NEW TECHNOLOGY ON CATALOGUING AND CLASSIFICATION IN HEZEKIAH OLUWASANMI LIBRARY ILE-IFE

Omoba, F.A.,
Hezekiah Oluwasanmi
Obafemi Awolowo University
Ile-Ife, Nigeria.

Akewukereke, M. A.
Federal Polytechnic,
Ede, Nigeria

Abstract
The paper is a breakdown of the journey so far in Hezekiah Oluwasanmi Library (HOL), Ile-Ife, Nigeria. The paper talks about how the library started with Union Catalog, and original catalogue was usually done for books not found in the Union Catalog. Carnegie grant was later won and VIRTUA was put in place. In its new format the card catalogue becomes an OPAC (Online Public Access Catalogue). Searches which once were time-consuming can be done in seconds on a well-designed OPAC.

Introduction
New technology in librarianship is the automation of the library resources and services. That is, changing of the delivery of resources and services from manual to electronic or digital.

The extent of the use of library resources depends greatly upon the quality of the library catalogue, and in the increasing demand for access to library holdings in many academic libraries via the catalogue (traditional catalogue cards) or the Online Public Access Catalogue (OPAC) has added to cataloguers’ work load as regards information dissemination, especially in academic environment. The Internet and most existing software in the market today are democratizing information, empowering the masses and allowing the users access to vast array of resources. It is significantly altering the work of cataloguers.

Kumar (2001) is of the view that information technology is rapidly transforming the content and the services of the libraries. Omekwu (2007) observes that academic libraries that are notable are classic examples of how automation has impacted on the traditional ways that work is done. Ajibero (2003) also notes that as a result of the
impact of ICT on technical services, the roles of cataloguers have completely changed. Their roles now involve operations that have become inter-dependent in their pursuit to provide bibliographic control and access.

Furthermore, concepts such as online cataloguing of materials, web browsing, global trend in ICT, Machine Readable Record (MRR) and so on are the language of information age.

The need for information professionals in developing countries to move with the times has been discussed at various level for the magnitude of materials being passed to the technical unit of academic libraries each day, an unprecedented challenge to the profession in terms of traditional responsibility to organize, provide access to, and preserve information. According to Zaid (2009), it is very dangerous to stay local as information professionals in this 21st century; we must strive to keep pace with the changes in the profession, to fulfil the needs of library users, and to fulfil librarian’s role as the principal providers of information service. The current issue is no longer whether information technology applications are relevant to library operations; the critical decision is on how best to apply information technology systems to library and information services.

The broad objective that this study is designed to achieve is to analyse the impact of the new technology on cataloguing and classification in academic library, while the specific objectives are the following:
1. To identify the changes in cataloguing and classification practices academic library;
2. To analyse the new technology and its impact on cataloguing and classification;
3. To analyse the changes that have taken place in (Hezekiah Oluwasanmi Library) HOL and the strategies adopted in managing these cataloguing changes; and
4. To analyse the user friendliness of VIRTUA in cataloging and classification.
Cataloguing and Classification in Academic Library

Cataloguing and classification of library materials embodies the very fabric of knowledge structures that shape the traditional and contemporary practice to find, identify, select and obtain information.

Original cataloguing of the library materials in academic libraries is pain-staking and time-consuming exercise. It is possible using this method to have library materials that should be processed fast to spend months in the cataloguing section. The application of new and emerging technologies as supportive tool would in no doubt turn most cataloguing section of most academic libraries into a livelier environment by reducing to the minimum backlogs and arrearages.

Backlogs of un-catalogued materials are also removed, while the cataloguer is also relieved of the “headache” of having to crack his brain or consult experts.

The following are the types of cataloguing; original cataloguing: derived cataloguing, commercial cataloguing and combination. There is one that is called Union catalogue, and also when automation started we started to have Online Public Access Catalogue (OPAC).

Original Cataloguing

Original cataloguing refers to cataloguing an item by examining certain parts of it to obtain information needed to describe it. While original cataloguing allows for on-site, immediate, and locally applied cataloguing, there are some concerns. These include:

• Original cataloguing is time-consuming for the cataloguer and the data processor/typist. The teacher-librarian’s time can be much better spent working with teachers and students. In addition, library technician and library clerk time in school libraries is usually at a premium.
• Lack of library technician and library clerk time usually results in a backlog of materials which have not been catalogued or processed fully. These materials cannot be used by staff or students.
• Inexperienced cataloguers spend long hours misapplying rules. Thus, the advantages of using a standard system are often negated, and re-cataloguing is often necessary at a future date.
• Cataloguing is an expensive process when done by unqualified personnel. If the hours spent by cataloguers and data processors/typists were cost out, it would become apparent that commercial cataloguing is more economical.
Derived Cataloguing

Derived or copy cataloguing refers to the process of cataloguing items by using existing bibliographic records obtained from various sources and altering those records to conform to local cataloguing standards. Cataloguing information may be found in:

- Cataloguing-In-Publication (CIP) data found within the item;
- Book catalogues;
- Non-book catalogues (e.g., microfiche and CD-ROMs); and
- Electronic catalogues (e.g., the Internet).

An on-line directory known as Hytelnet provides a well-organized means by which to browse through library catalogues or databases worldwide.

Two telnet addresses worthy of mention are:
1) Telnet locis.loc.gov (Library of Congress, mainly books); and

Two important Uniform Resource Locators (URLs) for web-based searching are:
1) http://lcweb2.loc.gov/ammem/booksquery.html (Library of Congress); and
2) http://library.usask.ca/hywebcat/ (Peter Scott’s “webcats” utility).

While derived cataloguing does result in definite cataloguing savings, both in terms of cost and time, it should be noted that catalogue cards still must be typed manually or cataloguing records must be entered manually into an automated library system. Furthermore, cataloguing standards and formats may vary from catalogue to catalogue. This will also affect the amount of editing required to meet locally established practices.

Commercial Cataloguing

Commercial cataloguing refers to cataloguing services now being offered by a number of firms. It may take the form of simplified cataloguing records for only certain titles to customized cataloguing for specialized collections. Care should be taken in choosing commercial cataloguing that follows national and local cataloguing standards. The advantages to purchasing commercial cataloguing include:
• Requiring less expertise on the part of the teacher-librarian (the main task for the school library staff may be in filing the cards in a manual environment or loading MARC records in an automated environment);
• Converting a card catalogue to an electronic format enables the school to have it done by a commercial vendor;
• Improving consistency; and
• Centralizing cataloguing reduces time spent duplicating the cataloguing for the same titles.

Many jobbers or wholesalers routinely offer cataloguing for a nominal fee. Libraries considering automation in the future will want to consider ordering MARC catalogue records along with card sets. This investment in the future allows the school to stockpile MARC data for the automation project. It also greatly reduces the amount of time required to complete the recon, or retrospective conversion of the catalogue.

Combination
Most schools opt for a combination of commercial and original cataloguing, purchasing commercial cataloguing whenever possible, and doing original cataloguing for items in the collection for which commercial cataloguing is not available. Centralized cataloguing in a divisional or district processing centre can result in a union catalogue where the print and audiovisual materials of that network of libraries are known. Union catalogues achieve uniformity throughout the system, avoiding duplication of effort and promoting resource sharing.

Changes in Cataloguing
The introduction of computers into cataloguing marked a turning point in the way it is being done and by whom the cataloguing is done. The introduction of non-professionals to cataloguing is one of such changes. Para-professionals in the library can now perform conveniently tasks solely meant for cataloguers. Nwalo (2007) states that paraprofessionals in libraries can now effectively perform much of the duties that hitherto were the exclusive preserve of professionals. The California Occupational Guide (1996) describes how automation has in many cases changed cataloguing of routine materials from being primarily a responsibility of the librarian to a paraprofessional responsibility for employees assigned to the cataloguing department.
Resource-sharing of cataloguing activities is another very notable change being currently experienced in cataloguing. It helps to save cost and reduce to the barest minimum, duplication of efforts in cataloguing. Nwalo (2006) notes that resource-sharing is of immense benefits to libraries and their users as it makes information more readily available, saves costs and prevents duplication of effort, especially in cataloguing and classification.

Outsourcing of cataloguing activities is another development that is being experienced in the ICT era and it is one of the changes experienced in cataloguing. Outsourcing is subcontracting a process, such as product design or manufacturing, to a third-party company.

Outsourcing of cataloguing becomes necessary as a result of backlogs experienced by libraries that are newly automating their services. It serves as an alternative means for eliminating these backlogs (“Outsourcing”). Online cataloguing also constitutes one of the major changes in cataloguing. It involves locating and copying cataloguing data online through international computer networks. It is common to see libraries hooked to the catalogues of other libraries to copy cataloguing details instead of embarking on original cataloguing.

The Library of Congress and Online Computer Library Centre (OCLC) are examples of libraries that have their catalogues uploaded on the Internet.

**New Technology in Cataloguing and Classification**

The intervention of new technology in this process is designed to eliminate the tortuous and repetitive cycle of the service and create platforms for effective retrieval of information resources in academic libraries for cataloguers that have embraced the new technology; unnecessary delay of library materials in the cataloguing section for an undue length of time is unacceptable because its acceptability is tantamount to counter productivity to the goals of the university library considering the users of such libraries and their information needs.

To this end, six universities libraries in Nigeria have signed a five-year contract with Blacksbury, VTLS (Visionary Technology Library Solution) incorporation to have VIRTUA as their Integrated Library System of choice.

The software can be used for cataloguing and classification of library materials in the University libraries as the technology provides unlimited access to important information from the University library
collection. Many online catalogs are now available for searching class numbers and other bibliographic details necessary for effective and efficient cataloguing (Zaid, 2000).

According to Lon (1997), he specified that the technology allows an enormous amount of information online. Cataloguers at Obafemi Awolowo University Ile-Ife for example have tackled the ever growing task of how to frequently push out books and other materials from the unit to the shelves with the use of the new technology (VIRTUA). Several backlogs of uncatalogued materials have been processed through the aid of VIRTUA and the users have been exposed to volumes of available library materials.

On the impact of VIRTUA, Wheeler and Beacon (2000) outlined four major features, namely:

i. VIRTUA permits cataloguing workflow;
ii. VIRTUA enhances the use of unified cataloguing theory and practice;
iii. VIRTUA enables functionality on the catalogue itself; and
iv. VIRTUA is user friendly- it has drawn the information professionals and information users closer.

From the foregoing, the traditional notion of a library as a mere storehouse of knowledge has been fundamentally challenged by the advent of information technologies such as VIRTUA. Cataloguers who wish to be relevant and functional in this information era should be ready to embrace these challenges, and help service points in the university library. This will also aid the consideration of the library catalogues as no longer a mere listing of library holdings but as a critical tool for library access.

**OPAC (Online Public Access Catalogue)**

Data is the necessary ingredient for any computer to perform at its optimum. No other field in education has a better application for current computer technology than the library. The library has always been a database. In its new format the card catalogue becomes an OPAC (Online Public Access Catalogue). Searches which once were time-consuming can be done in seconds on a well-designed OPAC. In many ways, the traditional card catalogue has been as much a roadblock as an aid in education. The seldom understood inner
workings and cross-references of the card system are replaced by the far simpler keyword access of the modern OPAC.

Students and staff, with some instruction, learn to manipulate large data files through the use of Boolean operators. By combining search terms such as author, title, subject, and abstract, the user is able to determine quickly where the appropriate information is to be found.

Even if there is little or no funding in the budget for library automation, the school can begin to prepare itself for that eventuality. MARC (Machine Readable Catalogue) records can be purchased for new acquisitions along with catalogue card sets. For these items there will be no need to worry about recon as the MARC data will be ready to load into the cataloguing module of your chosen automated library system. Materials that are currently on the shelf present another challenge.

Regardless of which library application software the library may eventually select, full MARC records are required. There are many sources of MARC records but not all records are of a good quality. MARC records derived from the Library of Congress or the National Library of Canada databases are uniformly good.

Old textbooks, teacher editions, dated scientific materials, worn, torn, and yellowed items were discarded before the conversion process begins; otherwise much time, effort, and money can be wasted doing recon on these materials. The next phase is preparing the shelf list. The more complete the shelf list, the simpler the task of matching against an existing database. If the shelf list is not up to standard, then the task becomes more difficult. It may become necessary to re-catalogue many books entirely.

Automated schools have learned a great deal and know how to avoid pitfalls; at the same time, Hezekiah Oluwasanmi Library (HOL) is not fully automated, but before the automation process, the following questions were asked:

• Where to obtain MARC records?
• How much original cataloguing is necessary?
• How good is the data?
• How good is the application software?
• What will be the difficulties to be encountered?
• Any vendor training? If so, is it useful?
• Will the vendor be responsive to school needs?
• How much will the project cost?
The most expensive part of any library automation project is the conversion of the old catalogue into a MARC format. The extent of the use of library resources depends greatly upon the quality of the library catalogue. Most libraries have moved away from manual cataloguing as they have embraced the new technologies. Mohammed (1997) is of the view that information technology is rapidly transforming the content and services of libraries. Mason (2004) observes that libraries are a classic example of how automation has impacted on the traditional ways that work is done, particularly in cataloguing departments—changing how, and by whom, the cataloguing is done.

Coyle and Hillmann (2007) assert that changes in the context in which libraries function have brought the library and its catalogue to a crisis point. According to them, the development of computer technology and electronic document production presents a significantly different challenge than libraries had only fifty years ago, a time when information resources were rooted in the era of books and periodicals, and the card catalogue was the entry point to the library's physical holdings. Calhoun (2006) observes that one area where change is essential is in the area of library catalogues and cataloguing.

Cataloguing rules used today according to him represent an unbroken continuum that began in the early 19th century. The rules he noted were developed for linear presentation, either in printed book catalogues, or in alphabetically arranged card catalogues, thus the emphasis on "headings", those carefully crafted strings that are designed to be placed in an ordered list ("Smith, James" "Smith, John").

He further averred that headings in alphabetical order were once the only access points into the catalogue, but as catalogue entries became machine readable records, the rules for cataloguing remained essentially the same. “More recently, library systems developers have worked hard to create a machine readable library catalogue that provides functionality beyond that of analog card catalogue, for instance by allowing keyword searching of all data in the catalogue record. However, the struggle to accommodate technological changes with data created using the old rules is clearly not optimal, and hinders the ability of libraries to create innovative services”.

Gorman (1998) says that by the end of the twentieth century, with the explosion of digital formats and the internet, the treatment of non-book formats using the model of book cataloguing has become less
useful. According to him, even conventionally published materials began to appear on the market in multiple formats. In addition, he noted that the much looser distribution channel of the internet eliminated the packaging and any vestige of description that those packages contributed. He further posited that the switch from physical media formats distributed through traditional channels to web-distributed digital information pulled the last remaining rug from under cataloguers who were used to relatively stable materials. He maintains that descriptive rules based on predictable stable and named “sources of information” (title pages, table of contents etc) about a resource, with a prescribed order of preference, were not adaptable to resources without title pages or pages and not suitable for resources that exist in a state of constant change. Schneider (2007) challenged the cataloguing practices as exemplified by the Library of Congress Working Group on the future of bibliographic control. She believes that the future of cataloguing is one of a new type of order and data control based on web developments. It is her contention that how we do things in traditional cataloguing may be very different but that much of what we value like shared standards, controlled vocabularies, and unique identifiers are exactly what leaders in the web community are working on also. While it is necessary that library cataloguing should approximate what obtains in the World Wide Web, there is need to optimize the editorial capabilities of cataloguers to ensure quality control of records added to the database or catalogue.

Library of Congress (2006) in its report on the changing nature of cataloguing notes that the catalogue operates against a backdrop of flat or declining use of library collections, flashy and powerful alternatives for information discovery, rapid changes in information technology, rising expectations of library patrons, mass digitization projects, and an incipient revolution in scholarly information exchange. It called on library managers to move swiftly to establish the catalogue within the framework of online information systems of all kinds. The report challenges librarians and indeed cataloguers to consider the following issues as they seek to manage the change which is imminent:

- What is the current state of standards and technologies to support unified access to multiple repositories, including catalogues?
- What are the future roles of MARC and cataloguing content rules?
What are the challenges to the economic sustainability of the current model of the catalogue?

What do 21st century information seekers need from catalogues?

In what ways might libraries leverage catalogue data for new uses?

What partnerships are worthy of pursuing with the publishing, systems, scholarly and information technology communities?

There is need therefore for library catalogues to provide access to more content and to offer significantly enhanced functionality based on the features of popular search engines. More users want, expect, and pursue full text. In increasing numbers, they look beyond the catalogue when searching for electronic journals, databases and websites.

What is VIRTUA?
The integrated library system Standards-based, fully integrated, flexible, and open, the VIRTUA ILS (Integrated Library System) is all this and more. With advanced features such as FRBR (Functional Requirements for Bibliographic Records), Update Notifications through SDI, User Reviews & Ratings, and support for mobile computing, VIRTUA sets a new standard of excellence for the library world. Providing full multilingual support and leveraging a solid Oracle foundation, VIRTUA is designed for libraries that expect more than meets the eye.

No two libraries have the same needs. That's why at VTLS (Visionary Technology in Library Solution) we have developed flexible software that lets you create custom profiles for each library and staff user, controlling access to more than 600 functions throughout the system. Engineered for the robustness and ease of use that library patrons and staff demand, VIRTUA lets you set the rules and parameters that work best for your library.

Easy to learn and easy to use, VIRTUA offers integrated functionality that includes OPAC, cataloguing, acquisitions, serials, circulation and reporting. Other components include FRBR, Consortium Databases, and Union Catalogs, SDI, Open URL and a lot more. With our fully integrated, single-client approach, switching from one module to another is as seamless as a keystroke or a click of the mouse.

Implementation Services ensures that a project moves smoothly through the three phases of a project's life cycle:
1. Planning Phase.
2. Implementation Phase.

**Planning Phase**
During the Project Planning phase, VTLS Inc. assigns a Project Manager who assembles a project team dedicated to the customer’s implementation. The VTLS project manager then develops a customized project plan. The project plan contains the schedule and personnel assignments for each deliverable typically including hardware configurations, pre-implementation consulting, software customization requirements, database preparation, installation, training and acceptance.

**Implementation Phase**
The implementation phase may consist of one or more of the following, depending on the customer's individual needs.
- **Design** - Detailed specifications are developed for custom programming.
- **Development** - Required customizations are completed, tested, and delivered to the customer.
- **Hardware Procurement** - Prepares hardware configurations and places order with selected vendor.
- **Software/Hardware Delivery** - Software is installed on the server with a test database.
- **Data Conversion and Load** - Customer database is delivered.
- **Training** - System and application training are provided.

During the implementation phase, the VTLS Project Manager maintains close contact with the work being performed, including monitoring the direction, personnel assignments, problem resolution and information flow. Additionally, the VTLS Project Manager provides regular status reports to the customer to ensure that the project remains on schedule.
Sign-Off/Start-Up Phase
Following the Planning and Implementation phases, the production software is delivered and the customer goes live. The customer approves the software and the Certificate of Acceptance is finalized. Upon acceptance, the project is concluded and the VTLS Project Manager transitions the account to Customer Support for ongoing maintenance.

Hezekiah Oluwasanmi Library (HOL), Obafemi Awolowo University
Hezekiah Oluwasanmi Library (HOL), Obafemi Awolowo University, Ile-Ife belongs to the Federal Republic of Nigeria. It was established in 1962 and it is located in Osun State. The vision is to be the best academic library in Nigeria serving the information and educational needs of Obafemi Awolowo University internal and distance-learning community, the Nigerian educational sector and the world at large.

HOL began computerization in 1997 with established 11 LAN nodes with a client server architecture. A proposal was written to obtain Carnegie grant to enable manual catalogue conversion which started in 2003, and was outsourced to OCLC while the new books brought to the cataloguing section were catalogued by copy/online catalogue. About 110,000 records were converted. Purchase of VIRTUA library management software was done by the consortium of six universities which are; Obafemi Awolowo University, Ile-Ife, Ahmadu Bello University, Zaria; University of Ibadan; University of Jos; University of Port Harcourt; and Bayero University, Kano. Data were uploaded and the OPAC started running. The cataloguing module is in full operation with bar-coding of the catalogued materials.

The mission of HOL is to provide access to learning and research materials, both hard and soft content, available world-wide primarily for the use of the staff and students of Obafemi Awolowo University and secondarily for the Nigerian educational community. It is also to contribute her quota to the world information resource by digitizing local materials for the use of all and sundry.

Physically, the Library occupies a central position in the University which makes it easily accessible to both staff and students. It is a big complex consisting of two wings each with five floors. The Library is open to users for fourteen hours of the day (8.00 a.m. – 10.00 p.m.) on week days and eight hours on week-ends. Its unique
collections include Africana materials, government documents and local newspaper collection manned by qualified and well trained professional librarians.

The Library has a LAN of about 70 nodes of Personal Computers all connected to the Internet. With the assistance of the Carnegie Corporation of New York, the Library has been able to embark on the conversion of most of its manual catalogue to electronic format. The newspaper collection and theses are also being digitized to make them available to users within and outside the university community. Aside that, the Library also provides access to a number of online databases to its users, including eIFL network and EBSCOhost.

**Before the Intervention of the Carnegie Corporation**

HOL had a radio link to OAUNet and the outside world, and the bandwidth connectivity was 56kbps. NUC supplied 2 386 Personal computers, one Flat-bed scanner and TINLIB software (4 edit users). HOL set up an 11–node LAN with 2 servers running NetWare 3.12 where about 10,000 records of new books entered.

**After the Intervention of the Carnegie Corporation**

Conversion of manual catalog entries to electronic format began; batch conversion was out-sourced to OCLC Inc. Link to OCLC World Cat for online cataloguing was established 56.9% (110,000) of 193,396 manual Catalog records now converted. HOL now has a fiber-optic link to OAUNet and the world. Bandwidth connectivity now 3Mbps. VIRTUA LMS purchased. OPAC Now runs, while HOL Website and OPAC are now visible to the world. Digitization equipment bought which brought about the kick off of the digitization of some of HOL newspapers collection, OAU Theses digitized through DATAD 86 Personal Computers are now on HOL LAN, Staff training and Capacity building has greatly improved. Serial Collection development is enhanced through JDP and ACU.

**Major Infrastructural Impact**

1 SMA 21 Scanner for Newspapers/Books digitization, 1 Sun Sparc Enterprise T2000 Server hosting the VIRTUA LMS, 1 Dell 1900 Server hosting library Website and Bar-coding of collection necessary to enable electronic circulation take-off is in progress.

With the automation of the cataloguing process, we now have;
The use of integrated software (library management systems), Cataloguing in marc 21, Online public access catalogue (OPAC) replacing manual catalogue, increase in search / access points, online cataloguing, copy cataloguing, campus wide / world visibility access to other library catalogues the world over.

**Challenges of Modern Cataloguing**

The will to modernize the library, the need for library computerization, establishment of local and wide-area network (internet connectivity), conversion of existing manual catalog into machine readable format, learning to catalogue in marc 21 format, bar-coding of library books and resources, the final issue grant writing, the power issue-alternative power sources (solar, battery inverter, bio-fuel).

**Other things to be achieved are:**

- Conversion of manual catalogue to electronic format need to be completed;
- Electronic gate and collection sensitization with RFID awaiting attention; and
- More on staff capacity building needed.

**User Friendliness of VIRTUA**

VIRTUA is software that gives room for so many activities that is carried out in cataloging and classification. It is MARC 21 compliant, once the tags of MARC 21 are mastered and understood, the work on VIRTUA is less. It allows one to view the databases of other libraries that are also using VIRTUA if the IP address of the particular library’s database is known. It also makes it possible for one to download the bibliographic data of the material of other libraries; vetting of catalogued material is possible; the person that catalogued a particular material can be detected with VIRTUA software. It is frequently updated to meet the needs of the users. VIRTUA supports MARC 21 and UNIMARC records in a single virtua database, this implies that cataloguers can catalogue in MARC 21 or UNIMARC, and whichever format a record is catalogued in is the format of that record when it is saved, displayed, imported, or exported. The cataloging module on VIRTUA is also used to bar-code materials in preparation for circulation module to take off.

**Conclusion and Recommendations**
Cataloguing practices have witnessed radical transformations over the years as a result of the introduction of ICT. The changes are reflected in both information sources and new tools in managing cataloguing records. These include: computers, Internet, CD-ROMs, online databases, electronic files, metadata structures, and library software packages, Online Public Access Catalogue (OPAC), as well as creation of hyperlinks.

Globalization of information networks puts a serious demand on all professionals including cataloguers. To maintain the status-quo would be tantamount to extinction and irrelevance.

Funding is central to the standardization of library practices, especially as it relates to the application of ICT to cataloguing. Academic libraries should adopt a strategic approach that would generate required fund to procure software, internet facilities, bandwidth and other peripherals needed in a modern setting. The institution must actively engage the corporate world to assist through their social responsibility initiatives. Private-public partnership is inevitable in this direction.

Resource sharing in an ICT-era is made possible through uploading institutional catalogues to the internet. It is therefore recommended that libraries should ensure that their bibliographical records are visible on the web. This forms the basis for the crystallization of true VIRTUA library.

All the achievement made so far in HOL is being sponsored by Carnegie Corporation.
References
Kumar, K. and Girja, K. (2001). The theory of cataloguing; India: VIKAS publishing house


