BIBLIOGRAPHIC UTILITY NETWORKS

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1 INTRODUCTION

The bibliographic utility is a network consisting of a large union bibliographic database, accessible online to member libraries on time-sharing basis. It is an organisation that provides access to and support for bibliographic databases directly to member libraries or through a network of regional bibliographic service centres, usually via a proprietary interface.

There are a number of definitions of bibliographic utilities. A definition of bibliographic utilities as given by W. Saffady [6] is more appropriate, which is: *"Bibliographic utilities" is the collective name for a group of computer service organizations that maintain large data bases of cataloging records, and offer various cataloging support services and related products to libraries and other customers who access those records on an online, timesharing basis. The data bases maintained by most bibliographic utilities are essentially online union catalogs.*

Bibliographic utility networks in most cases initially obtained machine-readable cataloguing records from either a national library (e.g. Library of Congress) or any other subscription based sources or vendors. Their union databases also comprise of bibliographic records contributed by participating libraries. Their bibliographic records include two kinds of information:

(1) descriptive cataloguing and classification data in the MARC (Machine-Readable Cataloguing) format appropriate to the form of item being catalogued , and

(2) holdings information for libraries that have added specific items to their collections.

The major bibliographic utility networks offer software for downloading, editing, and local record creation; authority control utilising the Library of Congress (or, any other standard) authority files; and services to facilitate interlibrary loan based on holdings information included in each record. This unique resource-sharing model is pivotal to library cooperation at the national as well as at the international level, to serve library clientele more cost-effectively and cost-efficiently.

2   FUNCTIONS AND ADVANTAGES

Functions

The functions of bibliographic utility networks can be:

- To serve member libraries in the region it operates with high-quality cataloguing information and related products or services for resource sharing and cooperation.

- To provide concurrent access to the bibliographic databases on time-sharing basis, and to allow member libraries contribute records of their own collection to the union catalogues.

- To maintain the standard of bibliographic record format, adopted by the national or international standardisation bodies.

- To provide an interface to each member library that enables data communication between two systems.

- To rationally utilise information resources available within a region or throughout the member communities, so that constraints in collections of individual libraries may be overcome.

Advantages

Some of the advantages are described below which are responsible for worldwide popularity of bibliographic utility networks.

i) Bibliographic utility network gives access to the world of knowledge through large bibliographic databases contributed by a number of member libraries.

ii) Bibliographic utility network provides tools to the member libraries for addition and modification of bibliographic records.

iii) Bibliographic utility network supports standard machine-readable cataloguing (MARC) formats in order to maintain quality of bibliographic records. Metadata used in these databases are well accepted by the standardisation authorities, e.g. MARC 21 format.

iv) Duplication of bibliographic record of a particular document can be reduced, which saves the cost of cataloguing and technical processing. A member library simply downloads the bibliographic record of such document from union databases and modifies only some information within a record, like holding information.

v) As the quantum of documents is generated worldwide in a small period of time, a single library is unable to keep abreast of all recent developments. Bibliographic utility may record most recently published documents if any of such documents is available to any of its member libraries.

vi) The union catalogue of a bibliographic utility provides location information of a particular document, which helps in document delivery service or interlibrary lending service from one member library (which holds the document) to another member library

(which requires the document for its clientele). This also enhances cooperation among member libraries.

vii) Bibliographic utility network helps in reducing costs of cataloguing and technical processing in the face of increasingly tightened library budgets.

viii) Online, real-time, location-independent applications become a reality using modern information and communication technologies by a bibliographic utility and its member libraries.

ix) A bibliographic utility network can support a diverse languages and different forms of documents to be incorporated in the union database. Multilingual and multimedia content in the bibliographic databases also become possible.

x) Bibliographic information on unpublished or out-of-print documents held by the member libraries of a bibliographic utility enhances the scholarly communication.

xi) Bibliographic utility network helps in effective collection management by various ways, for example, evaluation of a document's content, assessment of its popularity by availability.

xii) Bibliographic utility network serves as a most useful reference as well as referral tool to member libraries for answering reference enquiries from the clienteles.

Benefits of Using Union Catalogue by Different Groups

A bibliographic utility is centered on a union catalogue database. The union catalogue of a bibliographic utility provides a number of benefits to the member libraries and their users. Some of benefits are likely:

By Library Cataloguers
- Union Catalogue generally has high quality cataloguing, with rich, authoritative records
- It ensures that materials of any member library are processed quickly to make timely cataloguing
- It helps to locate the records that cataloguer needs fast; it gives high hit rate, less time
- It provides increased efficiency with the latest in cataloguing technology, flexible browser or Windows-based interfaces, linked authorities, and automatic extraction of metadata
- It can exports MARC or Dublin Core records so that library users can locate the materials that they need.

By Reference Librarians and Users
- Union Catalogue dramatically increases the quantity and types of resources available to library users through interlibrary loan, the reference search service and electronic content services
- It achieves benefit from the accuracy of bibliographic and ownership data maintained through quality programmes and adherence to international standards

- It enhances the range of resources a library offers and reduces search complexity in reference search service due to linked integration with other leading service providers
- It extends the cultural diversity of library's collection with resource sharing, collection sets and other services
- It offers better, faster service to library users and improves most facets of library administration using union catalogue-enabled products.

By Resource Sharing Professionals
- Union catalogue makes cooperative collection development a reality
- It shares resources within a group of libraries, or with the world
- It achieves fill rates of up to 95% for requests made via interlibrary loan (ILL) software of a bibliographic utility network
- It saves money and improve turnaround time
- It makes use of library staff effectively, with both Web and command-driven interfaces
- It empowers library users by letting them place their own requests (in some utility networks).

For Special Collections
- Digital collections can easily be catalogued and shared. Records for digital collections maintained by digital collection management software are linked to union catalogue, which makes special collections known to a broader audience.

3   HOW A BIBLIOGRAPHIC UTILITY NETWORK IS OPERATED

A bibliographic utility has a number of member libraries. Each institution contributes the bibliographic records of its documents collection to the centralised database, hosted and maintained by the bibliographic utility. Only one record for a particular document is stored in the union database, and duplication is checked before entering into the database. If the bibliographic record of a document is already available in the union database, only holding information may be added. After creation of the union database, the bibliographic utility generates a number of value added information products or services, using the same union database. These are again offered to the member libraries for their clienteles, who are the end users. Figure 1 depicts the operation of information through its union bibliographic database [2].

Each member library of a bibliographic utility is connected with the central system through a proprietary interface using communication networks, which enables the member library to communicate in either way.   Figure 2 depicts how the member libraries interact with the central facility of a bibliographic utility [1, 2]. A member library uses the standard format for creation of bibliographic records. Interface allows the member library to create new bibliographic records, to download existing bibliographic records to its site, and to upload bibliographic records after modification. The same interface may be used to disseminate the value-added information products or

services offered by the bibliographic utility to the end clientele. There may be some participating libraries that are non-contributory and use search-only services of a bibliographic utility. This type of participation is unilateral, and these libraries are not contributing bibliographic records of their own collections, but search the union catalogues for reference or other purposes.

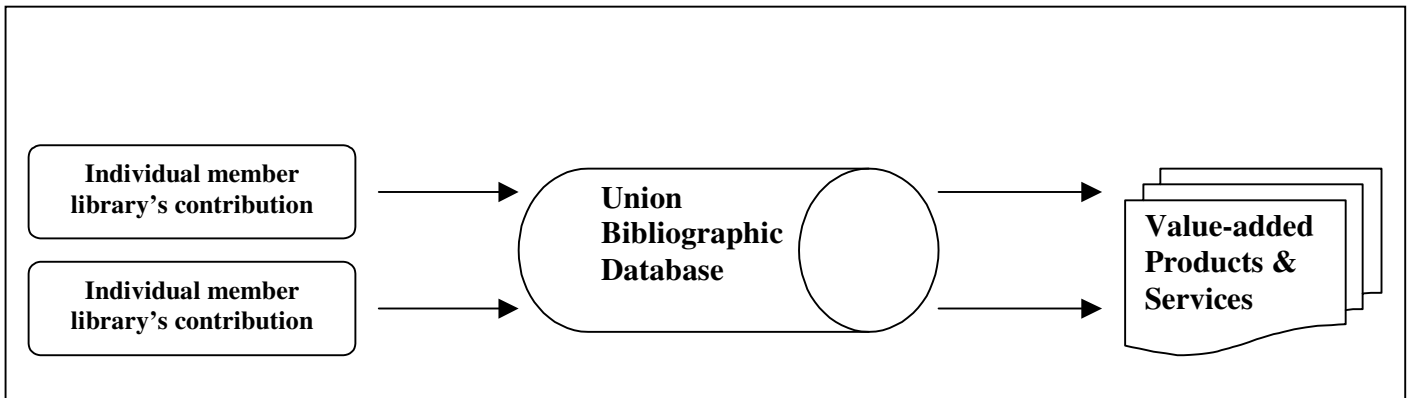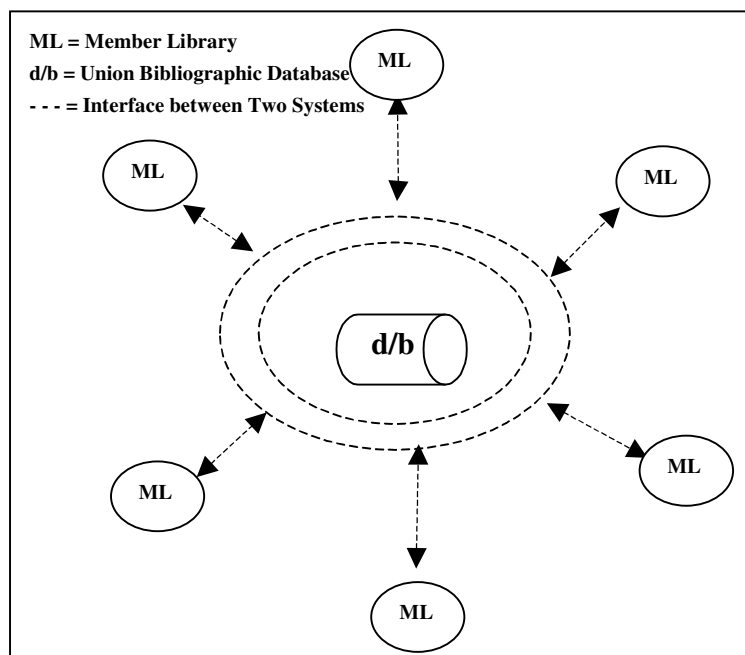**Figure 1: Operation of a Bibliographic Utility Network**

Figure 2: Flow of Information in a Bibliographic Utility Network

4   IMPACT ON LIBRARY AND INFORMATION SERVICES

Bibliographic utility networks bring development and modernisation of library and information services into a reality, to keep pace with rapid changing technological landscape in the world. The information and communication technologies (ICT) opened up a new vista in all areas of human development, from knowledge explosion to reaching the un-reached. The developed nations as well as developing nations take advantage of ICT tools and techniques for boosting up their economies. It was necessary to bring ICT tools and techniques for information handling, especially for the bibliographic control. Bibliographic utility networks invested a substantive amount of their resources for development of ICT tools and techniques for information handling. The member libraries of bibliographic utility networks get the better communication interfaces for information exchange between the member libraries and central facilities. Development of bibliographic utility networks seems to have the widest impact to date on technical services in libraries. Bibliographic utility networks played a major role in library automation by permitting individual libraries to share the benefits of new technologies without having to bear the full cost of its development and operation. A bibliographic utility has to invest huge resources for its development, which may lead to cutting edge tools for new services. This development is beneficial to all its member communities. Bibliographic utility networks also develop a number of applications, which are instrumentals in modernisation of library and information services to cope up with present changing scenario. Some of the recent developments in library and information scenario, like, Z39.50 protocol for information exchange, MARC-21 format for bibliographic records, and Dublin Core metadata standards for digital publishing, initiated through collaborative research, where some bibliographic utility networks also participated. Bibliographic utility networks extensively use Internet technologies, as these technologies have worldwide appeal and access. They are using commonly available technologies to reduce costs and to bridge digital divide.

Bibliographic Utility Networks and Academic Libraries

Academic libraries, specially the university libraries, are considered as the backbone of the bibliographic utility networks, since most of the utility networks started from resource-sharing initiatives among university libraries. University libraries cater information to the communities who are not only serious information seekers but also major information generators in most subject areas. University libraries in the developed nations have very rich collections of documents to serve the faculty members, researchers and students. They are major contributors to the union catalogues of bibliographic utility networks. They are also major users of services offered by bibliographic utility networks to serve their clientele.

Bibliographic Utility Networks and Other Types of Libraries

All types of libraries are participating in bibliographic utility networks for various purposes. Some libraries may want to equip with better reference tools, others may want repackaged information products from bibliographic utility networks. Some active participants in bibliographic utility networks are special libraries, public libraries, museums, archives, governmental libraries and corporate libraries. Special libraries

consist of libraries of research institutions, professional bodies, or which have documents of specific formats, like, sound records, computer files, cartographic materials, audio-video materials, etc. This type of libraries is very important to bibliographic utility networks for their unique collections. Public libraries in developed nations are equipped with superior collection of documents and technologies. These cater services to general people for community development, recreation and mass education. Museums and archives join bibliographic utility networks to share bibliographic information of their precious collections, which might be beneficial to researchers, experts and others. Governmental libraries and corporate libraries join bibliographic utility networks to attain their parent bodies' objectives through judicious use of published documents.

Development of Z39.50 Protocol

The Z39.50 is a client/server-based protocol for searching and retrieving information across remote databases. A major function of the Z39.50 protocol is to allow simultaneous access to a number of catalogues and databases with different interfaces. It enables the retrieval of bibliographic references, documents with full text and images; to send and retrieve catalogue records between libraries. The Z39.50 protocol became an international standard (ISO-23950) that prepares a solid ground for cooperation in bibliographic utility networks, their member libraries, and other library networks. This protocol was conceived at the end of the 1970s as an attempt to unify the catalogue interfaces of the U.S. Library of Congress, and two bibliographic utility networks, namely, OCLC and RLIN. Within a decade, it has become a bridge between hundreds of catalogues throughout the world. Also, the Z39.50 standard, which facilitates the transfer of MARC bibliographic records between and among libraries, will enable libraries to acquire these records from more sources and more cheaply than they have in the past. Now, all bibliographic utility networks provide Z39.50 compatible web-based interfaces to the participating libraries. Currently, special consideration is focused on the use of Z39.50 protocol in the World Wide Web in other areas of applications.

Bibliographic Utility Networks versus National Libraries

Though bibliographic utility networks and national libraries both have some similarities, as both are engaged in bibliographic control to some extend, there are some distinctive differences. Some differences are discussed below:

Bibliographic Utility Networks	National Libraries
Bibliographic utility networks have no national boundaries. Their members are drawn from a number of countries.	A national library operates within the nation it serves. It may cooperate with libraries for overall development of library services in the country.
Bibliographic utility networks maintain union bibliographic databases, contributed by the member libraries.	A national library maintains national bibliographic database, created by the library itself. This database is an effort of

	bibliographic control of documents, published within the country or relevant to the nation.
Union catalogues of bibliographic utility networks are rich source of bibliographic information, but less exhaustive than some national bibliographies.	The national bibliography of a country is a rich source of bibliographic information for the documents published from the country and on the country.
Bibliographic utility networks provide interface to member libraries for copy cataloguing and for contributing records to the union catalogues.	A national library may give access to the national bibliographic database to libraries for reference search and for copy cataloguing.
Bibliographic utility networks run independently, supported by the contributions from member libraries and revenues they earned.	A national library is fully supported by the government of the country that makes it a national property.

Bibliographic Utility Networks versus Database Vendors

Bibliographic utility networks and database vendors may have some similarities in their end products, but their organisational structures are quite different from each other. Some differences are likely:

Bibliographic Utility Networks	**Database Vendors**
Bibliographic utility networks provide multidisciplinary information.	Database vendors provide mono-disciplinary or subject area specific or customised information.
They provide cataloguing records to Z39.50 clients.	They usually do not provide cataloguing records.
They have a number of participating libraries as members.	They have a number of libraries as clients or subscribers.
Member libraries can contribute bibliographic records to union databases.	Subscribing libraries cannot contribute bibliographic records to vendors' databases.
They maintain member councils for strategic decision-making and monitoring of their services.	They do not have provisions of member councils drawn from the subscribers for strategic decision-making.
They are usually not-for-profit-making organisations.	They are profit-making organisations.
They undertake projects, which might have low return on investments, but would be	They undertake projects, which might have high return on investments, also to be profit

helpful for the member communities.	earning.
They derive a number of services from same union databases.	They usually do not derive different services from same databases. But they may customise their products according to clients' requirements.
	Examples: EBSCO, ISI, Gale, etc

Bibliographic Utility Networks versus CD-ROM Cataloguing Support Systems

Though bibliographic utility networks and CD-ROM-based cataloguing support systems both have some similarities in their end products, there are some distinctive differences. These are discussed below:

Bibliographic Utility Networks	CD-ROM Cataloguing Support Systems
Bibliographic utility networks provide online access to union catalogues to member libraries.	CD-ROM cataloguing support systems provide access to bibliographic records on compact discs, which is off-line.
Bibliographic utility networks can provide bibliographic records of most recently published documents, if the member libraries acquire such documents.	CD-ROMs cannot provide bibliographic records of most recently published documents, as they have some time lags.
Union catalogues of bibliographic utility networks also contain information on library holdings of member libraries.	CD-ROM databases do not contain information on library holdings.
Bibliographic utility networks provide a number of value-added services using same union catalogues.	CD-ROM databases are meant for a specific type of service only, that is, cataloguing support service.
End users as well as technical processing personnel both use services of bibliographic utility networks.	Technical processing personnel of libraries mostly use CD-ROM cataloguing support systems for bibliographic records creation.
	Examples: CatCD for Windows of OCLC, Laser-CAT of WLN, CD-CATSS of Utlas, Bibliofile of Library Corporation, SuperCat of Gaylord, etc.

5   CURRENT SCENARIO

The bibliographic utility networks have presence worldwide. But major bibliographic utility networks originated from North America, especially from the United States of America [6, 7, 8]. These networks expanded beyond their national boundaries to offer the global participation. They promote local access to global bibliographic information to member institutions. Though, some library networks and library consortiums have

evolved 1970s onwards even in non-descript nations, these could not become as bibliographic utility networks. Their central objectives are quite different from bibliographic utility networks, though those also make efforts to offer quality bibliographic information through networks. In the following sections we shall discuss about some bibliographic utility networks.

5.1   Indian Scenario

In India some library and information networks operate at the national level, some others at the regional or local level. The DELNET (Developing Library Network) is one of the successful networks in India originated from Delhi and later expanded beyond its region. The INFLIBNET (Information and Library Network) is a national network to cater information support to the academic communities in India. Some local or regional networks, like, ADINET, CALIBNET, etc. also emerged in many cities or states in India. Some library consortiums were also established in India for different segments of libraries and information centres. Two well-known consortiums are INDEST (Indian National Digital Library in Engineering, Science and Technology, operated from Indian Institute of Technology Delhi) and CSIR E-Journals Consortium (operated from National Institute of Science Communication and Information Resources, New Delhi). These library networks and library consortiums facilitate cooperation and resource sharing among the member libraries. Although some library networks in India perform a few functions of bibliographic utility networks, these are not truly bibliographic utility networks.

For many reasons, library networks in India could not become similar to bibliographic utility networks. Member libraries of each library network come from different shapes or size. Some libraries have completed their library automation and retrospective conversions of old bibliographic records, whereas some other libraries could not. These libraries when join together to cooperate among the libraries, they need a union catalogue of their materials for extending the access within network. But union catalogue is developed on voluntary basis, and some libraries have lack of resources that barred them from contribution to the union catalogues. So, in India, even the successful library networks do not have exhaustive union catalogues. Their interlibrary loan services are at the preliminary stage due to lack of exhaustive union catalogues. There also have lack of active participation from the member libraries for resource sharing and also have some technological limitations.

A few privileged institutions and corporate firms in India subscribe to services of few bibliographic utility networks located abroad. They mostly subscribe to search-only reference services of Online Computer Library Center (OCLC).

5.2   Global Scenario

There are a few successful bibliographic utility networks around the world that satisfies the definition of a bibliographic utility. Presently two major and popular bibliographic utility networks exist [2, 3, 4, 5]. These are: Online Computer Library Center (OCLC) and Research Libraries Information Network (RLIN) of Research Libraries Group (RLG). Two others also emerged as bibliographic utility networks, but presently these have no distinct existence or identity. These are: Western Library Network (WLN) and

University of Toronto Library Automation Systems (UTLAS). All these four bibliographic utility networks originated at local or regional level, few years later they extended at the national level and then they expanded beyond their national boundaries. Some countries also have taken initiatives to establish bibliographic utility networks at the national level. These are limited to few developed countries, like, Australia, Japan, UK, Switzerland, etc. Australia's Kinetica is one such bibliographic utility network operated at the national level.

Now, in the following sections you would know various activities and services of five major bibliographic utility networks that have wide impact on the librarianship in general.

6 WESTERN LIBRARY NETWORK (WLN)

Western Library Network (WLN) was a successful general-purpose bibliographic utility started in early 1970s by the state of Washington (USA) as state-library-sponsored automation system 'Washington Library Network' [6]. At that time, it appeared to serve libraries in the state of Washington with high quality cataloguing information and related products for resource sharing. The WLN online system was introduced in 1975 and became fully operational in 1977. The WLN initially served 10 Washington libraries. It originally operated as a division of Washington State Library. It changed its name and became 'Western Library Network' in 1985, and in 1988 WLN was established as a private not-for-profit corporation. Throughout the late 1980s and early 1990s, WLN was a regional bibliographic utility network serving only western region of North America, particularly, the Pacific Northwest. Later it expanded to other states of USA and Canada.

Impact of WLN

Though WLN was a general-purpose bibliographic utility, it emerged as a regional service provider. It even had some sorts of competition with other utility networks, due to strong commitment for quality. WLN was the first bibliographic utility to provide formalized quality control procedures for contributed cataloguing records. WLN also offered excellent authority control capabilities. As it was initially a state-funded network, it had strong commitment for state-funded libraries. After the merger with WLN, OCLC also became stronger in membership and in the range of services.

Merger of WLN with OCLC

In January 1999, Western Library Network merged with Online Computer Library Center (OCLC) and became a part of *OCLC Western Service Center* [3]. Its all products and services have befallen in possession of OCLC. Its union catalogue records were added to WorldCat, the online union catalogue of OCLC. Its authority control database were added to OCLC's same kind of database. At that time WLN had 550 member libraries in the Pacific Northwest region of USA and Canada. WLN full member libraries became OCLC general members and also became participants of OCLC's *Users Council* (presently known as *Members Council*). OCLC continued Authority Control, Collection Analysis and bibliographic services of WLN. Later, some services of Western Library Network integrated with OCLC's similar services, some others were discontinued. OCLC Western

is now OCLC's service centre to provide training and support to libraries in that region of USA.

6.1   WLN Services

WLN supported public and private libraries for technical processing and reference activities. It developed a comprehensive bibliographic control system for the member libraries. The WLN union bibliographic database included records from subscription sources as well as from member libraries contributions. Its bibliographic records were in MARC format. WLN used to store one cataloguing record for each item. There were two categories of member libraries: those that added records and those that did not. Contributing online members used timesharing systems, and later Internet, to contribute original cataloguing and holdings information, while contributing offline members used to send their records in magnetic tape or any other storage media. WLN was unique in that it reviewed centrally catalogue copy from member libraries. WLN produced LaserCat system, which was introduced in 1987 as offline cataloguing support system. Many member libraries used offline *LaserCat* that did not have online access to WLN union database. LaserCat and its subset FastCat, bibliographic databases on CD-ROM, aimed at the smaller library. Union list members used to add original cataloguing and serials holdings information for bibliographic control of serials. Search-only members could access the union database for reference, bibliographic verification, interlibrary loan, or other purposes. But they were not obliged to contribute. The central system offered members an acquisitions system and an interlibrary loan (ILL) system in addition to union catalogue and cataloguing system. More than hundred member libraries participated in the ILL system of WLN. This system obtained about ninety percent fill rate. A user usually obtained the requested item in about 11 working days. Online acquisitions system of WLN held information on library vendors. Bibliographic information and vendor information was copied into electronic order forms (or print order forms) automatically to generate the purchase order. Another significant service was Automated Collection Analysis Service (ACAS) to provide systematic collection assessment and management data for collection planning and development, budgeting and fund raising, using *Conspectus* software. Another related service, MARC Record Service offered professional project coordination of authority control and related procedures.

A significant feature of WLN was its automated vocabulary control system. It maintained authority lists for personal names, corporate names, conference names, uniform title headings, series statements, and geographic/topical subjects. The system provided 'see' and 'see also' cross-references. Member libraries and their users accessed to their author and subject authority files. For online purposes, portions of the vocabulary could be displayed at the terminal. In 1980s and 1990s its authority database was much more sophisticated than RLIN or OCLC, and provided a high level of quality control.

WLN provided members access to its databases through dedicated leased line terminals and also over the Internet. WLN had developed its own TCP/IP terminal software called LINC that was used when member libraries wanted to connect to WLN over the Internet. WLN developed menu based search engine that allowed users to search the union

database on keywords, phrases, author, titles, and subject headings. It also marketed specialised databases on CD-ROM, e.g., *Polar Pac* a CD-ROM of references dealing with the Polar Regions. WLN marketed its system software internationally to other library networks.

As the all services of WLN have been merged with OCLC's systems, the some details may be available in the following section where services of OCLC are described. Over the time, some services of erstwhile WLN ceased to exist.

7   ONLINE COMPUTER LIBRARY CENTER (OCLC)

The Online Computer Library Center (OCLC) is largest and best-known bibliographic utility, which has worldwide presence [4]. It is a nonprofit, membership-based organisation and its headquarter is located in Dublin, Ohio in the United States of America. OCLC initially founded as 'Ohio College Library Center' in 1967 to develop a computerised system in which libraries of academic institutions of Ohio could share resources and reduce costs. In 1972, OCLC participation was extended to non-academic libraries in Ohio. In 1973 its participation was further extended at the national level of United States. It became an international organisation in early 1980s and changed its name to the 'Online Computer Library Center, Inc.' in 1981. The founder of OCLC is Frederick G. Kilgour, who was President and Chief Executive Officer of OCLC from 1967 to 1980, and then became Permanent Founder Trustee and served till 1995.

7.1   Objectives

To analyse success of OCLC and to understand it better, one has to study the Mission and Vision statements of OCLC, and its Objectives and Goals. These are given below:

Mission

"OCLC exists to further access to the world's information and reduce library costs by offering services for libraries and their users."

Vision

"OCLC will be the leading global library cooperative, helping libraries serve people by providing economic access to knowledge through innovation and collaboration."

Objectives
- To establish, maintain and operate a computerised library network to be accessible worldwide
- To promote the evolution of library use, of libraries themselves and of librarianship
- To provide processes and products for the benefit of library users and libraries

- To increase availability of library resources to individual library patrons
- To reduce the rate-of-rise of library per-unit costs
- To provide ease access to and use of the ever-expanding body of worldwide scientific, literary and educational knowledge and information.

Goals

Furthering access to the world's information and reducing information costs are the goals of OCLC.

7.2   Structure

OCLC is a cooperative membership organisation, and members are drawn from many types of libraries geographically distributed in many countries. The members it serves virtually govern OCLC. The governance structure of OCLC consists the *Board of Trustees* and the *Members Council*. The *Board of Trustees* is the highest strategic decision making body. The 15-member *Board of Trustees* consists of the President of OCLC, six *Members Council*-elected members, and eight members elected by the Board itself. Among them five members of the Board come from fields outside librarianship. The Board meets five times annually.

OCLC has two types of membership: Member and Governing Member. There are a number of participating libraries that are not members of any kind, and only subscribe to certain services. A member cannot nominate and elect representatives to the *Members Council*, but a governing member can nominate and elect representatives to the *Members Council*. Any OCLC member or governing member may serve on *Members Council*. There are 60 *Members Council* delegates, and six international transitional delegates who are elected by and represent the OCLC member libraries in their respective regions. Council meets three times a year. OCLC management and members of the OCLC Board of Trustees attend Members Council meetings. This Council serves as a forum for exchanging ideas and raising issues. Its recommendations have directly shaped OCLC policies and services, from operational to functional issues. Delegates come from many types and sizes of libraries, bringing different perspectives to the *Members Council*. The participation of member libraries through *Members Council* in the governance of OCLC assures that the voice of member libraries can be heard at the highest levels of OCLC.

Advisory Committees

OCLC also maintains some advisory committees to deal with raising issues in strategic service areas. Advisory committees meet once a year. These committees are:
- Collections and Technical Services Advisory Committee
- Reference Services Advisory Committee
- Research Advisory Committee
- Resource Sharing Advisory Committee

User groups

OCLC maintains four types of user groups to exchange ideas and discuss issues. These groups are established and governed by users with an OCLC staff person serving as a liaison to the group. User Groups meet several times a year. These groups are:

Type of library user groups
- Health Science OCLC User Group
- Law Library User Group
- Theological User Group

Product related user groups
- OCLC CJK Users Group for Chinese, Japanese and Korean Languages
- OCLC Interlibrary Loan Users Group
- OCLC PromptCat Users Group
- OCLC Union List User Group
- OCLC Connexion Users Group

MARC format-related user groups
- Music OCLC Users Group
- OnLine Audiovisual Catalogers

Geographic user groups (located in USA)
- Arkansas Members of Amigos Library Services
- Georgia Users Group
- Illinois OCLC Users Group
- Iowa OCLC Users Group
- Kentucky User Group
- Louisiana Users Group
- MINITEX/OCLC User Group
- MLNC/OCLC User Group
- North Carolina User Group
- Puerto Rico User Group
- South Carolina Users Group
- Tennessee Users Group
- Virginia Users Group

OCLC Service Centres and affiliated Networks in USA

OCLC operations in 50 states of the United States are operated through 16 regional network affiliates and one service centre, namely:
- Amigos Library Services (Amigos)
- Bibliographic Centre for Research (BCR)
- Federal Library and Information Network (FEDLINK)
- ILLINET/ OCLC Services (ILLINET)

- Indiana Cooperative Library Services Authority (INCOLSA)
- Michigan Library Consortium (MLC)
- MINITEX Library Information Network (MINITEX)
- Missouri Library Network Corporation (MLNC)
- Nebraska Library Commission (NEBASE)
- NELINET
- NyLink
- CAPCON
- OHIONET
- PALINET
- Southeastern Library Network (SOLINET)
- Wisconsin Library Services, and
- OCLC Western Service Center

International Service Centres of OCLC

OCLC operations in 83 countries (other than USA) are operated through 6 regional service centres, namely:

Service Centre Name	Primary Service Area for OCLC Service
OCLC Asia Pacific	Asia and the Pacific Region
OCLC Canada	Canada Region
OCLC Latin America and the Caribbean	Mexico, South America, Central America and Caribbean Region
OCLC Middle East and Northern Africa	Middle East and Africa Region
OCLC PICA	Europe Region

7.3   Bibliographic Services

OCLC brings a number of products and services for the world communities in the areas of information and library management.

WorldCat

WorldCat is the largest and busiest online union catalogue database of OCLC, built continuously by member libraries around the world since 1971 [1]. More than 9,000 member libraries are contributing to this database, and more than over 550 lakh (55 million) records have been added to WorldCat in just 33 years. Each record in WorldCat contains the bibliographic description of a single work or item and a list of member libraries that hold the item. This database covers documents in more than 450 languages, spanning four millennia (Thousand years) of recorded knowledge, from approximately 2150 B.C. to the present. This database stores records in eight formats – books, serials, sound recordings, musical scores, maps, visual materials, mixed materials and computer files. The database is growing rapidly, as the knowledge grows. A member institution in every 10 seconds adds a new record. Each year WorldCat grew by more than 30 lakh

records (3 million). WorldCat is based on MARC (Machine Readable Cataloguing) format and presently uses MARC 21 format for bibliographic description of documents.

To understand diversity of the bibliographic records of WorldCat, following Figures are drawn. The Figure 3 depicts the distribution of items in different formats in WorldCat. The Figure 4 depicts the distribution of items by date of their origin. Figure 5 depicts the language wise distribution of items. Here only six Indian languages figured in top 50 languages of WorldCat, namely, Hindi, Tamil, Urdu, Bengali, Gujarati, Sanskrit and Marathi. Other Indian languages have tiny presence in WorldCat. Other languages in the Figure 5 consists of several other world languages (about 446). These Figures also show that the WorldCat has North American and European biasness, though this phenomenon is not new in scholarly communications. Other reason behind this biasness is that, outside North America and Europe, few libraries contribute to the WorldCat database. The statistical data, depicted here, is based on 31st March 2004.
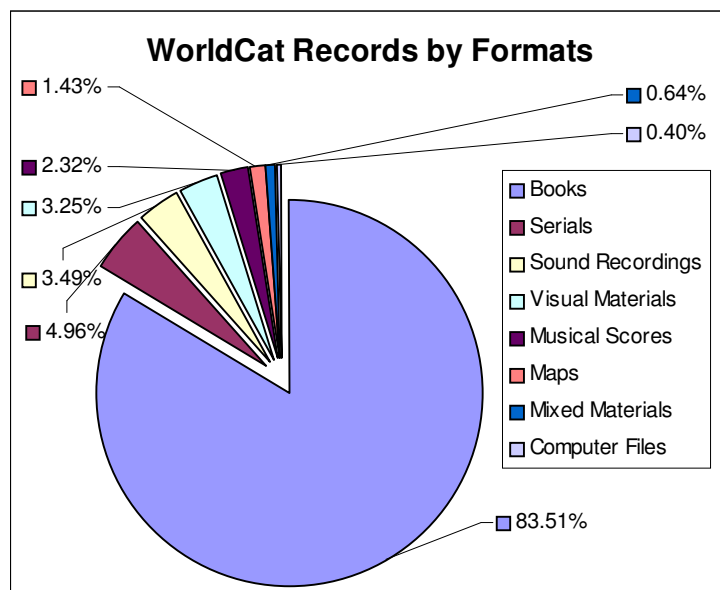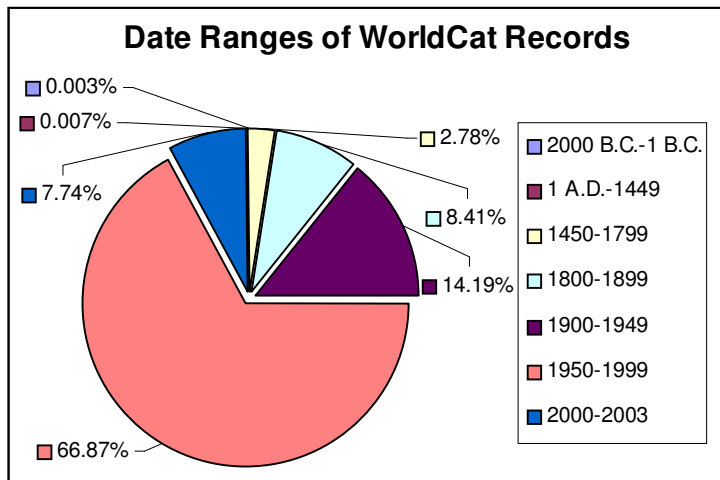
Figure 3

Figure 4

Date Ranges of WorldCat Records

- 0.003%
- 0.007%
- 7.74%
- 66.87%
- 2.78%
- 8.41%
- 14.19%

Legend:
- 2000 B.C.-1 B.C.
- 1 A.D.-1449
- 1450-1799
- 1800-1899
- 1900-1949
- 1950-1999
- 2000-2003

Figure 5

Language-wise Distribution in WorldCat

- All Others 7.0%
- Indian (6) 0.6%
- Chinese 2.6%
- Japanese 3.0%
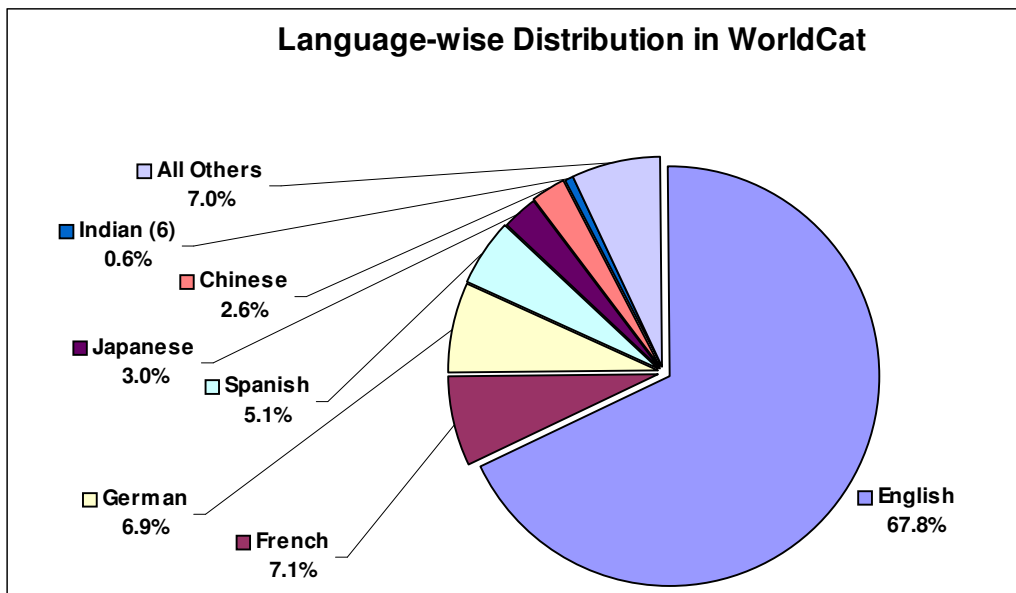- Spanish 5.1%
- German 6.9%
- French 7.1%
- English 67.8%

OCLC provides services in three main areas: cataloguing and metadata, reference and resource sharing, and digital and preservation resources. Central to the provision of these services and at the heart of the library cooperation is the WorldCat bibliographic database. WorldCat is authoritative source to be added to and drawn from. Here the cataloguing and metadata function works. The resource sharing function of WorldCat makes it the facilitator, letting libraries work together to distribution information it needed and pool their content. The collection management function of WorldCat makes it the benchmark, the baseline for analysing and supplement member libraries' collection. The reference function of WorldCat makes it the map, showing users what resources are

available and where. The digital collection and preservation functions of WorldCat makes member libraries' content accessible and showcasing their digitisation efforts to the world. The Figure 6 shows some of the functions, which makes WorldCat at the centre of every service OCLC provides [1].

Figure 6: WorldCat at the Centre of Everything
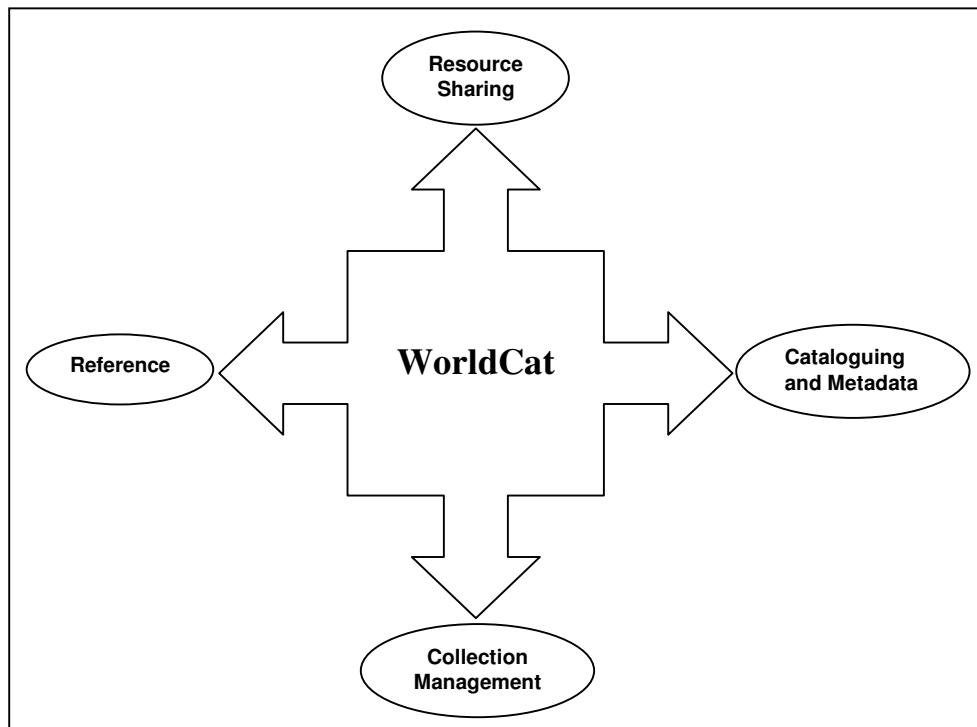
Cataloguing process

WorldCat is an online union catalogue, where contributions of the cataloguing records from member libraries make it a unique resource. When libraries catalogue new materials using OCLC cataloguing products, they seek to match the resource to existing records within WorldCat. If a matching record is found, as is the case approximately 95% of the time, the cataloguer only provide the holding information to the WorldCat record. Through the FirstSearch reference service, users in that library and other libraries can see that the library owns the item.

If no matching record is found, a cataloguer utilising *OCLC Connexion cataloguing service* (an OCLC interface) creates a new WorldCat record for the item. Working within the MARC format, he/she enters a physical description and information about its intellectual content, then carefully identifies appropriate subject headings from authority control files, assigns a resource classification number, and then provides holdings information. The ability to edit records and add information in real time system meant that contributors could see cataloguing records immediately, and any member library connected to the system could use the new information almost immediately.

It is expected from the member libraries that they would provide the accurate data for each new record. OCLC maintains effective quality control measures to ensure that duplicate records and other issues of accuracy are resolved.

FirstSearch

FirstSearch is online end-user reference service of OCLC, introduced in 1981. WorldCat is accessed through the FirstSearch reference service. FirstSearch provides librarians and library users an ability to find the materials they are searching for on any topic. The information may be required for an in-depth research project, for entertainment or to answer day-to-day questions to the library clientele. FirstSearch provides the "what" and "where" for the information that users need accessing WorldCat. Materials catalogued in WorldCat and available through FirstSearch span the spectrum of formats, as well as topics and locations. The materials, like, books, eBooks, periodicals, articles, videos, sheet music and artifacts are available there. Many WorldCat records are enriched with descriptive information such as tables of contents, cover art, and content summaries and extract. FirstSearch also provides links to additional information and related resources from other online information services and resource providers.

Member libraries contribute bibliographic records to the WorldCat database and get FirstSearch reference service to access to the WorldCat. Non-member libraries also can subscribe to FirstSearch reference service to take advantages for WorldCat. Many non-member libraries throughout the world utilise this reference service for getting records containing quality metadata and for answering reference enquiries of researchers.

Benefits of FirstSearch

- Highlights collection of member libraries within search results

- Saves money and time when borrowing from other libraries

- Influence investment of member libraries in electronic and physical collections with linking capabilities.

Interlibrary Loan Service (ILL)

The online Interlibrary Loan service of OCLC was introduced in 1979. The WorldCat provides the holdings information of materials. The ILL service enables libraries to send requests for materials directly to other member libraries. OCLC distributes ILLiad software to help member libraries streamline interlibrary loan process. OCLC ILLiad software is an interlibrary loan management system that automates routine borrowing and lending functions within a library's interlibrary loan department. It also provides a Web interface that enables library end users to submit ILL requests and allows them to track the status of their requests 24 hours a day, 7 days a week, without library staff intervention. OCLC implemented the ISO international standard for interlibrary loan in its ILL service. ISO ILL 10160/10161 is the technical definition of a series of messages used to communicate some aspects of ILL requests between systems. OCLC's ILL

service becomes very popular service among member libraries and so far OCLC communities have received more than 133 million interlibrary loan requests since inception of this service, and interlibrary loan requests sent to member libraries exceeded 9 million each year in last few years. The majority of requests through the ILL service are for materials in the English language, but requests for resources in other languages are steadily growing. This unique service broadens resource sharing and cooperation purposes of OCLC, and further widens scope of participation to international communities.

Digital and Preservation Resources

OCLC's digital and preservation resources service launched in 2001 to make digital collections and electronic contents of member libraries accessible and shareable. OCLC provides interface to showcase digitisation efforts of member libraries to the world through WorldCat. For this purpose, OCLC distributes digital collection management software *CONTENTdm* to member libraries, museums, archives, and historical societies. *CONTENTdm* provides tools for all aspects of digital collection management. It has capability to handle virtually all electronic media types, supports a diverse set of collection items, including photographs, slides, maps, rare books, audio and video clips, postcards and any other asset accessible via a World Wide Web browser. Bibliographic records for digital collections maintained by CONTENTdm software are now linked to WorldCat, which makes special collections of member libraries known to a broader audience. CONTENTdm was originally developed at Washington University for use in its digital library. OCLC also takes initiatives in preservation of digital resources through establishing digital archives and preservation resource centres in various regions. OCLC helps member institutions in their digitisation efforts.

OCLC-Produced Databases

OCLC produced a number of databases using its online union catalogue WorldCat since its inception. Currently OCLC produces six databases, namely:

- OCLC NetFirst: It provides access to authoritative, high quality websites, suitable for use by school teachers as well as graduate students. It enables users to evaluate a website without having to visit it.

- OCLC Union Lists of Periodicals: It includes more than 750,000 bibliographic records in WorldCat. Users can search for locations of periodicals within OCLC member libraries.

- OCLC ArticleFirst: It includes bibliographic citations from more than 12,600 serials, covering many subject areas. It features online full text and full image.

- OCLC PapersFirst: It gives access to individual papers presented at conferences worldwide, covering every congress, symposium, exposition, workshops and meeting, added to the British Library Document Supply Centre since October 1993.

- OCLC ProceedingsFirst: It provides tables of contents of presented papers from conferences worldwide. Each record contains a list of papers presented at each conference.

- OCLC Public Affairs Information Service (PIAS): It contains references to journal articles, books, government documents, statistical directories, research reports, publications of international agencies, Internet materials, etc. on important political, economic and social issues. The database includes publications from more than 120 countries in six languages.

Present Scenario

Online Computer Library Center (OCLC) is a successful bibliographic utility, started in the USA, and later expanded throughout the world, due to its enthusiastic and visionary leadership, path-breaking innovations, and active participation of members. OCLC grows very steadily, in membership and in range of products and services. OCLC also acquires a number of successful and renowned products, services, systems and networks through merger or acquisition to make the organisation stronger and focused. Some of the acquired services are Western Library Network (WLN) in 1999, Public Affairs Information Service (PIAS) in 2000, netLibrary (world's leading provider of electronic books) in 2002, PICA Foundation (Europe's major *Project for Integrated Catalogue Automation*) in 2002, Forest Press (publisher of Dewey Decimal Classification) in 1988, and so on. OCLC is further strengthening these products or services for the large communities.

8   RESEARCH LIBRARIES INFORMATION NETWORK (RLIN)

The Research Libraries Group (RLG) is a not-for-profit membership corporation of over 160 research institutions, archives, museums, and learned societies, based in USA [5]. It founded in 1974 by the New York Public Library, Columbia University, Harvard University and Yale University of USA. RLG is dedicated to improving access to information that supports research and learning. RLG began collaborative programmes with its member institutions and developed its own information system from the Stanford University-developed BALLOTS (Bibliographic Automation of Large Library Operations Using Time Shared System) software. The system later renamed as '*Research Libraries Information Network'* (RLIN) in 1976. RLIN then became a specialised bibliographic utility, having a strong online union catalogue of participating libraries.

8.1   Objectives
To analyse success of RLG/RLIN and to understand it better, one has to study the Mission statement of RLG/RLIN, and its Objectives and Goals. These are given below:

Mission
"RLG supports researchers and learners worldwide by expanding access to research materials held in libraries, archives, and museums."

Goals

"To increase online discovery and delivery of research resources, enable global resource sharing, and foster digital preservation for long-term access."

Objectives

- To work with and for its member organizations
- To enhance members ability to provide research resources
- To design and to deliver innovative information discovery services
- To organise collaborative programmes
- To take an active role in creating and promoting relevant standards and practices

8.2   Structure

Membership of RLIN in general and RLG in particular is open to any not-for-profit institution with an educational, cultural, or scientific mission and a commitment to improving access to research materials. RLG/RLIN has included almost every type of cultural memory institution – universities, national libraries, archives, historical societies, and museums as its members. Two membership categories exist in RLG/RLIN, (i) general member (the library should have more than 5000 users base) and (ii) Special member (the library has less than 5000 users base). Elected by the RLG/RLIN members' designated representatives, the Board of Directors is responsible for the strategic management of the activities, property, and affairs of the corporation. Board consists of President and other 18 Board members. The president is CEO and a voting member of the RLG/RLIN Board. The President runs this organization with approximately 90 dedicated staff members. RLG/RLIN has the following functional departments:

- General Administration
- Member Programs and Initiatives
- Integrated Information Services
- Technology Development
- Customer and Operations Support
- Finance and Administration

8.3   Bibliographic Services

RLG/RLIN Databases

The RLG/RLIN has a number of web-accessible databases. The databases hold bibliographic information of traditional library materials, including books, journals, music, and maps. RLG/RLIN also provides access to indexes to archival collections, art and rare book auction catalogues, and digital images of works of art and cultural artifacts though its RLG Union Catalogue.

The Databases accessible to RLG/RLIN users through web-based interfaces are:
- RLG Union Catalog
- The AMICO (The Art Museum Image Consortium) Library from RLG
- Anthropological Index, Royal Anthropological Institute

- Anthropological Literature
- Anthropology Plus
- RLG Archival Resources
- Avery Index to Architectural Periodicals
- Bibliography of the History of Art
- Chicano Database
- RLG Cultural Materials
- English Short Title Catalogue (ESTC)
- FRANCIS
- Hand Press Book Database
- Handbook of Latin American Studies
- History of Science, Technology, and Medicine
- Index to Foreign Legal Periodicals
- Index to Hispanic Legislation (World Law Index, Part 1)
- Index to 19th-Century American Art Periodicals
- Inside Information Plus
- RedLightGreen (online catalogue user interface)
- Russian Academy of Sciences Bibliographies
- SCIPIO: Art and Rare Book Sales Catalogs
- Trove.net
- Authority Files

RLG Union Catalog (RLIN database)

The *RLG Union Catalog* is the online database of RLG/RLIN contributed by many types of libraries and other institutions, like, national libraries, archives, museums, historical societies, book clubs and international book vendors. This online database is the major source of bibliographic descriptions for use in research collections management. This database has records for over 45 million titles. It is a multidimensional database that covers many subjects, many material types and as many as 400 languages. This collaborative database of research collections is shared among member libraries to pool and share their holdings. The multitude of this union catalogue expedites the research and academic activities of participating institutions.

The types of materials coverage in the *RLG Union Catalog* are very vast as compared to other union catalogues. The types of materials include:
- Literary and historical documents, public records, and other primary source materials in various formats
- Books, including microform reproductions
- Maps and globes, both printed and manuscript
- Computer files, including literary texts, statistical files and computer programs
- Recordings: musical and nonmusical, including speeches, oral histories, and interviews
- Music: manuscript and printed
- Serials: newspapers, journals, magazines and periodicals
- Photographs and graphics: motion pictures, drawings, blueprints and posters
- Audio and Video Materials, including tapes, CDs, DVDs

- Exhibition catalogues and publicity materials

The *RLG Union Catalog*'s each record includes names of contributing libraries as well as local call numbers in addition to bibliographic descriptions. The database structure supports a complete record for each item catalogued, with a flexibility that readily accommodates local cataloguing practice. These records can include institutional holdings, notes on contents, notable illustrations, author/owner annotations, the availability of microform service copies or plans for preservation microfilming, as well as the existence of an electronic version of the material.

The *RLG Union Catalog*'s has global coverage with records from contributors all over the world across many countries, like, USA, Canada, Australia, New Zealand, Russia, etc. Only the *RLG Union Catalog* includes Arabic, Chinese, Cyrillic, Hebrew, Japanese, and Korean original scripts that are difficult for romanisation. Sometimes romanisation fails to provide adequate bibliographic identification and access. More than 3 million titles, having the original scripts are included in RLIN database. Database system of RLG/RLIN allows bibliographic information in both original and romanized scripts within the same record. A search in either script can retrieve records containing both. Commitment of RLG/RLIN to original scripts has made the database the largest and richest resource online for Middle Eastern, Hebraic, and East Asian materials. RLG *Union Catalog*'s language-wise distribution is shown in Figure 7. The Figure depicts that the top eight non-English languages represent 32.5% of total records of database, which is higher that OCLC's WorldCat. Some other features of RLG Union Catalog are:

- Database size: Over 140 million bibliographic records (Over 45 million unique titles)
- Dates range: Incunabula to the present
- Update frequency: Daily
- Languages coverage: About 400

Figure 7

Language-wise distribution in RLG Union Catalogue
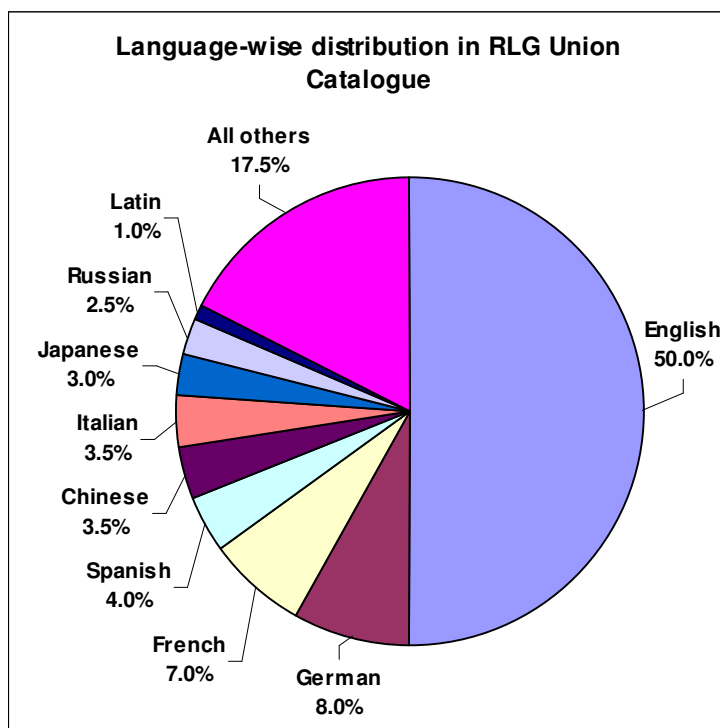
Interlibrary Loan Service of RLG/RLIN

SHARES Programme and *ILL Manager* of RLG/RLIN

The RLG/RLIN has a mission of global resource sharing among the member institutions. To achieve effective global resource sharing, RLG/RLIN has initiated SHARES programme. SHARES partnership of RLG/RLIN members promotes accelerated request and delivery, powerful supporting software (ILL Manager), and ongoing improvements. SHARES participants also save money in reduced lending charges and overhead.

ILL Manager is a Windows-based standardised software package designed to handle borrowing and lending transactions among the member libraries of RLG/RLIN. ILL Manager is a complete interlibrary loan system designed and marketed by the RLG/RLIN. The software manages library borrowing and lending transactions 'peer-to-peer' with other ISO ILL-protocol-compliant, distributed interlibrary loans systems. Additional features include support for 'non-protocol messaging', more printed and electronic mail communication with users about their requests, additional activity reports and automatic setting and tracking of user due dates. Users of ILL Manager search any Z39.50 compliant catalogue; transfer bibliographic data into an interlibrary loan request form and send protocol-compliant requests to virtually any resource-sharing partner. By achieving one workflow for all interlibrary loan transactions and automating many routine procedures, ILL Manager has potential for reducing interlibrary loan unit costs.

Role of RLG/RLIN in Preservation of Cultural Heritage

The RLG/RLIN is one bibliographic utility that has strong commitment for preservation of cultural heritage. RLG/RLIN is a pioneer in providing access to archival, museum and cultural resources to the research community. It has strong membership base that holds this types of materials. RLG/RLIN has developed a number of databases for archival, museum and cultural resources. These are:

- The AMICO Library from RLG
- RLG Archival Resources
- RLG Cultural Materials
- Trove.net
- Avery Index to Architectural Periodicals
- Bibliography of the History of Art
- FRANCIS
- Index to 19th-Century American Art Periodicals
- Inside Information *Plus*
- SCIPIO: Art and Rare Book Sales Catalogues

The AMICO Library (Art Museum Image Consortium) of digitised works of art, described and indexed, is available to universities, schools, museums, and public libraries for institution wide access over the World Wide Web. The database contains over 50,000 high resolution catalogued images of paintings, drawings, sculptures, ceramics, photographs and many other forms of art from Europe, North and South America, Asia, Africa, and Oceania, contributed by 26 major North American museums and galleries.

RLG Archival Resources integrates access to database of OVER 500,000 descriptive records of archival collections and items with use of a growing range of online finding aids, the detailed collection guides or inventories that reveal where a collection came from, how it is arranged, and what it contains.

RLG Cultural Materials is a dynamic multimedia collection of digital versions of manuscripts, photographs, art, historical documents, memorabilia, and other materials, presented via a purpose built interface with powerful cross collection searching and discovery, more content, complete descriptive information, and high resolution, non watermarked images. *RLG Cultural Materials* includes published and unpublished texts, images, objects, and artifacts of many types, particularly 'hidden collections' previously in storage or otherwise inaccessible to museum or library visitors. A unique, flexible Web workspace, developed with the materials' special characteristics in mind, users can discover, compare, interpret and make connections between materials in ways that enrich teaching, learning, and scholarship.

The *Trove.net* is a related service to its existing *RLG Cultural Materials* service, which includes all unrestricted collections from the latter service, freely available in low resolution, watermarked form. The two services complement each other.

Present Scenario

The future roadmap of RLG/RLIN is steadier than other bibliographic utility networks due to its futuristic resourceful services and its focused activities. RLG/RLIN provides a locus where the library, archive and museum worlds come together in the USA and internationally. RLG/RLIN is open to digital objects that have scholastic values to the member institutions. It has brought recognition to the preservation, establishing best practices norms in microfilming and digitisation. It continuously develops value-added and unique online resources from the union catalogue for research and learning. It would continue to support the research and documentation activities of its member institutions to enrich our knowledge in heritage, civilization, culture and society through its innovative systems and programmes.

9 UTLAS INTERNATIONAL

In 1960s, University of Toronto initiated most ambitious library data processing efforts through converting its bibliographic records to machine-readable form using computers and later introduced a library automation system [7]. The University of Toronto Library Automation System, later called UTLAS was a Canada-based general-purpose bibliographic utility network, formally established in 1971. It introduced an online cataloguing support system initially to serve public and academic libraries in Ontario and Quebec states of Canada in 1973. In the mid 1970s its customer base was broadened, and focused to other Canadian libraries. In 1977, UTLAS became independent enterprise, separated from University of Toronto Library. In 1980, UTLAS expanded to United States, and began as an international bibliographic utility network. In 1983, UTLAS was incorporated, as an Ontario company wholly owned by the University of Toronto and renamed as UTLAS Inc.

UTLAS was the first bibliographic utility network in North America to go private by becoming a subsidiary of International Thomson Organization, a Canada-based multinational company with broad interests in publishing and information services enterprise, which acquired it. Then in 1986, UTLAS became Utlas International Canada and Utlas International U.S., changing the acronym parts of its name to Utlas. In 1990 Utlas International became a regional network affiliate of OCLC to provide OCLC services and supports in Canada.

In 1992, Utlas was acquired by ISM Information Systems Management Corporation, Canada's largest computer service agency. In 1997 A-G Canada Ltd., a wholly owned subsidiary of Auto-Graphics Inc. of USA assumed operation of ISM Library Information Services Unit in Canada.

These series of acquisitions and mergers had impact on the operations of Utlas. Unlike other bibliographic utility networks, Utlas was not a membership organization. Libraries had to sign a computer services contract to become Utlas customers. Utlas marketed its services to different types and sizes of libraries, in Canada, USA and other countries. Its online-time sharing union catalogue for a period was very resourceful and exhaustive. UTLAS was ahead of OCLC in modernising its systems hardware during 1980s.

Present company A-G Canada Limited, which owns the legacy of Utlas, is a subsidiary of Auto-Graphics Inc. Auto-Graphics has creatively used technology to provide services to libraries for over thirty years and to publishers for over fifty years. A-G Canada became major sources for access to cataloguing copy that are used by libraries to share information and reduce costs.

With the acquisition of Utlas, Auto-Graphics Inc. and its subsidiary A-G Canada Limited become bibliographic solution providers for multi-location library systems, library consortiums and library networks. They provide solutions to their clientele in establishing online union catalogues, performing interlibrary loan functions, and other related functions.

9.1   UTLAS Services

A bibliographic service of Utlas was CATSS (Cataloguing Support System), which provided online access to large database of bibliographic records. Utlas also offered a CD-ROM cataloguing support system, named CD-CATSS, in 1990s that had good market share. Utlas also offered solutions for retrospective conversion and other bibliographic operations to the libraries in Canada, United States and other few countries in addition to own bibliographic services.

Utlas expanded its services to Asian countries. In 1987, a catalogue-access software in Japanese language, called Japan-CATSS was implemented. Japan-CATSS was based on Japan MARC format and Japan Industrial Standard character set. It developed similar catalogue-access software in Chinese language, called Chinese-CATSS, which was installed in 1989 at the National Central Library in Taiwan. Utlas became pioneer in CJK (Chinese Japanese Korean) cataloguing support, and was ahead of other bibliographic utility networks in North America. The CJK database was larger than other utility networks since Utlas had a number of clients in respective countries.

Utlas developed many library automation softwares that have market potentials. One of them is *Library Collection Management System* (LCMS), a minicomputer-based circulation system.

Utlas's online catalogue database had powerful retrieval capabilities that were suited for cataloguing and reference operations. Searches could be made on various search parameters, like, author, title, subject and series. Utlas offered REFCATSS, a reference-oriented module that displayed cataloguing records with clearly labeled field names rather than MARC tags. Presently AG-Canada provides web-based access to union catalogue database for both MARCit (formerly CATSS) for cataloguing copy and TRACEit, (formerly RefCATSS) for reference and holdings information.

Auto-Graphics and A-G Canada presently offer *AGent* suite of integrated products that provides major functional modules that a library may require. Available AGent modules are:
  ❖ Library Automation Module
  ❖ Cataloguing Module
  ❖ Resource Sharing Module
  ❖ Portal Module
  ❖ Statistics Module

- ❖ Authentication Module

Auto-Graphics Inc. also offers solutions for functions like online union catalogue database service, interlibrary loan service, and document delivery service to multi-location library systems, library consortiums and local library networks. Their solutions have worldwide market segmented for clients.

At the time of its separate existence Utlas covered more than 2,500 institutions around the world, but mostly in Canada and USA. Now Utlas has no presence in present library and information space, but its legacy is carried out successfully by its successors. Presently, the bibliographic utility functions are not dominating in the operations of Auto-Graphics Inc and its subsidiary A-G Canada Limited. This company expanded its business after acquisition of Utlas.

10   KINETICA

Kinetica is a national bibliographic network of Australia having functions similar to the bibliographic utility network. Kinetica was established in 1999 with the replacement of an earlier system, the Australian Bibliographic Network (ABN). ABN was created in 1981 to promote resource sharing and cooperation by Australian libraries. ABN included the National Bibliographic Database and an online interlibrary loan system. Kinetica extends the ABN's services to include a wider range of databases.

Kinetica is fully supported by the Australian National Library and operated as a division of Australian National Library. Australian National Library provides its own national bibliographic database based on MARC format to integrate a system where participating member libraries can also contribute their bibliographic records and holdings information. This provides a platform of cooperative participation between the Australian National Library and other Australian libraries for efficient bibliographic control.

Kinetica offers modern Internet-based online bibliographic service for Australian libraries and their users. It provides access to the national database of materials held in Australian libraries, known as the National Bibliographic Database. A library user or a cataloguer can search for any item and locate which library in Australia holds it. Kinetica also provide gateways to other major library databases. In addition, Kinetica supports cooperation and resource sharing within the Australian library community through the delivery of MARC records and the provision of a document delivery service. There is also an incentive scheme, which offers a search rebate if a library contributes records or holdings to the National Bibliographic Database.

10.1   Kinetica Services
KineticaWeb
The *KineticaWeb* is the search interface for bibliographic records in the National Bibliographic Database (NBD). It allows participating libraries for addition of holdings information and original simple bibliographic records via Web Input. It 1 based information exchange interface

Kinetica Cataloguing

The *Kinetica Cataloguing* is online cataloguing support system using special software (the Kinetica Cataloguing client software). This software also can send batch bibliographic records to union database. This software can be used to obtain records from union database for creation of local cataloguing records. It provides authority control function for quality inputs.

Kinetica Document Delivery

The *Kinetica Document Delivery* is an online Internet-based system for interlibrary loan and document delivery service. Through this system Australian libraries search the National Bibliographic Database to find material and then order it electronically. Kinetica Document Delivery integrates a payment management system for handling payments for documents and loans among Australian libraries. Libraries can make requests for documents not listed on the National Bibliographic Database through Kinetica.

Kinetica CJK Service

The *Kinetica CJK Service* provides access to Chinese, Japanese and Korean materials available in Australian libraries. This database can be searched using either CJK characters or romanised words. This database has contributions from Australian universities, public libraries and bibliographic agencies. This database is an invaluable tool for CJK librarians and researchers within the national boundary.

Kinetica also offers an array of products to the Australian libraries to help them to maintain and develop their local catalogues. Products of Kinetica are:
- MARC*Link
- Downline loading
- Batch Products
- Electronic Collection Sets
- Kinetica Authorities
- Kinetica Titles List

Kinetica is an example of successful national level initiative of bibliographic utility network, which is fully supported by the National Library of Australia, and participated by different types of libraries. It integrates Z39.50 protocol for bibliographic records exchange. The National Library of Australia also could develop its National Bibliographic Database with more records from the participating libraries. The participation in this network is fee based, and has joining fee as well as charges for the services. Kinetica brings the modern technologies and techniques into its systems comprise of major standards and protocols in related areas, including metadata standards. In near future it will integrate more digital objects in its database to add new features in emerge areas.

11   FUTURE DIRECTION OF BIBLIOGRAPHIC UTILITY NETWORKS

Nowadays, modern information service providers are oriented to make their products and services more satisfactory to their target users groups in order to sustain in the competitive marketplace. The bibliographic utility networks build their services not only for their member libraries and their clientele but also for wider non-member users groups. In the country like United States of America, major bibliographic utility networks are facing competition from various service and solutions providers, both within and outside groups. Sometimes their marketplace is also common. Market saturation in countries like United States, Canada and some parts of Europe in the area of bibliographic services is also considered as threat to the existence of the bibliographic utility networks. To tap different marketplaces and different users groups, the bibliographic utility networks expanded beyond their national boundaries, and developed value-added information products for different segments of customers. They initiate product differentiation and customisation activities for getting wider customer base. OCLC acquired a number of successful and well-known organisations through merger and acquisitions to expand in broad spectrum. Similarly, RLG expanded the scopes of their online union catalogue databases to include wide-ranged materials not only from libraries, but also from archives, museums and other scholarly organisations.

There is also tremendous peer pressure for changing technological bases of online environment very frequently as soon as the new developments in information and communication technologies are taking place. The user interfaces and front-end design is considered as another challenge. Users' convenience and confidence should be accomplished in design aspects for wide popularity of a bibliographic utility. The bibliographic utility networks take futuristic approaches of information handling, so that up-gradation can be handled easily. Online communities want to communicate with the systems in real-time mode. They also want to access the digital contents of documents with superior quality. So the library and information communities observe developments in metadata standards like Dublin Core, MARC 21 and Extensible Markup Language (XML); bibliographic records exchange protocol Z39.50; Interlibrary Loan standard ISO ILL protocol and other related standards or protocols, which have direct or indirect relations with bibliographic utility networks.

The Z39.50 protocol facilitates the transfer of MARC bibliographic records between and among libraries. This will enable libraries to acquire these records from more sources and more cheaply than they have in the past. This force will greatly decrease dependency of libraries on bibliographic utility networks for cataloguing.

Many local library networks and library consortiums have been founded during the last two decades, which have increasing influence and popularity. Some of them are offering similar cataloguing services to small groups of libraries that bibliographic utility networks are supposed to provide. These library networks and consortiums are using customised solutions developed by the bibliographic utility networks or other agencies for common functions, like, maintenance of online union catalogue databases, copy cataloguing, document delivery service, interlibrary loan service, and other resource sharing functions. Now, new markets are opening up to the bibliographic utility networks. Auto-Graphics Inc. and its subsidiary A-G Canada Limited have developed solutions for library networks and library consortiums, and exploring tremendous market potential as solutions provider. This way transformation from bibliographic utility to bibliographic solutions provider takes place.

Major bibliographic utility networks have already taken appropriate measures for future growth of their services and in their membership. The global library and information services would be strengthening more if some other bibliographic utility networks emerge at the national and international level to supplement the existing ones.

12   SUMMARY

This article describes the functions, features, and advantages of bibliographic utility networks. Some cases have also described in order to get in-depth knowledge on their core services. The services of a bibliographic utility network are centred on online union catalogue database. Some bibliographic utility networks derived a number of services from their exhaustive union catalogue database to be used by different segments of clienteles. The services are not only contributory from participating institutions but also accessible to non-participating customers for search-only services. Their products have intense reference value to the libraries worldwide. Their expansion beyond their origin also have described here, which reflected in phenomenon growth in their services and membership. Some successful bibliographic utility networks, i.e., Online Computer Library Center (OCLC), Research Libraries Information Network (RLIN), Western Library Network (WLN), UTLAS and Kinetica have described here, and these utility networks have wider impact on library and information services. These bibliographic utility networks transform the face of library and information services to equip with new technological tools and techniques.

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