library has more than 35,000 books and Library has fully computerized and all housekeeping operations have been automated.

Sri.Gavisiddeshwara College,Koppal established in the year 1963 and offering B.A., B.Sc., and B.Com courses. Gavisiddeshwara College is having more than 3000 students and having more than 75 teaching faculties. The combinations available in B.A History, Economics, Political Science (HEP), History, Economics, Sociology (HES), History, Economics, Kannada (HEK) and in B.Sc Chemistry, Biology, Zoology (CBZ),
Physics, Chemistry, Mathematics (PCM), and Physics, Mathematics, Electronics (PME). B.Com and BBM courses are compulsory and not having any combinations. The college library has more than 40,000 rich collections of books relating to arts, commerce, management and humanities. Library is fully computerized and all housekeeping operations have been automated.

Some of the affiliated college libraries, particularly located in Gulbarga city also have good collections and have rich technological infrastructure. A number of these libraries have already computerized their housekeeping operations and have created bibliographical databases of their collections.

5.5 Role of Gulbarga University:

Gulbarga University was established in 1980 by an Act of Karnataka State. Its jurisdiction extends to the five districts of Gulbarga, Bidar, Raichur, Bellary and Koppal of Hyderabad Karnataka region. Earlier it was a post-graduate centre of Karnataka University, Dharwad since 1970. The prime aim of the network is to link the resources of Gulbarga University and the affiliated colleges of Gulbarga University and build the union catalogue. This will enable the resource poor libraries to help their users with complete information.

The main campus is situated on 860 acres of land, 6 kilo meters east of Gulbarga city. It has 38 post-graduate departments and 4 post-graduate centres located at Krishnadevarayanagar, Bellary, Raichur and Bidar. The University enrolls about 3500 students every year for various post-graduate, M.Phil. and Ph.D. programmes in various disciplines. There are about 160 faculty members and about 700 technical and non-technical supporting staff. There are 270 affiliated colleges admitting over 60,000 students for undergraduate courses every year to this university which enroll
graduate/diploma courses in arts, fine arts, music, social sciences, science & technology, commerce, and education.

5.5.1 Gulbarga University Library:

Gulbarga University Library, a knowledge Center for accessibility developed on modern lines as a prominent Learning Resource Center on sprawling campus, ideally situated and easily accessible by all the departments and students housing. The Library has made sincere efforts to assure an environment for intellectual inquiry by providing user focused services to obtain and evaluate scholarly information and knowledge available in main formats and strives to create new knowledge to increase understanding and develop wisdom.

To keep pace with time and expectations of users, the library has built a strong State-of-the-Art computer facilities with 140 workstations, Main frame servers and CD NAS Server provide excellent access to CD/DVD Databases, Internet, e-learning packages, full text e-resources and indigenous databases under network environment.

The Library has been one of the active members of INFLIBNET Center, Ahmedabad (An Inter University Centre, UGC, New Delhi) and contributing the indigenous theses of the university in digital format to Vidyanidhi Project (Funded by Ford Foundation), University of Mysore, Mysore. The university has been provided with ERNET connectivity under UGC INFONET program for accessing about 4,500 e-journals and databases with 2 mbps leased line connectivity. The library received Dr. Padhya Best University Library Award for 2007 instituted by Indian Library Association, New Delhi.
Gulbarga University aims to make the university library a vibrant center to support the academics, research, and development activities. The Library is at the core of research and learning at the University. It is our goal to support and contribute to the quality of academic and research activities for the prosperous development of society and the nation-building activities.

The University Library has a rich collection of documents relating to science, humanities, and social sciences. Some of the affiliated college libraries, particularly located in Gulbarga city, also have good collections. A number of these libraries have already computerized their housekeeping operations and have created bibliographical databases of their collections.
5.5.2 ICT Facilities & Services in Gulbarga University Library:

The world of Library and Information Centers has been witnessing a sea of changes due to development of ICTs, which has not only changed the way information is generated, organized, stored and distributed but more importantly have become indispensable tools for teaching, learning and research. To keep pace with time to meet the expectations of the users, Virtual Learning Resource Centre & Digital Library has been established during 2008 to accomplish the objectives of universal access unrestricted by time and place in order to harness the ICT for enhancing quality of teaching and research. The VLRC & DL reflects the University’s mission to be a leading “Learning Region” and importance the institution places upon student centered learning. E-mail server for 500 e-mail IDs has been set up for communication between the Library and Departments and other stakeholders.

5.5.3 Learning Facilities and Services:

Learning Resource Centre (LRC) is the State-of-the-Art computer facilities supported by Infosys Foundation, Bangalore established with 100 workstations, Mainframe servers and CD NAS server provide excellent access to Internet, CD-ROM Databases and e-learning packages using two MBPS leased line for the benefit of students, research scholars and faculty. Access facilities provided for learning materials of different subjects. Users can work on some of the software for data analysis and research results from the LRC and Academic Commons. Assistance provided for e-resources search and downloading and Network Digital printing facility available on a nominal fee. Three units of Workstations in LRC with pleasant interior and air condition provide ideal learning opportunities for students, research scholars and faculty. The LRC has transformed the students learning experience and each student at the VLRC is now at
the centre of a learning word can access information by just push of a button. The VLRC is opened between 8.00 am and 7.00 pm on all working days.

5.5.4 Access to Databases:

Gulbarga University Library is one of the first Universities to adopt this technology using CD NET Tower for multi-user access in India. At present, the following sixteen national and international databases have been subscribed in various disciplines. Now these databases are made available under CD NAS Server by creating images accessible under network.

<table>
<thead>
<tr>
<th>Database</th>
<th>Period</th>
<th>Mode of updates</th>
<th>Publishers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math-Sci.</td>
<td>1980+</td>
<td>Semi Annual</td>
<td>Silver Platter, USA</td>
</tr>
<tr>
<td>Biological Abstracts</td>
<td>1992+</td>
<td>Quarterly</td>
<td>Silver Platter, USA</td>
</tr>
<tr>
<td>Biotechnology Abstracts</td>
<td>1982+</td>
<td>Quarterly</td>
<td>Silver Platter, USA</td>
</tr>
<tr>
<td>Sociological Abstracts</td>
<td>1974+</td>
<td>Quarterly</td>
<td>Silver Platter, USA</td>
</tr>
<tr>
<td>Econ-Lit</td>
<td>1969+</td>
<td>Quarterly</td>
<td>Silver Platter, USA</td>
</tr>
<tr>
<td>Psych-Info</td>
<td>1887+</td>
<td>Quarterly</td>
<td>Silver Platter, USA</td>
</tr>
<tr>
<td>Cross Culture</td>
<td>Vol. 1-5</td>
<td>One Time</td>
<td>Silver Platter, USA</td>
</tr>
<tr>
<td>Georef</td>
<td>1785+</td>
<td>Quarterly</td>
<td>Silver Platter, USA</td>
</tr>
<tr>
<td>Eric</td>
<td>1966+</td>
<td>Quarterly</td>
<td>Silver Platter, USA</td>
</tr>
<tr>
<td>LISA</td>
<td>1969+</td>
<td>Monthly</td>
<td>CSA</td>
</tr>
<tr>
<td>Dissertation Abstracts Intnl.</td>
<td>1861+</td>
<td>Quarterly</td>
<td>UMI, U.K</td>
</tr>
<tr>
<td>INSPEC</td>
<td>1989+</td>
<td>Quarterly</td>
<td>I.E.E.E</td>
</tr>
<tr>
<td>CABSAC (South Asian)</td>
<td>1973+</td>
<td>Yearly</td>
<td>Informatics India Pvt.Ltd.</td>
</tr>
<tr>
<td>IBID</td>
<td>1993+</td>
<td>Quarterly</td>
<td>Informatics India Pvt.Ltd.</td>
</tr>
<tr>
<td>Supreme Court Online</td>
<td>1950+</td>
<td>Quarterly</td>
<td>Eastern Book Co., India.</td>
</tr>
</tbody>
</table>
5.5.5 Hyderabad Karnataka Development Information Resource Center:

Unique facility provides information pertaining to history, culture, education, religion, Science Technology and other areas to support for Research and development activities. Specialized databases on the HK region provide useful statistical information for the users.

5.5.6 Academic Commons - Software Tools

Important software, e-books, CD/DVDs and manuals for academic and research work by the Faculty and Students can be used in the centre. Data analysis software like SPSS 16.0, trouble shooting, network architecture, soft copies of various documents are accessible in the centre. Efforts are on to provide NetLibrary e-book collections from OCLC Online Computer Library, USA.

5.5.7 Competitive Examinations and Career Development Resource Center:

A fair collection of books, periodicals and other documents on Competitive Examinations, Career Planning, Personality Development, Communication skills etc have been stacked. Documents required for preparing to various recruitments, common entrance examinations and competitive examinations have been collected and updated regularly for reference by Students and staff.

5.5.8 Institutional Repository and Digitization:

Publications of the University and Faculty are being digitized using hi-end scanner including Thesis and Dissertations, Rare materials and Archival materials. Mirror images of the CD/DVDs Databases and Instructional materials on various subjects have been created on NAS Server in LRC and accessible under network within library.
5.5.9 Online Public Access to Library Holdings:

The status of availability of Databases of Books, Journals and Thesis/Dissertations can be searched under the network using LibSys client and 50,000 books have been bar-coded and this process would complete soon to achieve total automation for circulation.

5.5.10 Users Training and Information Literacy Programs:

To promote use and acquaintance of e-resources, learning materials, UGC INFONET e-resources, CD/DVD Databases, research communication, presentation skills, information exchange and online access to Internet and web resources, the Library organizes User focused training Programs on ICT Skills, Research Communication and Information Management. Topics on research planning, ICTs and E-resources, Internet, E-communication, Discussion forums, Data Analysis packages, citation patterns, thesis/dissertation writing, technical paper writing, UGC INFONET e-resources, search skills, developing materials for scientific presentations, news reporting and editing for press and media are covered for different target groups.

5.5.11 Infrastructure Growth and ICT Adoption:

Gulbarga University Library has always been in forefront to introduce the ICTs for the benefit of Students and Faculty. Developments in Information Science have since been adopted to keep pace with the technological advancements. Following growth signifies the efforts made thereby.

1. Strengthened the CDROM Lab by adding new CDROM databases and additional access facilities (2000-01).
2. Internet Lab established using broad band dialup facilities (2001-02).
4. VSAT connectivity through UGC INFONET, INFLIBNET AND ERNET.

5. LAN in the Library with 40 computers established connecting VSAT using OFC (2004).

6. 4th International Conference CALIBER - 2006 organized on Dynamic Interoperable Web Based Information Systems. Also pre-Conference Tutorial on D-space was organized (2006).

7. UGC INFONET e-journals consortia access facilities (2006-07).


11. Established Virtual Learning Resource Centre and Digital Library with 100 Computers, Servers, Videoconferencing and other state of the Art ICTs supported by Infosys Foundation, Bangalore (Rs. 1.00 Crore).

12. Leased line 2 mbps bandwidth through BSNL supported by INFLIBNET/ UGC and ERNET (2008).

### 5.5.12 Existing State-of-The Art ICT Facilities in VLRC & Digital Library

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Specification</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Computers</td>
<td>P-IV Lenovo, Compaq and PCS and Laptops</td>
<td>140</td>
</tr>
<tr>
<td>Main Frame Servers</td>
<td>Dell™ Power edge™ 2900 Quad</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Core Intel® Xeon® E% 310, 2x4MB Cache Server, 03</td>
<td></td>
</tr>
<tr>
<td>CD NAS Server</td>
<td>2084 MB memory, DVD writer drive,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-500 GB SATA Hard Disk Drive</td>
<td>01</td>
</tr>
<tr>
<td>High End Scanner</td>
<td>PS 7000 Minolta</td>
<td>01</td>
</tr>
<tr>
<td>Digital Network Printers</td>
<td>Phaser 4510</td>
<td>03</td>
</tr>
<tr>
<td>Videoconference Units</td>
<td>Draper Baronet Remote Mt of –</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Videoconference/LCD units</td>
<td>01</td>
</tr>
<tr>
<td>Television</td>
<td>BenQ 42” Color TV</td>
<td>02</td>
</tr>
<tr>
<td>Bar Code Printer (1) &amp;</td>
<td>Laser Guns (2)LP2844 Printer, Heron D130</td>
<td></td>
</tr>
<tr>
<td>SOFTWARES:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Libsys</td>
<td>Libsys 4 standard edition software</td>
<td>01</td>
</tr>
<tr>
<td>Windows Advance Server</td>
<td>Advance Server 2007</td>
<td>01</td>
</tr>
<tr>
<td></td>
<td>McAfee Anti-Virus Software McAfee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Active Virus Scan Enterprise-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Media Pack - 103 user License</td>
<td>01</td>
</tr>
<tr>
<td>MS-OFFICE</td>
<td>100 user license</td>
<td>01</td>
</tr>
<tr>
<td>Open Source Software’s</td>
<td>DSpace and SQUID proxy</td>
<td>01</td>
</tr>
<tr>
<td>Firewall</td>
<td>SONIWALL</td>
<td>01</td>
</tr>
<tr>
<td>SPSS</td>
<td>10 user License</td>
<td>01</td>
</tr>
</tbody>
</table>
5.5.13 Network Architecture of Gulbarga University Library:

Network Architecture of Virtual Learning Resources Center and Digital Library (VLRC&DL) of Gulbarga University Library is presented in following diagram

![Network Architecture Diagram]

5.6 Proposed Model for Resource Sharing and Networking of College Libraries Affiliated Gulbarga University, Gulbarga:

The figure shows the proposed model for Resource Sharing and Networking of college libraries affiliated to Gulbarga University, Gulbarga. The model would facilitate easy and direct access to information from the central bibliographical databases housed at the nodal center. Participating libraries can establish link with the regional centre to access resources of nodal centre.
In order to achieve the goals and objectives of the proposed model the following milestones have been identified.

1. Identification of a suitable library automation and networking solution that will allow cost-effective networking via the Internet as described in the architecture presented.

2. Designating a public domain server by Gulbarga University on which the server side software can be installed and ensuring that such a server is made available as per the requirements of the chosen library automation and networking solution.

3. Identify the infrastructure (hardware, networking, connectivity required, etc.) at Gulbarga University as well as the affiliated colleges to enable the network whose architecture has been described.

4. Establish the needed items of infrastructure not only at Gulbarga University but also at affiliated college libraries who will participate in the network.

5. Develop local area networks (LAN) in all the affiliated college libraries and ensure that library LANs are bridged to the Gulbarga University campus LAN/Intranet and also at the colleges.

6. Installation of the Server and client side software at Gulbarga University library and college libraries.

7. Conversion of data already available in machine-readable form at most of the affiliated college libraries of Gulbarga University into an international metadata format such as MARC-21.

8. Development of the online union catalogue of resources of member libraries. This will be accessible via a link on the Gulbarga University Library network.
9. Organization of training programmes on the use of the chosen software for librarians and system administrators at Gulbarga University and the affiliated colleges.

10. Organizing orientation programmes for students and faculty at University and the affiliated colleges of Gulbarga University. These are aimed at sensitizing students and faculty to the resources, facilities and strengths of the network and how they might benefit from these.

11. Co-ordinate with other regional, national and International Library networks for exchange of information and resources.

5.6.1 Implementation for Proposed Plan:

In what follows, an implementation plan is presented taking into account facilities already available.

Establishment of the network hub at Gulbarga University

A Central Network facility with high end servers (as required by the chosen software) will need to be established in the University Library. This will be connected to the all Affiliated College Libraries of Gulbarga University through internet as per the predefined architecture given above.

5.6.1.1 Creation of Online Union Catalogue:

The union catalogue of Gulbarga University Library and some affiliated college’s almost ready. This can be directly converted in to a common format and match with OCLC WORLDCAT database, download the validated records and include to the union catalogue. The creation of metadata databases at other colleges conforming to the same
international standards as that of Gulbarga University will need to be done. Wherever some machine-readable data exists in college libraries, these will need to be converted to the standards in use at Gulbarga University. All such data from the colleges will need to be uploaded to the existing union catalogue of the University Library.

5.6.1.2 Developing a Reference and Information Service Model:

The Gulbarga University Library will identify and provide access to important reference sources, databases, online resources, in the University library, and libraries of affiliated college.

5.6.1.3 Developing a Resource sharing Model:

Gulbarga University Academic Library will develop a resource sharing model by which all participating libraries can avail inter-library loan and document delivery services. In the proposed model the online union catalogue will students and faculty at the Gulbarga University and any of the colleges to search for required monographs, serials, conference proceedings, articles.

5.6.1.4 Development of Subject Portals:

Gulbarga University Library will develop subject portals where in librarians will monitor in an ongoing manner the web to identify resources that are useful to the academic community, describe such resources and post them to the union catalogue database as well as to one or other subject portal Users of Gulbarga University as well as all participating libraries will access to the portals in the subjects of their interests. This will not only save the search time of the users but also enable to access required information, by those users who are not familiar with search techniques.
5.6.1.5 Peer-to-Peer Networked Services:

It is an architecture in which all participating library and its parent institution will have a peer site. To create the peer site, web space is proposed to be provided by Gulbarga University Library Network. This Network staff will provide web design services to colleges where needed. Each site will have the ability: To provide advertisements/notifications describing the services of the college and library and to be able to search the network for service(s) advertised/notified by other peer sites.

5.6.2 Organization of Network:

Taking into consideration of the existing networking system in the country such as INFLIBNET, NISSAT and DELNET the model for the degree colleges proposed. In the present study an attempt has made to propose a network, as there is no established network available for the degree colleges in Gulbarga University. In order to initiate the study for the framework of proposed network it is desirable to have an ad-hoc committee to explore the feasibility to establish the network and its mode of operation.
The above chart 1 shows the organizational structure of the proposed model for Resource sharing and networking of college libraries. To ensure proper coordination and participation of all libraries, there is a need for coordinating agency and this should be empowered certain amount of power to control and facilitate the smooth functioning of the proposed network.
Ad-Hoc Committee-The ad-hoc committee will be responsible to establish the network in one of the potential libraries identified. Further, the implementation and execution will be taken care of by the remaining committees.

Advisory body- The Gulbarga University has academic control over all the college and it also facilitates to improve the system for higher education and research. However, the nodal center would function independently and sustain it expenses contributed by the participating institution/libraries.

The advisory body may consist of 14 members. The Vice-Chancellor of the Gulbarga University shall be the Chairman of the advisory body. To give proper participation to the heads of the institutions of participating libraries, the librarians from the participating institution shall be the members.

a. Vice-Chancellor Chairman 1
b. Experts in networking Member 2
c. Experts from LIS field Member 2
d. Representatives of the Heads of the Institutions from participating libraries Member 6
e. Representatives of the Librarians from participating libraries Member 2
f. Librarian of the nodal center Convener 1

Executive Committee: After the establishment of the nodal center the executive will chalk out the implementation in a phased manner.
The executive committee shall be composed of the following members.

a. Head of Institution (Nodal Center) Chairman 1
b. Representatives of librarians from participating libraries Member 5
c. Representatives of users Member 3
d. System Engineer at the nodal center Member 1
e. Senior faculty member in the nodal center Member 1
f. Librarian of the nodal center Convener 1

Nodal Center: The nodal center will have four functional units. It will function as per the guidelines stipulated by the advisory body and executive committee.

Administrative Unit: To manage all the activities, an administrative unit is necessary. The administrative unit consists of adequate staff to look after the day to day activities of the center as well as to coordinate network activities between the center and the individual participating libraries.

Resource Unit: The resource unit has the main server with a higher storage capacity to take the load of bibliographic information of the collection of all engineering college libraries (Present and future). This unit serves as centralized databases for bibliographic information of all the engineering college libraries and facilitates access to any of the participating library.

Technical Unit: The technical unit keeps track of standardized creation of databases. It also attempts to overcome duplication of technical processing tasks being performed at the individual libraries. In other words this unit maintains standard format of data elements for creation of bibliographic databases. It also maintains authority file to ensure uniformity in the standards adopted.
This unit shall also be responsible for proper maintenance of the server and computers and other peripherals so as to facilitate services to all through 24 hours a day and throughout the year.

**Information Products and Services:** This unit provides necessary services such as compilation of bibliographies, content page, and trend reports etc. on demand from the participating libraries. It would also extend its service to the outside users both institutions and individual on payment basis and thereby generate financial resources.

**Manpower:** The manpower required in the nodal center is proposed as under. The center shall be headed by the Director who shall be responsible for proper implementation of the decision of advisory body, and the executive committee shall work under the direct control of the Chairman of the proposed network. The manpower required in the nodal center is proposed as under:

1. Director 1
2. Asst. Directors 4
3. System Engineer 1
4. Computer Operator 1
5. Superintendent 1
6. SDA 1
7. Ministerial Staff 2

**5.6.3 Finance for Proposed Networking Model:**

The expenditure of the nodal center, including the salary of the staff shall be borne by the participating libraries. The participating libraries shall also share the expenditure towards the information resources and other facilities required by the center. The expenditure towards the subscription to information resources shall be shared by the
participating libraries. The center shall charge a stipulated amount to meet the recurring expenditure towards salary and maintenance cost of the center, which shall be accounted directly to center account.

5.6.4 Prerequisites for Network Architecture:

The Network Centre will have all the college libraries linked with the Gulbarga University Library Network host system through telephone lines or VSAT links. The college libraries will be routed through the Regional Centre. This will be done primarily considering the poor communication infrastructure especially the non-reliability of the telephone lines and also to lower the cost of using telephone lines. This will eliminate the need to pay STD charges as the State Centre is located close to the libraries. The libraries in term can have their own LAN set up.

5.6.5 Network Components:

The Network Centre at Gulbarga University will have essentially these components. Router usually provides by the V-SAT service provider. LAN Switch: The LAN switch interfaces all the terminal points in the network centre. It is configuration depends upon the number of nodes required. Remote Access Server (RAS): The RAS should have a minimum of 6 ports, enabling a minimum of 6 logins simultaneously. Depending on the traffic the capacity of RAS could be increased. Telephone Lines: The Network Centre should have adequate number of telephone lines to enable the remote server to login at any part of the day or night.

5.6.6 V-SAT Connectivity:

Very small apparatus terminal (V-SAT) usually provided by the telephone company but there are many private service providers offering this facility.
5.6.7 Hardware Requirements:

Dual-Processor 500Mhz server class Machine; 500+MB RAM; Minimum of 120 GB Hard disk space; 101100 NIC (Network Interface Card); Database Backup solution; UPS with at least 2 hour battery backup time; CD/DVDROM; OCR Scanner and Printer with network compatibility.

5.6.8 Software Requirements:

Windows 2000 service Pack 2+Security hole up. Internet Explorer 7.0 or higher version; Terminal service Pack 2, Internet Information server (IIS) (included with windows); Microsoft SQL server 7 or higher; Effective library software packages; Visual studio packages; MS-Office 2003; and others as required.

5.6.9 Prerequisites for Participating Libraries:

a. Willingness to share the resources and services.

b. Willingness to share the expenses.

c. Minimum infrastructure facilities including computer, accessories and Internet.

d. Bibliographic databases of individual library collection.

e. Skilled manpower and

f. Willingness to adopt common methods and procedures for database creation.

5.7 Network based Information Services:

The central role of library is to promote and facilitate the effective use of 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.

The information network must ensure that information can be found or delivered quickly from a large universe. The computer workstations in the libraries are now well equipped for dial-up and Internet access etc. Network facility helps libraries to improve inter-library loan by sending the information through e-mail. The online ordering and acquisition related activities can be carried out. Networking with the development of union catalogues of different libraries act as a boon to avoid duplication of holdings to the extent possible. Reference service can be enhanced with the use of Internet and e-mail facilities. CD-ROM Multimedia service can be effectively provided through networks. The data communication through networks will be very high and helps users to obtain information within few seconds from anywhere in the world and sitting anywhere. There are several other facilities to improve the services with the use of network based information services to the end users.

5.7.1 Type of Network based Information Services:

1. Bibliographic Information Service
2. Full text access to publications
3. Promoting the discussion forums for different subjects

5.7.2 Bibliographic Information Services:

Bibliographic services includes the creation of bibliographic records and the compilation of bibliographies, catalogues, indexes or any other form of bibliographic database. Access to the databases created by the individual libraries and also the union
databases access provides the bibliographic details of an item held by the libraries. Bibliographic Information Service provides the patrons with access to databases from a variety of databases. This also includes the access to the databases subscribed at the network center.

The network helps the librarians to provide this service in a much better way to maximize the information services of the library and the network as well. Individuals affiliated to the networks have access to the databases developed at national and international level provides access to bibliographic details of the sources available with them. Libraries make effective use of the databases and provide better service to its users.

5.7.3 Full Text Access to Publication:

The existing collection to many of our libraries is not enough to meet the actual requirements of the academicians and researchers. To supplement the collection and to provide an access to large number of journals, and full text databases available in electronic form at an economical rate. A network centre can play a major role in providing access to full text of publication to the member libraries.

Full-text resources are the most sought after commodity in an electronic library setting. For students, scholars and the everyday user alike, all they want is what they want, when they want it, where they want it. Full-text electronic resources offer access unrestricted by either location or library hours.

In providing the bibliographic information service and access to full text of journals, number of issues involved as discussed below.

- Identification and selection of databases to be acquired in the network environment.
Negotiating, pricing, getting access right from the publishers/vendors.

Financial support for subscribing to these databases.

Licensing and copyright issues.

Infrastructure facilities to ensure smooth and speedy delivery.

Required documentation and training to the staff working in the library for providing such service.

To tackle all these issues, it is advisable to have a network centre, which can act as facilitator for all activities mentioned above.

**5.7.4 Promoting the Discussion Forum in Different Subjects:**

In the networked environment, it is quite possible to create discussion forum in different subjects to help individual to interact with their own group of users working in their area of interest for problem solving and discussion among the users to enhance their skills by participating in the discussion forum. To facilitate exchange of ideas and promote communication among faculty members, students, researchers, scientists, engineers and academicians electronic discussion forum will help to interact each other. This kind of service can be coordinated at national level by the network agency in the subject concerned.

**5.8 Consortia Based Services:**

Libraries in India have been affected by an uncertain financial environment in which resources buying have been restricted, causing them to look back at ways of extending their purchasing capabilities to compensate for reduced budgets. Library consortium is the one of the emerging tool kit for the survival of libraries.Network is
essential partner in this exercise as it facilitates access to vast information services. Networks have potential to improve library 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.

Consortium based services is the way of maximizing the resource base in the developing country like India. In the networking environment, it is quite possible to provide the consortia based services with the coordinating agency.

Consortia based services helps to:

1. Increase the cost benefit per subscription.
2. Promote the rational use of funds
3. Ensure the continuous subscription to the periodicals subscribed.
4. Guarantee local storage of the information acquired for continuous use by present and future users.
5. Develop technical capabilities of the staff in operating and using electronic publication databases.

5.9 Benefits of the Proposed Model for Resource Sharing and Networking:

Benefits of the proposed model for resource sharing and networking of college libraries are as follows:

a. More access to information at least cost to all the participating libraries.

b. Speedy access to information to the users.
c. Possibility of providing of the additional services such as content page, select bibliographies, trend reports to the users.

d. Facilities for easy inter-library-loan services.

e. Avoids duplication of technical work their by reducing the manpower requirement or enabling the libraries to provide more user services with the minimum library staff.

5.10 Criteria for Success of Resource Sharing and Networking of College Libraries:

In order to ensure the success of network, equal access to network resources should be ensured. Provision should be for immediate facility for proper communication among the participating members of the network. On the other hand, all the members should also conform to the group discussion and efforts. Note should be made available for sometimes on recommendation made by the committee, which has marketing techniques. Development of common standards and operational guidelines that foster understanding among the colleges is also essential. Collaborative development of resources should be given due weight age.

Effective centralized coordination is a must. Commitment and motivation of key person is a boon to the success of the network. Financial commitment of the members should be ensured before hand. There should be consensus among members on policies, objectives, operational agreements and contracts concerned with the network. Various categories of end users, their needs and services to satisfy those needs should be identified. Evaluation criteria and procedures for improvement of modes of operation should be formulated. Provision of training programmes for the users and coordinators is also essential for the success of the network.
5.11 Conclusion:

The library profession has never been exposed so much to the changing information scenario as it has been exposed now. In this age of information explosion the technology has progressively replaced the traditional method of information collection, storage and retrieval. Today, the walls of a library are giving a path to electronic environments to establish links with information and virtual libraries that are getting shaped on the Internet. Each individual library is acting as a place for storage and service to the users, but the latest trend is to provide shared information to the users.
REFERENCES:


