CHAPTER 5
INFONET Programme

Introduction:

Information and Communication Technology has provided the global access to information resources in a reasonable cost. Amidst all criticisms about quality, integrity, authenticity, volatility and non-refereed nature of information, Internet remains as important medium for information transmission. Everything that is needed for teaching and learning, viz, textbooks, catalogues, encyclopedias, magazines, newspapers, scholarly journals, databases, photos, and all are made available on Internet. Hence Internet has been viewed as a valuable source of information that can assist users in the pursuance of knowledge, learning, research, and increasing their capacity for social interaction. Internet is seen to promote inquiry and creativity through interaction of various forms of knowledge such as text, multimedia, graphics, photos, music, video, sound, animation etc.

The delivery of educational materials over the Internet is now almost a common phenomenon in some of the affluent, developed countries. The mechanism range from the sophisticated Virtual Classroom (VC) in which students in cyberspace interact in near real-time with instructors of remote sites, to the more basic non-real-time delivery of lecture contents to the remote students. Virtual classroom essentially consists of educational materials on the Internet via the World Wide Web that are accessible by students who have access to the Internet; and mechanisms that support interactions between instructors and remote students.

In recent years, there has been a phenomenal interest in the growth of what some are calling ‘digital’, ‘online’ or ‘virtual’ Universities. Indeed today, it is common place to read that information and communication technologies are radically reconfiguring the landscape of higher education, changing the very nature of the university.

This clearly indicates that there is a decrease in importance of the campus, a student’s ‘login’ from a distance to access ‘courseware’, new media
technologies replacing traditional lectures, courses being delivered and assessed over the internet, promising to make higher education available anywhere and at any time.

For an academic institution mastering Internet technology is not a luxury, but a necessity, because without thorough knowledge and expertise of this technology every effort will end up in vain. Relies on collaboration and teamwork.

Advent of UGC-Infonet

The University Grants Commission (UGC) is the apex organization and was established an under an Act of Parliament in 28th December, 1953. It has launched an ambitious programme to bring about a qualitative change in the academic infrastructure, especially for higher education and to make use of the benefits of Information and Communication Technology to all the universities and colleges across the country. Under this initiative, UGC is modernizing the university campuses with the state of-the-art Campus Wide Networks and has set up its own nationwide communication network named UGC-Infonet. The UGC-Infonet is supporting the higher education in several ways. (1)

UGC – INFONET:

The UGC-Infonet E-journal consortium is a landmark in the history of education initiated by University Grants Commission to facilitate free access to scholarly electronic journals and databases in view of limited resources subscribed by majority of universities. This project is a pride in the field of education and research, which was formally set up on the concluding day of UGC’s Golden Jubilee celebrations by His Excellency the President of India, Dr. A P J Abdul Kalam at Vigyan Bhawan on 28th December 2003 by dedicating a bouquet of e-journals to the nation. More than 4000 scholarly journals and databases from around 23 major publishers/vendors made available to around 100 universities and the remaining universities will be provided access in stages. From the users point of view it is a great bonanza for them in the absence of such access. Archival access is also available for most
of the journals from 1997 onwards and from some publishers the access available. The subjects covered almost all areas, like Arts, Humanities, Social Sciences, Physical and Chemical Sciences, Life Sciences, Computer Sciences, Mathematics and Statistics. (2)

**Network architecture and topologies:**

UGC-Infonet is based on open IP platform, employing state-or-the-art technologies like IP multicast, TCP spoofing and other Internet tools that provide interactive education on PC or TV, enabling online response to queries. Open system architecture will ensure support for current and future applications. Users from participating universities would enjoy high data rates while accessing Intranet and Internet resources. The main features of UGC-Infonet Network architecture are:

Nationwide Terrestrial backbone using fiber optic links;

1) Integrated Satellite WAN supporting Broadband and SCPC VSAT technology;
2) Linkage with other academic networks and research networks all over the world;
3) Comprehensive Network Management Systems for overall monitoring of the network, down to each device;
4) Data security and virus protection using firewalls and Intrusion detection systems;
5) Dedicated data centre for web hosting and mailboxes;
6) Broadband multimedia and video channels for distance learning.

The UGC-Infonet is using the backbone of ERNET2 network, which is a judicious mix of terrestrial and satellite-based wide area network. The Satellite Wide Area Network (SATWAN), using C-Band transponder on INSAT-3C and VSAT technology has facilitated reliable and quick access from remote areas. The SATWAN hub, located at STPI Bangalore, supports broadband VSATs
with up to 52.5 Mbps shared bandwidth and Single Carrier Per Channel (SCPC) VSATs capable of providing up to 2 Mbps dedicated bandwidth. (3)

Access to Bibliographic information:

INFLIBNET has been developing and providing online services through following databases over Internet:

1) Books database:
   It is a collection of bibliographic information of the books residing in libraries of the Indian universities. Around 80 lakh records from 115 universities have been processed and merged into the database.

2) These database:
   It has more than 1.75 lakh records of doctoral theses submitted to various Indian universities.

3) Serial holdings:
   It has more than 58208 unique serial titles having over 66021 holdings of various universities in the country.

4) Experts database:
   Provides useful data relating to the name(s) and details of the experts in different disciplines. It has more than 15000 records, and is growing continuously.

5) Experts database (Science & Technology):
   It has more than 20000 expert’s profiles in the area of Science and Technology. (4)

UGC is modernizing the University Campuses with State-of-the-art Campus wide networks and setting up its own nationwide communication network namely UGC-Infonet. This is going to be a boon to the higher education systems in several ways to facilitate spread of quality education all over the country. This will function as a tool to distribute education material
and journals to the remotest of areas and a resource centre for researchers and scholars for tapping the most up-to-date information. As a main feature of UGC - Infonet, a data center with large server capacity is being set up, where content of common interest can be maintained. Each University will have the option of hosting their website, digital content like ETDs and the E-journals subscribed through INFLIBNET Consortia. This consortium has been the joint effort of UGC, India and the ERNET India, New Delhi under Ministry of Information Technology. The executing agency of this consortium is the INFLIBNET Centre located at Ahmedabad. Under this programme it is proposed to use ICT and Internet to transform learning environment from a mono-dimensional one to a multi-dimensional one. UGC-Infonet has become a boon to a higher education system in several ways. And in the long run, each university will become a hub for the colleges affiliated to them. The INFLIBNET centre has been able to realize one of its objectives by setting up a major communication network of universities through UGC-Infonet. It has become a vehicle for distance learning to facilitate spread of quality education all over the country. It also acts as a tool to disseminate education materials and journals to the remotest of areas. It has become widely used resources for research scholars for having the most up-to-date and reliable information. It has an intranet for university library automation. It also establishes a channel for globalization of education and facilitates the universities in marketing their services and developments. The member libraries will have access to the e-resources being made available under this programme. The infrastructure provided through UGC-Infonet is a minimum bandwidth of 256 kbps to 2Mbps.

Establishing a Mission and Goals:

The consortium has essential statements of mission and goals that reflect its purposes as outlined in its foundational documents, state its commitment to support and facilitate high quality learning and training, and define briefly its intention to maintain strong collaborative relationships among the consortium,
participating institutions, and other stakeholders. The consortium needs to jointly develop the plan, specifying their purpose and what they hope to accomplish together. These will serve as the overarching framework for their activities. Objectives will be most useful if they include both measures of success and milestones for success. The consortium should encourage member organizations to develop their own measurable goals for participation in the consortium, beyond them jointly agreed to by the consortium members.

1. The mission of the consortium is widely understood and accepted
2. They have been adopted or endorsed by the participants
3. They are public and widely distributed among participants in the consortium.
4. The mission of the consortium enables public accountability
5. It aims to establish a foundation on which systems of accountability for the consortium can be structured
6. They establish the consortium’s support of using technology for effective pedagogy and enhanced student learning, and for providing access for students
7. They establish the responsibility of the consortium to its participating institutions and the students using the consortium’s services.(5)

Salient Features of UGC-INFONET:

The following are some of the most important features of UGC-Infonet:

- Scalable Architecture to grow nation-wide terrestrial backbone using fiber optic links.
- Integrated satellite WAN supporting broadband and SCPC technology.
- Comprehensive Network Management systems overall monitoring of the network.
- Linkage with other academic and research networks all over the world.
- Security for data and virus protection using firewalls and intrusion detection systems.
- Dedicated Data Centre for Web hosting, e-journals and Mail Boxes.
• Broadband Multimedia and Video Channels for Distance Learning. (6)

With these salient features the UGC-Infonet is serving its clientele to the maximum extent. They mark the efficient service of the institution which holds good for the success of an institution

UGC-INFONET Digital Library Consortium:

To promote higher educational system, its standard quality research and bridging the digital divide amongst Indian Universities, INFLIBNET has initiated UGC-Infonet Digital Library Consortium under UGC in the year 2004 under 10th Five Year Plan. By this, centre has been able to realize one of its objectives by setting up a major communication network of universities and is successfully interlinked 149 universities through this consortium, which has been planned, implemented and monitored by the centre. During the last three years, effective implementation and execution of this programme has made it as one of the largest and successful consortium around the world. Under the programme, over 4500 high quality peer reviewed priced full text scholarly journals in Science & Technology, Social Science and Humanities are provided free of cost to 124 universities through UGC-Infonet infrastructure. Centre has developed a website of UGC-Infonet Digital Library Consortium. Users can get information about the UGC-Infonet Digital Library Consortium, e-resources, details of member universities, user help guides and usage statistics, etc. (7)

Coverage of INFONET:

The UGC-INFONET E-journal consortium covers all disciplines in the UGC curriculum. It also intended to cover all fields’ relevance to various Universities including, Arts & Humanities, Social Sciences, Physical and Chemical Sciences, Life Sciences, Computer Science, Mathematics, Statistics etc. E-Journal distributions is expressed in three categories with a division of 48% collections in Science and Technology, 46% collections in Social Sciences and 6% collections in the area of Arts and Humanities.

The E-Journal Programme aims at covering all field of learning of relevance to various universities comprising of following areas:
1. Arts, Humanities and Social Sciences; Physical and Chemical Sciences; Life Sciences; and Computer Science, Mathematics and Statistics.

2. The literature, which is being made available to the university community, includes scholarly journals covering mainly research articles, reviews and abstracting databases.

3. Access is being provided to current as well as archival literature depending upon the negotiations and availability of on-line version with the publishers.

Following e-resources or online e-journals and databases are available for access to 100 universities:

1. American Chemical Society (ACS): 31 Journals in Chemistry (http://pubs.acs.org)
2. Royal Society of Chemistry (RSC): 27 Journals in Chemistry (http://www.rsc.org)
3. Chemical Abstract Service (CAS) Chemical Abstract Databases: (http://www.cas.org)
5. Institute of Physics: 36 Journals in physics including archival access (http://www.iop.org/EJ)
6. Cambridge University Press: 68 Journals from different scientific disciplines. (http://journals.cambridge.org);
7. Project Muse (John Hopkins University) 220 Journals in social sciences, Humanities, and Mathematics (http://muse.jhu.edu/journals)
8. BIOSIS: Biological Abstract Databases (http://www.biosis.org)
10. JSTOR (http://www.jstor.org)
11. American Institute of Physics: 36 Journals in Physics (http://www.aip.org)
13. Science Online (http://www.scienceonline.org)
14. Annual Reviews (http://www.annualreviews.org)
15. Springer Link Journals (http://www.springerlink.com)
17. Emerald Library Science Collections (http://www.emeraldinsight.com/ft)
18. Elsevier Science-Life Science Collections (http://www.sciencedirect.com)
19. Ingenta Gateway Portal (http://gateway.ingenta.com)
20. J-Gate Gateway Portal (http://www.j-gate.informindia.co.in)(8)

**Project COUNTER**

Project COUNTER (Counting Online Usage of NeTworked Electronic Resources) provides the tool needed to measure e-usage accurately. The first COUNTER Code of Practice, covering online journals and databases, was published in 2003. COUNTER’s coverage was extended further with the Code of Practice for online books and reference works in 2006. The objective of Project COUNTER is to address the measurement problem by developing an international Code of Practice governing the recording and exchange of online usage data. To comply with COUNTER Code, vendors will have to provide to customers (at no extra charge) the set of basic usage reports for e-journals and databases. The journal report gives the details of the number of full-text articles requested, number of turn a ways for each month, identified by journal. The database reports breaks down total searches, sessions, full-text requests, and turn a ways by month and database. The Code of Practice specifies that usage reports must be delivered at least monthly. There will be no format problems: reports must be delivered as a CSV file, a Microsoft Excel file, or in a format that can be easily imported into Microsoft Excel. At present, publishers, online vendors’ content is COUNTER release 2 complaint. However, recently new and final version of Release 3 of the COUNTER Code of Practice for Journals and Databases has been published on the COUNTER website at http://www.projectcounter.org/code_practice.html The deadline date for implementation of this Release is 31 August 2009, giving vendors a full year to
meet its specifications. After this date only those vendors compliant with Release 3 will be considered COUNTER to be compliant. (9)

In the era of digital divide academic and research community are in the crucial period of transformation especially in India. They have to be dependent upon the electronic based collections rather than print based resources due to faster and quicker means of searching, browsing and interlinking facilities. Their expectations have been growing tremendously in this electronic age. But the computer literacy rate, which is a prerequisite in accessing electronic resources, in India, is comparatively less than many developed countries. Along with this it brings out challenges like copyright, archiving and how to exploit these available e-resources are some of the major aspects one should be aware about. So, there is need for awareness among the Indian academic and research community for proper utilization of subscribed resources.

In the recent days the system allows universities covered under the purview of UGC but gradually it will be extended to colleges and different R & D Institutes of the country. The ultimate goal of this programme is work on the virtual philosophy of libraries i.e. right information to the right user at the right time with the help of state-of-the art technology. Access is more important rather than collection development, and should be accessible. User awareness programmes conducted by the Centre are started working as a tool to achieve the goal of qualitative and authentic research output from the side of Indian universities with the help of scholarly and updated information. This consortium is bridging the gap between information and its user.

**UGC-Infonet and digital divide:**

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research output from the side of Indian universities with the help of scholarly and updated information.

- Providing Internet access to more than 150 universities of the country and likely to envelop other academic and research institutions with the colleges.
- The programme is free to privileged universities and funds are being provided by UGC.
- INFLIBNET is applying all its best parameter for selecting the scholarly and peer reviewed literature from all streams of learning and making it available to the end users.
- Training and orientation to handle the technologies which is used in the programme, imparted by the Education and Research Network (ERNET) with the help of INFLIBNET.
- INFLIBNET is conducting various training and awareness programme to improve the information literacy within the user community.(10)

In this era of global communication, networks and consortia are highly important. A library consortium in the country is needed to achieve cost effectiveness and bridging of the digital divide. To develop library consortia in India many hurdles such as inappropriate ICT infrastructure, inadequate funding, limited trained personnel, technological capability, lack of understanding of the concept of consortia should be overcome but anything new comes up with new challenges and opportunity, it is up to the individuals to take up the challenge and accept the opportunity

**Key features of UGC-Infonet: E-Journals Consortium**

In the era of digital divide academic and research community are in the crucial period of transformation in India. They have to be dependent upon the electronic based collections rather than print based resources due to faster and quicker means of searching, browsing and interlinking facilities. Their expectations have been growing tremendously in this electronic age.
• The programme commenced with the aim to get qualitative changes in the higher educational system of the country by providing free access to electronic contents, using state-of-the-art technology.

• Initially the whole programme is funded by UGC for the first three years.

• Programme will be evaluated after three years.

• INFLIBNET is working as a nodal agency to monitor and execute the programme systematically.

• Up to December 2011 more than 185 universities were accessing E-Journals subscribed under E-Journals Consortium.

• Till 2011 around 150 universities have already enveloped in this virtual venture.

• Various experts are also helping by providing expert guidance and advice on various issues related electronic resources.

• UGC has established various committees (includes experts from various disciplines) to ensure better functioning of the programme.

• INFLIBNET is conducting various local, regional and national training and awareness programmes to improve the e-information literacy to use available resources exhaustively and extensively.

• Guidelines for ‘UGC-Infonet for Colleges’ and ‘Associate Membership’ are also in consideration.(11)

Awareness programmes to the faculty and Research Scholars

Awareness is the key for success of the programme, INFLIBNET conducted number of training courses, workshops and user awareness training programmes and will continue to organize for the success of any new initiative and INFLIBNET has conducted several such programmes for the benefit of universities and institutions. (12)

Future Programmes of Infonet

The future programmes include user awareness training programmes at universities, Collect user feedback from time to time and publish in the newsletter as well as on website, UGC-Infonet E-Journals Consortium –
Annual Meet and meeting of librarians time to time, Intensive training programmes for professionals, Evaluation studies on the benefits of UGC-Infonet E-Journals Consortium etc.(13)

Organization

The consortium need to have an operating structure, an individual responsible for keeping the consortium on track, money to cover management and programme expenses, and a system for keeping members informed about the consortium’s activities. Members need to be intimately involved in organization creation to ensure that the resulting system will meet their needs. The consortium operates through its headquarters at the INFLIBNET Centre Ahmedabad. INFLIBNET with an overall responsibility for making policies, monitoring the progress, coordinating with UGC for promoting the activities of UGC-Infonet E-journal Consortium. The Centre have independent electronic access to all the publications to help with the process and has also provided one free print copy of each journal from many publishers, which is being maintained as a National repository in its centre Archival Library. A web site has been created to provide all needed information to consortium members about the status of the programme at http://web.infonet.ac.in/econ/index.htm. INFLIBNET conduct various training programmes, workshops, user awareness programme time to time at different places to spread awareness and to develop expertise in the university community in the use of E Resources. Special training programmes, seminars are conducted on different University campuses by publishers of complex databases viz. Chemical Abstracts, Biological Abstracts etc. The National Negotiation Committee members consisting of members from among the beneficiary institutes review the progress of the consortium from time to time. (14)

Infonet Consortium Policies

The consortium has operating policies and procedures, understood and accepted by participating institutions that give it sufficient authority to protect the integrity of activities it supports and coordinates and to be accountable for
its activities. The consortium maintains official records documenting decisions related to participating institutions.

- Sets clear standards against which its courses and services can be held accountable to participating institutions and to the public at large.
- Assures that appropriate performance data are collected and its programs and services are evaluated and improved.
- Issues performance reports to its participating institutions and to the public at large.
- Exercises responsibility for the quality of the education provided through its services.
- Identify courses or services failing to meet the standard and require their remediation.
- Engages in planning processes necessary to ensure its long-term success.
- Appropriate technical requirement is fulfilled through good management, following a technology plan, and drawing on a human infrastructure capable of supporting the technology.
- Supports professional development and scholarly activity.
- Coordinates or provides comprehensive in-service training programs for its participating institutions, using virtual environments when appropriate.
- Enables its participating institutions to become familiar with emerging technology tools.
- Budget allows for its leadership group to participate in local, regional, and national conferences.(15)

**Responsibilities to Participating Institutions**

The consortium has clearly stated policies and procedures, well-defined decision-making structures and processes through which it identifies and fulfills its responsibilities to participating institutions.

- Facilitates its programs and services are evaluated and improved rates access to programming provided by its member institutions rather than competing with them.

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• Assures that each participating institution has access to programming from other participating institutions for its campus and its learners.

• Consortium policies, financial arrangements and marketing encourage participating institutions to offer the highest quality programming.

• Follows processes that honor each institution’s policies and procedures in approving courses and degree programs for which the institution grants credit and/or awards degrees or certificates.

• Assumes responsibility for developing policies required for effective functioning of the consortium.

• Assures that the financial arrangements among the consortium and its participating institutions are clearly stated.

• The consortium has policies that establish the ownership of intellectual property shared with or created by the consortium.

• Recommends appropriate changes if participation in the consortium requires changes to existing institutional policy.

• Cooperates with its member institutions to develop the processes and systems necessary to accomplish its stated goals.

• Collaborates with its participating institutions to assure that they fulfill the expectations of government agencies and third-party quality assurance agencies.

• Establishes procedures through which it and the participating institutions share responsibility for the quality of the education facilitated by the consortium including but not limited to instruction, academic rigor, and educational effectiveness of all learning activities.

• Assures that either it or its participating institutions provide appropriate faculty support services specifically related to distance education.(16)

UGC-infonet as an organization solely meant for the encouraging the educational programmes under the banner takes cudgels on its shoulders for the satisfaction of the user public of the member universities and other institutions. The above enumerated responsibilities go to ensure the services mentioned in
The institution attends the services even beyond the limit of the said duties.

The aims of UGC-infonet e-journal consortium:

By facilitating the flow of information and knowledge, the UGC-infonet addresses the critical issue of access and create a new peripheral to enrich the research efforts in the country. The network design is based on a proactive method that considers the coming issues and new possibilities that this infrastructure may unfold. This will bring about a knowledge revolution that will be instrumental in transforming society and promoting inclusive growth.

The aims of UGC-infonet e-journal consortium are

- Scalable Architecture to grow from Universities to affiliated Colleges;
- Nation-wide Terrestrial Backbone using Fiber Optic links;
- Integrated Satellite WAN supporting broadband and SCPC -VSAT technology;
- Comprehensive Network Management Systems for overall monitoring of the network, down to each and every device;
- Linkage with other Academic and Research Networks all over the world;
- Data security and virus protection using firewalls and Intrusion Detection Systems;
- Dedicated Data Center for Web hosting, e-Journals and Mail Boxes;
- Mirror sites spread all over the country for content hosting and
- Broadband Multimedia and Video Channels for Distance Learning(17)

The list of full text e-journals and bibliographic databases subscribed under this programme are:

1. Chemical Abstract Services (CAS): CAS is the most important, strong and costly service tool in the areas of chemical sciences. This e-resource needs a specialized training to access. Therefore, in 48 universities specialized training programme on STN access to Chemical Abstract has been conducted for proper and systematic utilization. The CAS
access is given to 10 universities through Sci-Finder and other Universities having the Chemistry subject are getting this access through STN service. The archival access is made available since 1907 onwards.

2. American Chemical Society (ACS): Full text access to ACS titles is giving access to the prominent 31 full text e-journals from volume no.1, issue no. 1.

3. Royal Society of Chemistry (RSC): Full text access to RSC titles is given access to 23 journals and 6 databases and the archival access is made available from 1997 onwards.

4. Institute of Physics (IOP): Access is provided to 36 full text topmost journals in the area of physics, and the archival access is made available from Vol.1 issue.1 of all 36 IOP titles.


6. Cambridge University Press (CUP): Access to 72 prominent full text e-journals of CUP are being subscribed under the scheme and archival access is made available since 1997 onwards. Access to social science and humanities package of CUP titles are given from January 2005.

7. Project Muse: The access is made available to 222 full text journals in the area of humanities and social sciences with the archival access mostly from 1999 onwards.

8. Biological Abstracts (BA): One database for biological sciences more than 7.7 million archival records are available back to 1969.


10. American Physical Society (APS): Access is made available to 8 Full text journals from 1997 onwards.

11. Encyclopedia Britannica: This Encyclopedia Britannica is one of the popularly used reference tool and can be used by Faculty and research scholars including colleges across the country. INFLIBNET has the National Site License for this reference tool.
12. Science Online: This is a popular science magazine with 52 issues a year and provides access to the full text of all SCIENCE contents published from October 1996 through the latest issue.

13. Annual Reviews: Access is made available to all 29 full text journals and archival access is provided up to 10 years back issues.

14. Kluwer Journals: Access is made available for approximately all the 650 journals of Kluwer online for one year and after those members can access top 100 Kluwer journals. The archival access is provided from 1997 onwards.

15. Springer Online: Access is made available for around 550 journals from Springer Link for one year and after that member institution will be continued to make access for 100 top Springer journals. The archival access is provided from 1997 onwards.

16. Emerald Journals: Under UGC-Infonet e-journals consortium access is made available for 28 e-journals from Library and Information Science full text database and archival access is varies from journal to journal (mostly 1994- onwards).

17. Elsevier Science: One can access the 34 full text e-journals of health sciences from Cell Press, Current opinions and, Trends. The access is made available through the www.sciencedirect.com and archival access is provided from 1995 onwards.

18. J-STOR: The most awaited e-resource which deals with back volumes of social sciences, humanities and to some extent with natural science subjects. For accessing JSTOR each university perform the Network Performance Test (NPT). This test is essential for getting access to the JSTOR. JSTOR access is presently given to 24 universities selected by the committee. Member universities can access to 319 full text e-journals from Vol.1 issue 1- onwards up to last two-three years gap depending on the moving wall period of original publisher rights.

19. Ingenta and J-Gate, 2 subject gateway portals are also available and both of these are gateways for more than 20,000 journals. One of these
portals is provided to each university in the first year; however five major universities have been provided both the portals to get the feedback on these portal services. The portals provide one stop solution to all publications and get access to full text access for the above titles from single window.(18)

In the era of digital divide academic and research community are in the crucial period of transformation especially in India. They have to be dependent upon the electronic based collections rather than print based resources due to faster and quicker means of searching, browsing and interlinking facilities. Their expectations have been growing tremendously in this electronic age. But the computer literacy rate, which is a prerequisite in accessing electronic resources, in India, is comparatively less than many developed countries. Along with this it brings out challenges like copyright, archiving and how to exploit these available e-resources are some of the major aspects one should be aware about. So, there is need for awareness among the Indian academic and research community for proper utilization of subscribed resources. (19)

Legal issues

While discharging the duties though as a social concern it involves the matters like accountability and its response to the public. Hence it is subject to legislative issues. All electronic resources available through the Consortium are governed by license agreements. The terms and conditions for using these resources are spelled out in license agreements that are signed with each publisher by the Consortium on behalf of its member universities. The licenses for electronic resources impose two types of restrictions on its usage, namely i) who can use these resources; and ii) how the resources can be used. The first restriction defines authorized users for e-resources, which generally includes students, faculty, staff and onsite visitors of a subscribing institution. The second restriction deals with how these resources can be used. It is the responsibility of individual users to
ensure that e-resources are used for personal, educational and research purposes only. Most of the agreements entered into by the Consortium and publishers specify items that users are prohibited to do. Some of them are as follows:

1. Systematic or programmatic downloading, retention, and printing are prohibited. For example, a user cannot download entire issue of a journal or print out several copies of the same article.

2. Electronic distribution of content is also restricted although the specific restrictions vary from publisher to publisher. It may be permissible to forward an article to another colleague in the same institution by email; however, transmitting an article to someone outside of the institution, or to a large group of recipients, a mailing list, or an electronic bulletin board, is not allowed.

3. Faculty in a university can print out a copy of an article from an electronic journal and include it in their course pack. However, multiple copies should not be made for circulation. Copyright laws protect published material in any format so that it cannot be copied except in accordance with fair use. Providing access to material for educational purposes falls within the realm of fair use.

4. Subscribed e-resource should be used for educational and research purposes and not for commercial purposes.

5. Providing electronic links to the licensed resources on the course web pages is permitted but it is not permissible to post a PDF of an article on a website. However, a researcher can post a pre-print of an article written by him.

6. As with any kind of scholarly communication, a researcher can use phrases or quotes from other articles and cite the source of information. However, a researcher is prohibited from using large chunk of information from an article or from a chapter in a book. (20)
Violation of Terms and Conditions of License Agreements

Every system devoid of its nature is to be governed by some of the standard sanctions for Violation of Terms of contract. UGC infonet too has some sanctions that bind this system to bring them into force.

Publishers track the use of their electronic resources in terms of number of downloads made by subscribing institution. Misuse, if any, is notified to the subscribing institution with details of kinds of violations and institution is expected to take action. The publisher also suspends the access to e-resource pending suitable action by subscribing institution. The access is stopped not only for journals where license agreement was violated but for all journals by the same publisher. Moreover, the access is suspended not only for the individual violator but for the entire institution. (21)

It beyond the reasonable doubt that the sanctions if carried out strictly shall prevent the misuse of the complete freedom ensured by the UGC infonet for imparting of education in order to help research and development of the country. Therefore the UGC Infonet as an organization has formulated some legal issues for the control of the institution

Network Infrastructures

In a library, be it digital or analog, the essential transaction is the same: a user interacts with content. But richer interaction is possible within the digital environment not only as more content is put within reach of the user, but also as more tools and services are put directly in the hands of the user. These include the ability to search, refer, validate, integrate, create, customize and publish. Students, teachers, faculty, and those pursuing continuing education will connect, browse, search and save the required article and enhance and keep themselves update in their subject. Therefore establishing network infrastructure not only in
library but also in campus LAN is paramount component to ensure access to e-resources. Under UGC- INFONET programme, which aims to establish network in universities, INFLIBNET has extended different kind of connectivity to universities located in north east states. Based on location, number of students and teachers, CCMC has recommended different type of connectivity to ten universities, which comes under the purview of UGC. Initially, all the universities were given (SCPC) VSAT with minimum 256 KBPS bandwidth which is not sufficient to use e-resources. (22)

The infrastructures mentioned help in bringing success to the programme in an acceptable manner. It is with the help of the above said infrastructure that the efforts of UGC infonet programme can be a successful project of the Government in getting the society turned into a knowledge society, to yield research and sustainable development

Shibboleth-based Access Management System

Students from different universities have started submitting electronic version of their theses into the repository on voluntarily basis. So far, five universities have submitted their theses without formal request. MG University is the first University to sign the MoU with INFLIBNET Centre. The MG University has already given electronic version of their 550 theses for hosting them into the Shodhganga. Access management, variably called access control, licensing conditions and Digital Rights Management (DRM), refers to control of access to digital collections. Digital Rights Management (DRM) is a system of solutions created or designed as a means to prevent unauthorized access, duplication and illegal distribution of copyrighted digital media. In online environment, the scope of DRM can be leveraged to control access to and usage of digital objects and to impose restrictions on their misuse.
The INFLIBNET Centre, as one of its core mandates, provides access to scholarly e-resource to universities and colleges in India under the UGC-INFONET Digital Library Consortium and N-LiST Programme. The Centre is keen to optimize the utilization of e-resources so as to ensure better return on investment (Rol) and greater benefit to the academic community. At present, access to e-resources in universities is IP authenticated access and, as such, access is restricted within the confines of a given university campus due to lack of proper authentication mechanism. The Centre is working towards deploying appropriate access management tools, enabling users to access e-resources from the campus, home or even while travelling. Implementation of such a solution requires setting-up of proper user authentication and access control mechanism ensuring trust relationship between publisher, identity providing agency and the user institution. The Centre is working towards implementing Shibboleth System which is open-standard based, open source software for web-based single sign-on across or within organizational boundaries. It allows sites to make informed authorization decision for individual access of protected online resources in a privacy preserving manner. Using this technology, user can access designated electronic resources within institute as well as off campus. The Centre is working towards implementation of Shibboleth-based access management system for all e-resources and for all its member institutions including colleges and universities. (23)

Keeping in view the large number of universities in the country, services of E journals has been planned to be implement in various phases which are given below:

**Phase-I**

In first phase, (2004), fifty universities were identified and provided access to more than 2000 E-journals in different disciplines. The first fifty universities have been selected based on certain criteria,
viz. existing infrastructure, and number of scientific research, no of students and research scholars enrolled and Internet connectivity in the campus. National Negotiation Committee consisting of five members is responsible for selection, negotiation and identification of E-resources. In the year 2004, the committee, judiciously selected reputed society publications along with some reputed commercial publishers and finalized the deal for 18 publishers and spent Rs. 1681,38,043/-. The access is given to first fifty universities. These fifty universities were given financial assistance to establish campus LAN and necessary infrastructure for Internet connectivity. After establishment of network, they were asked to send the IP addresses to INFLIBNET. By using IP addresses of these universities, accesses to E-journals are being provided. INFLIBNET forwarded the IP addresses of respective universities to the publishers/aggregators. (24)

3.2 Phase-II

New set of 50 more universities were given access to E-journals after releasing the grants for developing network infrastructure in the year 2005. Additional expenditure was incurred to subscribe new resources. The costs for inclusion of these universities and subscription of these e-resources is around 25 crore. (25)

Phase-III

In the third year (2006), the consortium would cover remaining universities and colleges. There are around 50 universities which have been deprived of the access to E-journals and are expected to establish network infrastructure soon. Suitable measures have already been taken and grants were provided for networking. Colleges are integral part of education systems where millions of students enroll every year in pursuit of higher education. UGC aims to extend E-journals facility to select 200 colleges shortly. (26)
USAGE STATISTICS

Access is based on IP wherein multiple users can search the site and download the content. Most electronic resources available through consortia are served from the server maintained and controlled by publishers, aggregator and vendor. They control the data through the publishers. INFLIBNET spent increasing amount of money on electronic resources, many suspect that it should be possible to use the actual electronic media to track usage of these journals more carefully than it was possible with paper journal.

It has been difficult and complex to obtain reliable data from publishers. This has created problems in obtaining accurate use statistics for E- journals. With new standards like COUNTER has made librarians job easy. COUNTER stands for (Counting Online Usage of Networked Electronic Resources) is an international initiative designed to serve librarians, publishers and intermediaries by facilitating the recording and exchange of online usage statistics. The use of online information resources has been growing exponentially and it is widely agreed by producers and purchasers of information that the use of these resources should be measured in a more consistent way. Building on a number of important, existing initiatives, COUNTER has set out to achieve this.

During the last few years there has been a growing realisation that a truly international effort, involving vendors, librarians and intermediaries, would be required to develop acceptable, global standards for measuring online usage. The seed for this international effort began to germinate in the UK, with the PALS (Publisher and Librarian Solutions) group formed by the Joint Information Systems Committee (JISC), the Association of Learned and Professional Society Publishers (ALPSP) and The Publishers Association. Under the Chairmanship of Richard Gedye of Oxford University Press, PALS made considerable progress in 2000 and 2001 in developing the framework and processes that evolved into COUNTER. In March 2002
COUNTER was formally launched, with a fully international Steering Group, a dedicated Project Director and a set of clear objectives. As access to electronic journals carried out electronically, it should be relatively easy to count at least in terms of number which is far simpler than trying to gauge the number of people picking up print journal. COUNTER brings new benefits to librarians, publishers and intermediaries. (27)

Management is the art of getting things done. A Presentation is a fast and potentially effective method of getting things done through other people. Presentations are used as a formal method for bringing people together to plan, monitor and review its progress. Project leaders from other sections need to be persuaded of the merits of a project and to provide any necessary support. It allows questions and to initiate discussion. It may not be suitable within the presentation formats of a company to hold a discussion during the presentation itself but it does allow the issues, present the problems and at least to establish who amongst the audience could provide valuable input to decision making.

**UGC- INFONET Today**

The UGC Infonet, the aspiring and dream project of University Grants Commission, which also aims at Content Creation by Indian Academic Sector, will definitely boost this idea. University Campuses have been modernized by UGC is modernizing with local networks for setting up its own nationwide communication network named UGC-Infonet. UGC-Infonet will be a boon to the higher education systems in many ways to facilitate spread of quality education all over the country. This will function as a tool to develop education material and journals to reach the remotest of areas and a resource centre for researchers and scholars for tapping the most up-to-date information.
• UGC-Infonet E-journals Consortium is quite a remarkable programme initiated by chairman UGC to facilitate access to scholarly journals in all areas of learning.

• The programme is being executed by Director INFLIBNET Ahmedabad

• Is being helped by Quite a good number of scholars and academicians for this noble initiative.

• Regional meetings have been conducted at different places to take the expert opinions of university librarians across the country while selecting the journals

• Expert opinions have also been taken from existing consortiums in few subjects;

• National Negotiation committee set up by UGC recommended number of resources to be subscribed in different areas of learning;

• The very purpose of this initiative is Indian Universities constitute one of the largest higher education systems in the world.

• Universities across the country are now facing acute shortage of funds to subscribe the costly journals and are deprived of access to latest literature published.

• This consortia initiative has helped to get discount of more than 85-90% on many scholarly journals and databases.

• This facility enables the subject experts and academicians to browse, download print the relevant articles for their research and academic development.

• Databases / journals licensed to a consortium available to all at the same time simultaneously.
• Facilitates the libraries to get the benefit of wider access to electronic resources at affordable cost

• More importantly the entire programme is wholly funded by UGC and is executed by the Director INFLIBNET, Ahmedabad.

• It also maintains one print copy of the journals subscribed for many titles as a national archive at Ahmedabad, which can be accessed by the research and academic community across the country.

• The resources are accessed based on the IP address at individual universities and University signs MOU with INFLIBNET and UGC to use the resources for academic cause.

• Creates sharing of resources among the participating universities

• The consortium received number of proposals and finalized with 15 publishers / vendors to cover journals and databases in sciences, humanities, social sciences.

• Many other journals and databases are also under consideration and are being taken up.

• This model provides access to and supports only electronic version and not to be linked with print subscription. Supplement to existing collection.

• Perpetual access to subscribed resources with archival access.

• Subscription for minimum 3 years initially and to be reviewed at the end of three years

In view of the above statements relating to present status of the UGC Infonet it is pertinently inferred that though there is still an urgent need of developing adequate ICT infrastructure in the colleges and universities of
India. The initiation taken up by UGC Infonet definitely will result in converging India into information society in the coming days

**Overcoming Barriers**

Organizing and forming a consortium is not easy. There are many barriers to success, including lack of information and resources. But the barriers can be overcome, and the benefits of a consortium, particularly for small and mid-sized institutions are great. To succeed, consortia should:

- Gain commitment from the highest levels within member organizations and involve all levels of the organization in consortium activities.
- Gaining the full support of members is crucial to success.
- Consortium goals must be aligned with members’ goals.
- Full support is achieved when the consortium’s activities meet members’ needs.
- Recognize and address institution concerns about sharing information with competitors.
- Institution will participate if they feel their competitive position will not be jeopardized.
- Build the success of earlier efforts.
- Create consortia out of earlier group or collaborative efforts.
- Once in operation, seize on each small success and use it to spur members on to even greater achievements.
- Create a sense of permanence and stability.
- A clear purpose, structure, and process will provide security.
- Preparing members to take ownership of the consortium giving them control of activities will help secure their continuing involvement and support.
- The benefits to be gained from consortia are real. Institution members attest to lower training costs, better quality training, improved work processes, and increased productivity.
While the barriers to forming learning consortia exist, they can be overcome, and they are worth overcoming.(28)

The above steps at the instance of government and the policies in the implementation of them then will be a successful task of imparting of education through e journals and books available on internet. As it opens the window on the world to know the new and novel techniques and developments in science and other spheres of knowledge shall reach the users at a proper time and for the proper persons. Therefore it is indeed a herculean task by the UGC launched to reach the education elite within a fraction of second and thus will overcome the barrier of ignorance and innocence in case of science and technology

**Benefits of Consortium**

The benefit of consortia-based subscription to electronic resources is made available during 2004 to 50 universities and many other universities were given trial access for six months and are added to the consortium during 2005. The consortium attracted the best possible price and terms of agreement from the publishers and it has been observed from the last one year that every major publisher wants to become a part of this initiative and is ready to provide the best possible economic model. The consortium provides access presently to more than 7500 electronic journals from more than 25 publishers and aggregators.

The benefits of consortium are many.

- The process of working together as a group and learning cooperatively is extremely powerful. Members can share problems, solutions, and ideas with each other, thereby reducing the number of mistakes they make and shortening their learning curves. In many cases, consortium members, collectively, have all the answers they need to succeed — all they have to do is learn to share.

- Consortium members can reduce their costs by sharing training development and delivery expenses. They can expand their access to
training resources by sharing curricula, facilities, and trainers. By combining their resources, members might also be able to research and design new programs that they could not have developed on their own.

- Finally, with the leverage member’s gain by being part of a group, they can persuade education and training providers to tailor course content to meet their needs. While these benefits hold for both small and large institute, they are of particular importance for smaller universities. (29)

- The consortium allows remote access to its member institutes beyond their expectations.

- It facilitates simultaneous use from the member institutions.

- Multi-dimensional features of e-journals encourage the users to use them round the clock.

- They are flexible and do not require physical processing, storage space and are even environmentally variable. Accession of archival issues is available and CDs are supplied to member institutes for future use.

- The member institutions can create their own Table of Contents that alert through them via e-mail. The Table of Contents for the latest issue of their favourite journals and selected journals of their choice can be added to their personal profile.

- The Consortium acts as a single-window service for a large number of universities with their diverse research and academic interest;

- The Consortium, with its collective strength of participating institutions, attracts highly discounted rates of subscription with most favourable terms of agreement for a wider range of e-resources.

- Users have immediate access to material previously not subscribed to, at no incremental cost for accessing back files;

- It improves the existing library services and reduce the subscription cost;

- The research productivity of beneficiary institutions is expected to improve with increased access to international databases and full-text resources;
• Remarkable increase in sharing of both print and electronic resources amongst participating library through J-GATE Custom Contents for Consortia (JCCC) can be achieved;

• The Consortium is opened-ended for all other universities / educational institutions through its “Associate Membership Programme”. Private universities and other institutions can join the Consortium and get the benefit of not only highly discounted rates of subscription but also the favourable terms and conditions;

• Members of the Consortium have the benefit of cap on the annual increase in the rates of subscription.

• The Consortium is offered better terms of agreement for use, archival access and preservation of subscribed electronic resources, which would not have been possible for any single institutions; and

• There is a troubleshooting to the problem of Hoarding of information as the subscribed resources are accessible online the beneficiary institutions have less pressure on space requirement for storing and managing print-based library resources.

It is needless to say that a consortium offers a number of benefits, the most obvious being its purchasing power. A consortium representing a large number of institutions, in some cases even more than 90, can more easily achieve more favourable conditions than individual institutions on their own. The UGC Inflibnet infonet Consortium described above is a typical effort to overcome such borderlines and to develop a service covering all relevant parties. Special arrangements for solving the economic issues have, therefore, been necessary because the government budget does not support translocal approaches.
Conclusion:

The initiative has been taken by the University Grants Commission, with INFLIBNET to provide high speed Internet connectivity and E-journals through this network. This has started making good impact on researchers and academic community. The universities are showing high utilization of provided bandwidth, that is the result of good Local Area Network infrastructure development within the university. As a result, universities are also demanding more bandwidth. Number of universities under UGC-Infonet are using satellite based communication network which usually expensive and include more delay than terrestrial network. Therefore, efforts may be made to increase leased line connections in the UGC-Infonet, which will minimize the propagation delay and improve accessibility. Network security is one of the major problems for UGC-Infonet. However, to secure Internet connection from virus and spam at university end, is the responsibility of respective universities. Inadequate security infrastructure, security policy and lack of trained manpower may reduce the bandwidth utilization. The UGC-Infonet network has vast capacity of carrying digital contents, is still not utilized till its maximum extended because of few applications are available over this network. However, the Govt. may take initiatives to encourage universities to host various applications like online full text thesis, course materials, online professional courses etc. within this network. This will encourage domestic network traffic, accessibility to e-contents that will in-turn reduce the bandwidth cost. (30)

In the era of digital libraries, Web-based electronic databases have become important resources for education and research, providing functionality and ease of use superior to print products. Analysis of usage of such online systems can provide valuable information on user behavior and on usage of electronic information in general.
The initiative taken up by University Grants Commission to provide electronic access to scholarly journals and databases has started making a very good impact on the research and academic community. However there is great need to further improve the access in terms of network infrastructure within the universities and the bandwidth support will further enhance over the usage over the years. The result strongly indicate that in the consortia arena the levels of information use will rise through desktop electronic access, but it is not possible to predict now how high the rise will be. At this early stage the users have probably not yet fully absorbed what the E-Journals consortium can do for them, but INFLIBNET is on its mission to reach out to them and provide necessary guidance time to time in improving the access base. (31)

Electronic information resources are gaining momentum. Libraries have felt that sharing e-resources is simpler than print resources. This is the first time in the history of higher education system in India that libraries in higher educational institutions have been given prominence and access to many scholarly journals is made available from the support of University Grants Commission. Presently the system allows universities covered under the purview of UGC but gradually it will be extended to colleges and different Research and development institutes of the country. The ultimate goal of this programme is to work on the virtual philosophy of libraries i.e. right information to the right user at the right time with the help of state-of-art-technology. This is what the essence of all the fundamental laws of library and information science advocates. Access is more important rather than collection development whatever you have that should be accessible. User awareness programs are started working as a tool to achieve the goal of qualitative and authentic research output, by Indian universities with the help of scholarly and updated information. It is expected that e-subscription initiative of UGC-INFONET will bring remarkable change in the academic environment in the country in the days to come.
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