CHAPTER- 6

INTEGRATED LIBRARY SOFTWARE – MODEL

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6.0 Introduction

The traditional concept of library is being redefined from a place to access books to one which houses the most advanced media including CD-ROM, Internet, and remote access to a wide range of resources. Libraries are now being slowly metamorphosing into digital institutions. Earlier a library was judged by its quantitative resources. Today, libraries are surrounded by networked data that is connected to a vast ocean of Internet-based services.

Increasingly, libraries are facing the challenges presented by the need to acquire, manage and archive electronic resources. Libraries must be able to supply these resources to users on demand. As the Libraries come to depend more and more on electronic resources, they will require comprehensive library - and information - management systems that are able to keep track of resources wherever and in whatever form they exist. The University Libraries do need an information technology strategy that results in the efficient integration of a variety of technical platforms, applications software, networking options, and access mechanisms as well as one that addresses copyright and other intellectual property issues.

An effort has been made in this chapter to propose a model integrated library management software with functions, features and standards which should be adhered to international standards in the changing information environment. The Integrated Library Management Software is under continuous development due to various developments taking place primarily in information technology and publishing industry. The process approaches the best practices for automation in university libraries to serve as guidelines in preparing, implementing and managing an automated system.
6.1 Need for the Strategic Plan

The recent rapid evolution in the past few years of libraries and integrated library systems themselves now presents some interesting challenges. With the growing capabilities of today's technological advances in the use of web, digital components and electronic resources, expectations have grown high. Libraries have to be more responsive to user needs in order to provide services that are better aligned to meet-and possibly exceed-their expectations.

The typical library automation environment today, especially for a university library, would require an ILS to manage traditional content and a suite of additional products to lend support for electronic content. Many now offer some sort of metasearch environment separate from their ILS and associated OPAC for searching the packages of e-content they offer. It also seems that not all libraries find the interface offered by the standard Web-based OPAC entirely satisfactory. One of the most recent trends in the ILS product area is to provide an alternate interface, instead of, or in addition to, the OPAC interface provided with the ILS.

6.2 Pre-requisites for Successful Library Automation

Computer and information technology represent a fundamental change in the way libraries function. Libraries must make an ongoing commitment to keeping pace with change. Therefore, like automated systems, plans must also change with time. Plans must be regularly revised and updated as the environment and needs change. In general, a library should conduct a major re-examination of its plans periodically, and should review its plans on an annual basis.
The administration and management of integrated library systems is no small task. It involves a multitude of persons working together to make it successful.

6.2.1 E-Publishing

The transition from print to electronic distribution has caused significant disruption to the publishing industry, and also to marketing the resources. The challenges are traditional scholarly communication converting the traditional publishing to the digital environment; new intellectual property rights issues, alternatives to journals and dramatic increase in all forms of information content etc. These challenges along with supporting technologies have created major issues around copyright, ownership and management of digital resources. Libraries, in the future, will create, publish, and compile information, embracing various kinds of publication and dissemination roles in a networked environment. Librarians and other staff will be partners as well as innovators in information technologies, distance education, information literacy programs, and in the creation of new models of scholarly communication. Electronic resources are important components of library collections, and their number is increasing at a rapid rate. Many publications are now available only in electronic form, a trend we can expect to continue and expand. Librarians must have the automated systems that allow them to develop and manage accessible and cost-effective services that match the strategic directions of their parent institutions.

6.2.2 Changes in Education

Innovations in the design and delivery of education to reach to the people are on the increase. But the effectiveness of such innovations and the impact on
the faculty productivity is still not clear. The new modes of learning need different approach and new support system for both students and the faculty.

6.2.3 E-learning

In the last few decades, we have witnessed an unprecedented explosion of information in print and, more recently, in electronic formats. This has been triggered by the proliferation of publishers, an increase in the number of researchers and others producing publications, the emergence of the developing countries as an information provider, and the ease of publication and dissemination in the World Wide Web environment. Online public catalogs and other electronic resources helped provide solutions to these problems. The online catalog distributed access to library collections.

6.2.4 Information Resources

One of the challenges the University Libraries face is how to integrate traditional resources with the newer electronic ones and how to help users exploit both types of resources. This emphasises the need to complete conversion of the card catalog to provide electronic access to all print and traditional non-print resources as well as newer electronic materials.

6.2.5 Users' Expectations

The growth and availability of access to information via the internet and associated technology has transformed the expectations of the client population as well as their service preferences. New technologies and developments have altered the perceived link between information and libraries.
Users are expecting that their library systems are capable of, among such other things, as providing seamless integration between system gateway and OPAC modules providing access to external users on the Internet to the library's OPAC. Researchers want online access to resources wherever they are located. System and network capacity have difficulty in keeping up with these demands. The extension of searching into the Internet environment has further increased these problems. Students, faculty and other staff are developing the expectation that librarians will be able to deliver almost all information to the desktop.

6.2.6 Human Resources

Library automation succeeds through the work performed by hardware, software and people. The library staff is critical to a successful project. Staff acceptance is another important factor contributing to the successful use of information technology in libraries. The successful use of IT in a library depends on the extent to which supervisory and operational staffs are involved in its planning, design, analysis and implementation. Without the right human skills, it is not possible to implement the automation process successfully. If remarkable results can be accomplished with very primitive software, it is all because of the skills of knowledgeable, confident and practical professionals.

6.2.7 Library Services

Functions once mediated by humans, like some library reference searches, can now be mediated electronically. Information providers must anticipate shifts in user's needs and expectations and must adapt the computing infrastructure and support facilities to meet the growing demands of the user community that displays a wide range of expertise.
A basic model of library service in an electronic environment will help to organise in planning efforts at each step in the process. The model consists of:

- Providing access to the content of local resources such as Books, Journals, etc. that are part of the libraries’ collection
- Offering gateway or portal access to the remote resources such as books, e-journals, other electronic resources, including the ability to obtain copies in print and electronic formats.
- Facilitating off site electronic access to local and remote resources to from users’ desktops

The environment in which university libraries operate both nationally and internationally has been undergoing rapid change as a result of a number of factors, which include: impact of technology, changes in approaches to teaching and learning, changing demographics of the student population, and competition amongst universities. Trends in publishing worldwide, in particular, the increasing electronic availability of scholarly publications and the increased cost of acquiring library resources and copyright, have also had a major impact. Budget constraints are a determining factor.

Therefore, as libraries provide new levels of service for customers, the focus has shifted to those tools which can document and support these. The development of statistical measures for relevant electronic services, for example, becomes critical - given the increasing access to resources by remote customers. In addition the fact that libraries are part of a larger network of local and remote library-related systems and services leads quite logically to integration and interoperability.
6.2.8 Standards Related to Library Automation Systems

The widespread use of Integrated Library Systems (ILS), global communications via the Internet, and growing numbers of digital library initiatives have made the need for compliance with standards more critical than ever. Implementing information products and systems that support standards can ensure that libraries will be able to adopt more easily new technologies.

The following standards address a variety of issues in the area of library automation. In addition to the core elements of a library automated system (public access catalog, cataloging, circulation, acquisitions, and serials), remote access, imaging, and full-text document management are included. These standards address only a limited number of topics; they are not sufficient by themselves for developing a comprehensive set of specifications. The system must comply with the following library and information industry standards, depending on the need of the library:

(i) Bibliographic Formats (MARC 21); (ii) Record Structure, Character Sets, and Exchange Media; (iii) Serials - Serial Item and Contribution Identifier (SICI); (iv) Circulation (NICP); (v) Barcodes (Code 39, Codabar); (vi) Resource Sharing and Interlibrary Loan (ILL Protocol); (vii) Information Retrieval (Z39.50); (viii) Command searching (CQL); (ix) Metadata; (x) Unicode; (xi) Encoded Archival Description; (xii) Web Access; (xiii) Open URL and (xiii) XML and (xiv) Local area network (IEEE 802.XX) (Hodgson, 2002).

6.2.9 Developing a Library "Profile"

One of the most important planning tools involves collecting basic statistical information on the library and its operations. It is important to take stock of any existing automation in the library by compiling the following data:
• Percentage of collection that has catalog records in machine-readable form;

• Description of collection without machine-readable records, by type of material;

• Description of currently-automated library functions;

• Estimates of the location and number of workstations; and,

• Specifications for any existing equipment to be re-used with any future system.

• Number of titles and volumes in the collection, current and projected;

• Number of borrowers, current and projected;

• Number of materials circulated, current and projected;

• Number of new materials acquired, current and projected;

• Interlibrary loans, lent to and borrowed from other libraries;

At the same time while this data is being assembled, it is important to assess user’s needs and set service priorities. This can be accomplished by undertaking a focused, strategic planning process designed to involve the library’s "stakeholders."

6.2.10 Developing a Strategic Plan

A library that is planning to automate its operation should undertake a process by which representative staff and users can identify service needs and objectives. The purpose of such an effort is to allow the participants to articulate
their interests and concerns, share perspectives and learn about possibilities in a collaborative setting. Group interaction is an important contributing factor in the success of the goal, which is to develop and sustain library automation in the years to come.

6.3 A Model Integrated Library Software

The ILS represents considerable technology investment by libraries. The success of library process change and information retrieval has been built around the functionality, or otherwise, of the ILS. These systems have provided a solid foundation for both collection management and resource discovery. The information landscape is increasingly fluid and the role of the ILS in this context is becoming more important. Information retrieval is no longer limited to the library-controlled resources.

The functions of integrated library systems need to be considered in the context of trends, strategies and technical issues within the wider information environment. For the library, the fundamental challenge is integration, and, in particular, designing the ways of navigating the wide range of resources using cross-searching and linking tools. Libraries' decisions about what to automate and why depend closely on the overall direction of their mission and service policies.

The objectives of the typical university libraries are committed to provide excellent library and information services to its community by implementing an integrated library management system of superior functionality and cost efficiency. These objectives address only a limited number of topics. They are not sufficient by themselves for developing a comprehensive set of
specifications. The type of functionality the university libraries are seeking to incorporate includes (Integrated Library System..., 1997):

- A state-of-the-art integrated library system that provides access to public services, collection management, and technical services functions.

- Consortia-based capabilities such as union catalog and non-mediated requesting of library materials.

- The ability to effectively convert data from the existing library systems into a new format that will preserve and insure its continued development and preservation as well as the ability to migrate data to new generations of library systems.

- The ability to exploit emerging technologies and information resources to raise the level of library services, facilitate an increase in staff productivity, and improve effectiveness.

- Conformity to all national and international standards.

- Report generator to facilitate retrieval of management information.

- The integration of electronic resources that are made available through the UGC-Infonet e-Journals Consortium or other initiatives (e.g., bibliographic and full-text databases, image databases, electronic journals, etc.).

Ideally, an ILS should deliver comprehensive automation in an efficient manner. It must handle all the work that happens within the walls of the library and deliver services to users outside the library via the Web. An ILS must also be able to interact with other automation systems by using appropriate standards.
and protocols. The particulars of what constitutes comprehensive automation change over time. As libraries evolve in the services they offer and the collections they build, it is essential that the ILS evolve in step. Ideally, a system's capabilities should run ahead of the curve. This happens only if the librarians themselves correctly anticipate their future needs well in time (Breeding, 2006).

The library system will maintain an automated library system which supports the internal automation.

6.3.1 Functional Capabilities of a Model ILS

The purpose of an integrated library system is to process, share, and provide access to information in an efficient, useful and timely manner. Functional capabilities of ILS will fully support all the traditional and modern library functions such as Acquisitions, Cataloging, Serials Control, Circulation, OPAC, Services and Administration and Maintenance. Here is a model which is displaying all the library housekeeping operations, services and administration functions and features (see vide Figure-6).

Another important factor that deserves careful attention is the security and safety of data. As library databases are usually huge and contain valuable data, it is necessary to protect expensive resources and data from unauthorised access and viruses.

The ILS will have Electronic Resource Management (ERM), RFID and OpenURL features, which will help libraries in electronic resource management, Circulation and Inventory management and Accessing Electronic Journals respectively.
Figure 6: Functions and Features of a Model Integrated Library Management System
Management Information

The ILS should be capable of providing the statistical data related to items, transaction, finance, etc. to support management of the library. Such statistics will be particularly useful when they are presented as time series so that comparisons can be made from month to month and from year to year.

The ILS will usually be capable of supporting a number of other functions and process in the library. For example, while a few libraries still perform a complete stock check, the ILS will be able to produce lists of stocks in particular areas, sorted into shelf order.

6.3.2 Service Capabilities of a Model ILMS

A library primarily aims at providing effective and efficient services to its clientele, based on library information resources both print and non-print, in-house database and networked resources. Integrated Library Management Systems (ILMS) provides an effective media to deliver the services to its users, be it on the university campus or off the campus. Accessing bibliographic databases and conducting the specific searches on various topics, accessing library OPACs, personalised services such as SDI, CASs can be provided at minimal cost and effort. Various kinds of reference services can be generated and provided to the patrons by using integrated library software.

Other library information service includes Interlibrary Loan, Document Delivery Service, Web Access, Digital Reference Services. Through the ILMS and modern technology, these services can be provided more efficiently and accurately. Evaluation has to be done periodically in order to assess the cost
effectiveness of these services. Here is a model which is displaying all the library information services using ILMS (see vide Figure-7).

6.4. Implementation and Management Issues

The most complex process of all is implementation. Strategic vision provides the framework or context for the next step in the automation process, which is to determine which library functions should be automated and in what order of priority. Determining the functions that a library wishes to automate and their priorities relative to each other is important for all sorts of reasons. If needs and priorities are clear, functions can be automated in phases, allowing for more effective use of frequently scarce funding.

6.4.1 Turning Service Priorities into System Specifications

Library needs to re-formulate functional priorities into "functional specifications," which may be defined as what an automated system can do to enhance the existing operations and services, including things that are performing manually as well as through automated systems. Technical specifications include standards that must be adhered to system performance, operation, and maintenance as well as infrastructure requirements such as stable sources of electricity and telecommunications, and sufficient bandwidth.

Developing clear and accurate functional and technical specifications that are specific to the library is one of the most important activities that it engages in a plan for automated system. These specifications will carry through the entire procurement process, and will ensure that the system which most closely matches them will be the most useful and most responsive to the library needs.
Figure 7: Services by Using Integrated Library Management System
6.4.2 Developing a Formal Specifications Document

It is very difficult to compare systems sensibly and practically exclusively by randomly looking at systems, talking to sales representatives, reading literature or comparing broad cost quotations. For this reason, libraries use a formal document often known as a Request for Proposal (RFP) that organizes and standardizes the information provided to and requested by the various system vendors.

Utilising an RFP to solicit written responses from vendors makes it possible for libraries to systematically compare functionality, cost, maintenance, support, and all the other issues that are involved in system procurements. The process can save money and will result in a wiser decision.

6.4.3 Selection

Major changes in the procurement of an ILMS include the shift of focus from detailed micro-functionality of ordering, cataloguing and circulation towards the customer service aspects and customer empowerment features of the system. Along with this shift in focus there is a redefinition of what the “core” features include. The proliferation of third-party interoperable products has assisted in this redefinition by giving the libraries options for managing various business processes.

There are many vendors of integrated systems. While it is possible to identify market leaders among the vendors, it is not possible to say which of the available systems is best. Such a determination would have to be based on a thorough understanding of the library for which the system was intended and of that library's needs and resources. Still, the number of systems which a vendor
has installed, is one measure of success and quality. Other measures include the level of customer support provided and customer satisfaction.

6.4.4 Cost

Cost is one of the first considerations of most library system purchasers. Costs include not only the initial purchase price, but also license fees, system maintenance and up-keep, database manager training, user training, upgrade fees, physical facilities, database conversion and storage, information delivery, staff training, documentation, and users' groups and conference fees. A vendor contract should outline all system installation, licensing, conversion and maintenance costs. Clearly outlined responsibility for each cost item in a contract insures that costs will not be underestimated or run over budget. A careful research into vendor's prices and judicious contract negotiation produces advantageous purchase prices.

6.4.5 Consortium Approach

This refers to any local, state-wide or regional co-operative association of libraries and/or allied organizations, e.g. university libraries. Acquiring an ILMS through a consortium potentially saves libraries money, compared with the alternative of each library supporting an individual installation. There are also savings through shared systems support, cooperative cataloguing opportunities, and other areas. These need to be balanced against the reliance on an external consortium for hardware and support, reliance on external infrastructure for data traffic, requirement to fit in with consortium priorities, limited customisation and potentially limited flexibility.
6.4.6 Implementation

After the system selection process is complete, there are several important steps which must be completed. The Library and vendor will have to negotiate and sign a contract. Library may want to test the system and make sure that it suits the needs of the library and make provisions for system maintenance. Finally, the library wants to train both the staff and users as much as possible to prepare them for the new venture in the world of information when the system is up and running.

Planning for the migration from the existing system to the implementation of a new system can be phased, parallel, pilot or complete change over approaches, depending on the size and complexity of the new systems.

Maintenance of the infrastructure facilities like computers, peripherals needs to be given due importance while planning for implementation. Some provision should be made to see that all these machines are kept in working condition at all times.

6.4.7 Training

Training the library personnel and providing facilities for hands on experience in using computers are important aspects to be given serious consideration. Continuous training on emerging technologies is necessary to develop, maintain and improve skills, knowledge and competencies. An intensive need-based practical oriented training should be imparted to library personnel to install confidence in them so as to enable them to handle and manipulate new technologies. Training may add to the cost of an ILS, but lack of sufficient training is a more costly road to project delay and failure.
6.4.8 Importance of Assessment

Having used for a considerable period of time after implementation, evaluation needs to be carried out to assess the extent to which the new technology meets the goals and objectives set for it. The evaluation should include assessment of hardware, software utilisation, staff and users' perceptions about the new system and services and fulfillment of the library's needs and objectives. The staffs and users suggestion will be used as an input for future improvements.

Computer and information technology together represent a fundamental change in the way libraries function, libraries must make an ongoing commitment to keep pace with change. Therefore, like automated systems, plans must also change with time. Periodic evaluation of automated systems should be carried out. Plans must be regularly revisited and updated as the environment and needs change.

6.5 Conclusion

The library management system provides the essential infrastructure which enables the modern academic library to deliver its services. At present many good software packages are available for library automation in India. Preferably library software which follows international standards should be procured in the libraries only. However, libraries should be prepared to meet the new challenges. They shall have adequate understanding about the hardware and software options available. Individual efforts have to be replaced by coordinated and collective national/regional efforts. All libraries should use standard software packages for automation, for in turn it will help in resource sharing between groups of libraries.
During the next few years and beyond, libraries will operate in an increasingly interconnected world. Librarians will be compelled to find ways to put materials from the emerging global library into the hands of their clients and be ready to quickly supply materials, regardless of format, from their own collections to both local and remote users. Libraries will have a global customer base, requiring movement from a model for "just in case" acquisition of materials to a model for "just in time" delivery of information and materials with an emphasis on customized provision of information.
References


