
PLAN AND MANAGEMENT FOR LIBRARY AUTOMATION AND USE OF NEW INFORMATION TECHNOLOGY IN SPECIAL LIBRARIES

Hemant Kumar Sahu

N. Nageswaran

Dr. S. N. Singh

Abstract

In India, there are many special and R & D libraries where library automation and use of new information technology are in planning stage. Librarian and library managers are making effort to automate their libraries. Authors of this paper try to accommodate each and everything, which required for successful library automation. This plan describes the basic elements of managing the automation planning process in primarily special and R & D libraries. This write-up provides a detailed overview of a planning process designed to help to make decisions about library automation. Practical suggestions are offered on how library manager can effectively organize the process of library automation.

Keywords : Library Automation, IT in Special Library.

1. INTRODUCTION

Planning for library automation has been defined as planning for “integrated Library management systems” that computerize an array of traditional library functions using a common database. As physical, spatial and temporal barriers to acquiring information continue to crumble, libraries must plan for a broader and more comprehensive approach to providing automated services.

Currently, libraries find themselves confronted with a second computerization wave. The first wave took place during the seventies and turned manual back-room activities, such as acquiring, distribution and cataloguing, into computer-controlled activities. Essential in the computerization wave of the 90s is the deployment of computer networks: campus-wide networks at universities as well as national and international networks. These networks provide access to remote electronic information by means of library information systems. Furthermore, available electronic information is no longer limited to so-called secondary information (catalogues, bibliographic databases). Also primary information has now become electronically available. Presently, we can refer to the electronic full-text versions of scientific journals. Electronic textbooks and readers enable us to consult information outside the library, i.e. at the professional and private work site of the library’s traditional customer.

We must realize that all traditional library activities are being affected by this innovation: the character of all library tasks is about to change as a consequence of technological developments. Within this context, we can observe a number of trends. One very important trend is the fact that the physical collection is becoming less important. Of course, in the humanities books will keep playing an important role in the next decades, but the number of electronic sources will gradually increase. The library is shifting its focus from concentrating on supply towards centering on what is asked for by its customers. In correspondence with this trend, information reference is becoming more and more significant. The library acquires a gateway function, referring to information, irrespective of the location where it has been physically stored. Growing emphasis will be put on navigation. By and large, users will prefer to find their own way across the large amount of available information. To an increasing extent, service will be provided from a distance: the users will choose to consult their sources sitting at their own desk, at their own computer. This, in turn, implies that the library needs to increase the accessible electronic collection, which is accomplished by disclosing sources elsewhere, but also by electronically providing material that has already been

available on paper. Of course, this development entails new problems related to the storage of electronic information.

2. IMPORTANCE OF LIBRARY FOR ORGANIZATION/R & D CENTERS IN IT ERA

Special library have been in existence from the beginning of this centuries, whereas information centre engaged from the fifties and have now developed into major group of information institutions. Although special libraries and information centers has over lapping functional characteristics. Special libraries disseminate information and matter acquired by them answers, research questions, and direct users needs details on research information to appropriate some and handle toward periodicals to keep their user informed current development in this field. Parent organization special libraries after serves a widely distributed group of users who only link being the common subject interest. The concepts of special libraries have been change in all aspects and librarians are known as cyberians.

3. NEED OF LIBRARY AUTOMATION IN SPECIAL LIBRARIES

In the changing scenario of information storage and retrieval, we have no option but to automate our information and library systems due to various reasons. Consequently, there is urgent need to reply following questions before /and after automation planning.

Questions you might ask are basic but important :

1. What are the information needs of the organization ?
2. Who will access the database?
3. What will the content be?
4. What is our computing environment or can it be changed?
5. Who will maintain the data?
6. Who will determine the process and procedural controls and standards?

We have to discuss the said questions with library staff, library committee and with users for better planning for library automation and use of new information technology in library.

4. STEPS FOR PERFECT LIBRARY AUTOMATION

4.1 Redefining and Planning for Library Automation

Library automation is a very complete process and needs exhaustive planning looking to the present and future needs of the users. This includes hardware, software, moony manpower, materials and mechanics (4M's), obsoleseness, updating, adoptability and very fast changing IT environment.

4.2 Selection of hardware & others required equipment

System Purchase: Purchase of the System if not available latest configuration of hardware and software, as well as the cost of preparing a site for the computer system. As having following latest configuration as follow :

Processor : Intel Pentium 4 processors up to 530J with Hyper threading (3.0GHz)

Operating system: Windows XP Professional

Memory speed: DDR2 PC2-4200 SDRAM

Memory expansion: Four DIMM slots for expansion to 3GB memory

Graphics: Integrated Intel Graphics Media Accelerator 900

Hard Disk Drive(s): Up to 200GB 7200rpm Serial ATA]

- Networking of Computers (LAN) in library: Think and complete the library networking if not already available etc. as Telecommunications dedicate at least one standard (analog) phone line that the vendor can use to dial up to your system. Internet accessibility is become more common for vendor troubleshooting, but you may still need that extra phone line.
- Retrospective data conversion costs are those associated with the creation of machine-readable bibliographic and, for circulation systems, patron records.
- Site Preparation—updating power supply, updating electrical wiring, cable for networking, furniture, remodeling that may need to be done, adequate HVAC system
- Conversion Costs—This includes the costs of converting the catalog and patron records. However, also consider the cost of staff time dedicated to the project. Bar-coding costs also fall into this category.

Operating Costs—This category is often forgotten in automating a library. Typical costs in this category include on-going utility and telecommunications costs, software license renewals, software updates, system maintenance fees, and miscellaneous supplies

4.3 Selection of library software & others required software

Following criteria might help the librarians to select the right software for other housekeeping operations:

- Who are the developers, whether an institution, or reputed company or few individuals. The preference is for institution and second preference is for the reputed company. One has to be skeptical about the software developed by individuals as there will be no continuity
- How many times the software has been revised since the time of its first launch.
- How many parameters are available for each module? More the parameters better will be the flexibility and needs no or minimum customization.
- Whether the software has facility to import bibliographic data available in MARC 21 format and similarly export of data in this format
- Training and guidance after installation
- Whether available on major operating systems.
- Whether it is web interfaceable
- Whether it can be interfaced with the e-mail system of the campus network.
- How many installations it has got in the country, since when and major clients.
- Whether it can offer OPAC and different rights to different logins
- Database architecture, Database migration, maintenance, database security, etc,

4.4 The following are latest trends to be considered library automation software

Integrated library Management system : An automation system in which the various applications share one bibliographic database. Each system comes with a set of core modules as well as additional modules, which can be added on, if necessary (or affordable). The system should not only

Core modules as : Circulation, cataloguing and online public access catalogue are necessary minimums. Additional modules often cost extra and are therefore not always used by as many of the system's clients which can lead to less responsive development. Additional modules include acquisitions, community information, course reserves, imaging, inter-library loan (ILL), materials booking and serials. Acquisitions and serials are sometimes part of the same module and are often part of the core package, content management, e-learning etc.

Client-server architecture : Turnkey systems are quickly becoming a thing of the past. A client/server system is identified by a more powerful server machine that handles database manipulation and retrieval while leaving the user interface to the desktop client software. This shares the computational load between the client and server machines and gives the user a better experience through a faster interface.

Z39.50 : This is a protocol for computer-to-computer information retrieval. It allows users to access dissimilar library catalogues from the host institution's catalogue while using a familiar interface. Both a Z39.50 client and server are needed if you want to visit others and have others visit your catalogue. A Z39.50 client allows access to others' catalogues. A Z39.50 server allows others to access your catalogue. Ideally access works both ways.

GUI interface for all modules : Graphical and menu-driven interfaces have or are replacing command-driven interfaces in systems.

MARC 21 and non-MARC compliance : First, library systems developed to use MARC records. Now systems must allow for cataloguing formats, such as Internet resources, for which no MARC formats yet exist alongside MARC records.

Web-based patron catalogue : Patron access is greatly increased when catalogues can be accessed remotely via the World Wide Web. Better systems contain password-protection to allow patrons to access portions of their own records remotely.

UNICODE : This protocol expands the character set allowed and is essential for collections with materials in non-Roman languages. UNICODE encodes 65,000 different characters compared to the extended ASCII character set of 256 characters. Not all vendors have fully implemented this yet, but most are working on it.

RFID (Radio Frequency Identification Technology) : RFID is the latest technology to be used in library theft detection systems. Unlike EM (Electro-Mechanical) and RF (Radio Frequency) systems, which have been used in libraries for decades, RFID-based systems move beyond security to become tracking systems that combine security with more efficient tracking of materials throughout the library, including easier and faster charge and discharge, inventorying, and materials handling? Following are the advantages of RFID systems i.e. Rapid charging/discharging, Simplified patron self-charging/discharging, high reliability, High-speed inventorying, automated materials handling, long tag life, etc.

Accordingly, today's integrated system must not only provide access to the traditional cataloging, circulation, public catalog (OPAC) and acquisitions modules, but must be capable of connecting through the local system into the systems of other vendors, remote bibliographic databases, CD-ROM drives on a local area network (LAN), and the Internet. Users are expecting that their library systems be capable of, among other things:

- providing seamless integration between online gateway and OPAC modules;
- providing access for external users on the Internet to the library's OPAC;

-
- Monitoring the usage of remote databases that have been accessed through the gateway; and,
 - accessing the Internet using a variety of online database

Essentially, what this means is that libraries must plan to use a library automation management system as a gateway for achieving access to resources outside campus. Stimulated by the Internet, which has created universal connectivity to information resources heretofore public/society/respected community and by Z39.50 interoperability standards and “gateways,” users of individual are expecting to access the resources of other systems— anywhere and anytime. Moreover, the traditional definition of “publishing” has been stretched by the creation and CDROMS, E-books, online databases, informational home pages and Web sites worldwide.

4.5 Finance matter

Finance is an important aspect of any planning and automation is no exception to it, these are: Hardware, Software, Training, Staff, Networking (LAN, WAN, MAN & Internet). Speaking of funding, planners need to be aware that there are certain cost elements involved in the installation and operation of any automated system. These may be summarized as follows: Planning and consulting costs include direct, out-of-pocket costs (e.g., hiring a consultant) and indirect costs (e.g., training staff) associated with getting started, etc.

4.6 Developing a Library “Profile”

One of the most important planning tools involves collecting basic statistical information on the library collection, library in-house activities, user services, users’ education etc.

The following are examples of commonly needed data of:

- 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;
- Description of any cooperative arrangements involving the library; and,
- Library in-house activities and hours of operation.

In addition, 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 category (e.g. monographs audiovisuals);
- Description of currently-automated library functions (if any);
- Estimates of the location and number of workstations (to show where you intend to have equipment in any future system); and,
- Specifications for any existing equipment to be re-used with any future system (if any).

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

4.7 Developing a Strategic Plan

A library planning to automate 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 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 ahead.

Here are the basic steps involved in this process:

- Ask participants to identify strengths, weaknesses, opportunities and threats in the library's environment
- Group these factors into critical issue areas that are likely to have an impact on the libraries' future in developing and sustaining automation.
- Ask participants to explore their ideas and perceptions in relation to the question: "How do you see the library providing user-friendly, cost-effective automated services as Current Awareness Services (CAS), Selective Dissemination of Information (SDI), online database, online journals etc.
- Through a method of your own devising, ask participants to prioritize all of the ideas that come out of the above two "brainstorming" exercises.
- Ask participants to shape these priorities into the draft of a strategic "vision" for automation development consisting of a statement of purpose, goals and objectives for the library.

4.8 Setting Service Priorities

Your strategic vision must now provide 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. For example, processes that are repetitive, occupy large amounts of staff time, require retrieving information from large, unwieldy files, or are high-profile functions of the library (such as the public catalog) are prime candidates for automation.

4.9 Developing a formal specifications document:

It is very difficult to compare systems sensibly and pragmatically solely 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," or RFP — that organizes and standardizes the information provided to and requested from the various system vendors.

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

4.10 An "Request For Proposal" document :

The following points should include these essential elements, among others:

- Library Background Information
- Libraries Service Plan, Mission Statement, Technology Plan, other supporting information (Create appendix for attachments)

-
- Technical Inventory-Inventory of your existing hardware/software, and infrastructure:
 - Size of your collection
 - number of terminals
 - number of patrons
 - Network operating system
 - number of servers
 - Type of wiring
 - Existing database that may need to be migrated into the new system—People soft, access database, etc.
 - Specifications-Detailed listing of requirements the system should provide.
 - Module Requirements : Circulation, Bibliographic Maintenance, Acquisitions, Serials, General System, and Report Generator, etc. (See Automation Features section for further details on individual modules
 - System Technical Requirements
 - Network, System Design, Database Management System, Data conversion requirements, Hardware requirements
 - System Performance and Testing Requirements
- 4.11 Be ready for the following upon the receipt of vender proposals against our floated RFP.**
- A description of how the proposals should be arranged and submitted;
 - Instructions on receiving vendor business and financial information;
 - Criteria the library will use to evaluate vendor proposals;
 - Questions regarding vendor training and documentation;
 - Your functional and technical specifications;
 - Also, vendors should be asked to describe:
 - How they will create bibliographic, item and borrower databases;
 - Their system maintenance programs and services;
 - Their site preparation requirements;
 - Their delivery and installation methodologies;
 - Their system performance guarantees; and
 - Their pricing and cost strategies, in detail.

4.12 Criteria for vendor(for Hardware & Software) selection

Upon the receipt of vendor proposals, it will be time to begin the process of system evaluation and selection. This process involves a number of key steps:

- If possible, form a project team of persons to assist with the evaluations and the selection who have some knowledge of automation or who work in the area(s) being automated. People involved in the strategic planning process would be a good choice.
- Try to weed out proposals that are “fatally flawed,” e.g., where the vendor fails to reply to any of the functional specifications or the system is missing a module for a high-priority function.
- Begin in-depth reading of the “surviving” proposals, carefully noting both deviations from the requirements as defined by the RFP and any aspect that is handled unusually well. Make a list of any parts of the response that are not clear and require further clarification.
- Schedule system demonstrations. They are an important component of the evaluation process. Allow the vendors to show off the vendor’s system in the most attractive light; however, be prepared with a list of what you want to see along with questions you would like answered. Use the same list with each vendor. This permits more effective cross-comparisons.
- Consider using computerized spreadsheet software in order to compare and evaluate vendor cost proposals. Costs may not be what they seem at first glance.
- Contact some of each vendor’s current clients— sites of the same library type, and of similar size, where the hardware and software modules that have been proposed to you are currently in use.
- Assign point values to the criteria listed in the RFP and assign scores to the different proposals. The system with the highest score becomes the number one finalist, the system with the second highest score number two and so on. To maintain a negotiating edge, it is better to cut to two vendors rather than one. If that is impossible, maintain the illusion anyway. Remember: The selection process is not over until the contract is signed. Until that point, never let any vendors know that they have been eliminated, including those with fatal flaws.
- Compare studies: Do compare study of all received proposal from venders with theirs features etc.

4.13 Putting your system into place

After the system selection process is complete, there are several important steps which must occur. You and your vendor will have to negotiate and sign a contract. You will want to test the system and make sure it suits your needs. You will want to make provisions for system maintenance. Finally, you will want to train both your staff and your users as much as possible to prepare them for when the system is up and running.

With regard to training, the following must be considered: In thinking of automation planning, there is often a tendency to focus on the hardware and software aspects of planning, and to ignore the human aspects of automation— training and public relations. Without these, however, even the most carefully designed system may not be accepted by library staff or library users.

To assure the success of your hard planning work, training and public relations plan should be part of any automation project. Fortunately, training can begin long before the system is installed. By involving staff at all levels in the analysis of operations, the identification of needs, the setting of priorities, the development of specifications, and the evaluation of systems, staff will gain much of the knowledge they need as the planning progresses.

User acceptance and enthusiasm for your new automated system is certainly an important ingredient in a successful planning effort. If you are implementing a public access catalog, it is probably the most important measure of success.

Public relations can allow you to accomplish three things:

- Make users aware of your new system and services;
- Motivate them to use the system; and,
- Train them in using the new system and services effectively.

4.13 About the database

In the rush to acquire hardware and software, librarians often forget that their most valuable product is the library's database. The creation of a high-quality machine-readable database provides the cornerstone upon which all present and future automation efforts rest. Vendors will come and go, hardware will become obsolete, software will be replaced, but a well-constructed, well-maintained database, with its accompanying local holdings, will be the library's transportable and viable link from system to system. Moreover, as library users begin to access not only their local system but systems in other libraries as well, the quality of respective databases will influence both the outcome of search strategies and the availability of materials.

Database readiness has several important facets:

- Catalog records must be carefully converted from manual to machine-readable formats;
- Collections must be prepared for conversion through effective and ongoing weeding and inventory programs;
- Once converted, collections must be properly maintained as titles are added, withdrawn, transferred and re cataloged; and,
- Standards — for bibliographic, item and patron records as well — must be adhered to. In particular, adherence to well-established and accepted standards of description for bibliographic information in a machine-readable database is critical because
- Without standards, files cannot easily be transferred from one automated system to another, and,
- It is essential for libraries wishing to participate in resource sharing arrangements with other libraries, which will require such adherence as a condition of participation.

4.14 Results of your good planning

- Confidence that you have selected the best possible system available, given technological and financial constraints;
- Confidence that you have addressed the priority needs of your library;
- Confidence that you have established a firm basis of understanding and a methodology (the planning process) for future planning;
- Confidence that automation activities are being implemented as part of a clearly articulated, overall plan for the development of library services; and,
- Confidence that you have the ability to respond quickly and effectively to unexpected opportunities and challenges, with a clear understanding of how these unexpected developments may be used to support the library's long range goals.

4.15 Feasibility study of your plan

Immediately after the analysis and design for the system has been completed, a feasibility study must be conducted. The aim of a feasibility study is to determine if the project is achievable, if the benefits outweigh the disadvantages and to examine alternative solutions. It is designed to answer these questions: Is the proposed system realistic? Is it necessary? What other options is available? Is it affordable? The final output of a feasibility study is a report to be presented to the management

5. Conclusion

Understanding and planning for the life cycle of automated systems. Computer technology and software applications are changing and evolving at an incredibly rapid pace. At current rates of development, you can expect that by the time you install your carefully planned system, capabilities will be available that were only in planning while you were evaluating vendor proposals. In general, a life cycle of five years is considered to be acceptable for a computer system before some significant upgrade (installation of additional hardware and/or software providing for increased capability or capacity) or replacement will be necessary. Because computer and information technology represent a fundamental change in the way libraries do business, 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 revisited and updated as the environment and needs change. In general, a library should conduct a major reexamination of its plan every five years, and should review its plan on an annual basis.

6. REFERENCE

1. Bas Savenije ; The future of the library: The crucial importance of accessibility. (<http://www.library.uu.nl/staff/savenije/publicaties/florence.htm>)
2. Cohn, John & Kelsey, Ann L. ; Planning For Automation And Use Of New Technology In Libraries (<http://web.simmons.edu/~chen/nit/NIT'96/96-065-Cohn.html>)
3. Competencies for Special Librarians of the 21st Century ; Submitted to the SLA Board of Directors by the Special Committee on Competencies for Special Librarians Joanne Marshall, Chair; Bill Fisher; Lynda Moulton; and Roberta Piccoli ; Full Report, May 1996 Revised, June 2003
4. Lindquist, Mats G, RFID in libraries - introduction to the issues, Proceedings of IFLA conference, August, 2003
5. Manjunath, G.K, Library automation: Why and how? (<http://www.igidr.ac.in/lib/paper1.htm>)
6. Moulton, Lynda ; Leading the Library Automation Project <http://www.ilsr.com/leading.htm>
7. Nelson, R. ; Basics of Library Automation (<http://www.cde.state.co.us/cdelib/technology/atauto.htm>)

About Authors



Dr. Hemant Kumar Sahu, holds B Sc, M L I Sc and doing PhD from University of Pune. He is working as Scientific/Technical Assistant –III at Inter-University Centre for Astronomy and Astrophysics, Pune, since April 1997, before joining IUCAA, Pune, He has taken training in Centre for Advanced Technology, Indore. He has to his credit about 8-10 articles that are published in international and national conference / seminar proceedings.

E-mail : hksahu@iucaa.ernet.in



Mr. N. Nageswaran, holds B Sc, M L I Sc, M. Sc. (Botany), M. Phil in library Science, and Pursuing PGDBI (Bioinformatics). He is working as Scientific/ Technical Assistant –II at Inter-University Centre for Astronomy and Astrophysics, Pune, since April 2005, before joining IUCAA, He had worked in Bhopal University.

E-mail : nagesh@iucaa.ernet.in



Dr. S. N. Singh holds B.Sc.(Hons), M.Lib.Sc., BHU Varanasi; M.A. & Ph.D. in Library Science from Rajasthan University Jaipur, Presently, He is working as Head, Information Centre & Library, National Institute of Virology (ICMR), Pune. He has to his credit about 88 articles that are published in international and national conference/seminar proceedings, edited books etc. He has membership of seven National/International Bodies. He has also editorial member of Journal/ Bulletin. He has to his credit around 10-12 awards, prizes and scholarship. He has honored as Chair Person & Rapporteur in many National/International workshop and seminars. He has reputed Ph.D. guide with University of Pune & Project guide: Symbiosis Institute of Computer Studies & Research Pune- (PhD- Eight enrolled Project completed-4 students.

E-mail : nivicl@pn3.wnl.net.in)