

## Planning for Library Automation: Academic Libraries

### INTRODUCTION

Library Automation refers to the use of computers to serve the needs of library users. The operations of a library get a quantum jump with the introductions of computers. The computers help to provide fast and reliable access to the resources available in the library as well as elsewhere. The application of computers in the library operations avoids repetitive jobs and saves lot of labour, time, speeds up operations, increases use of library resources. Computers are not only used as a tool for processing the data, but also for data storage and accessing.

Planning for an automated system, no matter how big or small, should be part of an overall long-range plan for the library. Automation should always be used as a means to achieve overall better patron service. Careful planning for technology will assure that your automation project is "sustainable", i.e. enhances the organization's ability to meet its service mission without disrupting the organizational stability of the institution.

The present scenario of library worldwide is

- ? vastly expanded storage of indexes, statistical data bases, and document databases within the library;
- ? full-text storage of documents, complete with full-text keyword searching and on-demand printing;
- ? access by users to library databases from home or office, with direct downloading of information and text on demand;
- ? the ability to access remote databases across the country and the world, and to download information and text on demand;
- ? storage of pictorial and graphic material; and,
- ? availability of "intelligent systems" providing transparent, one-step searching and access to various library in-house and remote databases.

These capabilities and far more have become reality. 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 system 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 graphical interfaces.

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Essentially, what this means is that libraries must plan to use a local library system as a vehicle for achieving access to resources outside that system. Stimulated by the Internet, which has created universal connectivity to information resources heretofore unknown and/or inaccessible, and by Z39.50 interoperability standards and "gateways," users of individual local systems 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 instant availability of informational home pages and Web sites worldwide.

Given such increased complexities and heightened levels of expectation, libraries must learn all the more how to plan for the introduction of automation in an organized and systematic fashion. There is little mystery involved here: It is entirely a matter of building upon what you already know about your library, using tools that are readily at hand and, most importantly of all, involving the people -- staff and users -- who must live with the consequences of any automation decisions.

## **WHAT IS LIBRARY AUTOMATION**

Traditional library work consisting of acquisitions, technical processing, serials control, circulation and reference services all entail time consuming manual work. Though these activities are essential to proper functioning of a library, they consume professional staff time that might otherwise go towards user services and library development. Library computerization is now gaining importance necessitating the establishment of profession-wide standards. Comprehensive studies of library computer systems world over include discussions of machine-managed acquisitions, cataloguing, serials control, circulation and bibliographic service modules. The literature in this area highlights major aspects of computer's role in the library environment. Similar to several aspects of library management, the demand for more and faster information services and the decline in library resources are compelling librarians to appreciate the role of computers within their operations. In general, librarians are looking to maximize the benefits of automation by spreading computer use to as many aspects of library activities as possible by taking advantage of developments in computer hardware and software and telecommunications.

## **NEED FOR LIBRARY AUTOMATION**

Even though this question seems to be very fundamental it is essential to emphasize this aspect, as the library automation is yet to take off in majority of the Indian libraries. Secondly, while justifying need for library automation more than cost-effectiveness the benefits derived by the library users become the major consideration. To appreciate the advantages it becomes necessary to highlight the different levels of library automation.

Following are considered as important factors for Library Automation

- Ø Information explosion
- Ø Increase in the collection of libraries
- Ø Inability of users to explore the unlimited literature and information of their interest
- Ø Advances in the computer and communication technology
- Ø Wastage of user / staff time in locating the information
- Ø Provide wide access to resources within the libraries and elsewhere

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- Ø Better access
  - Ø Quality in service
  - Ø Cooperative efforts (Resource Sharing)

Out of all libraries an academic library has a difficult task of defining its mission and operating objectives. The automation programme will have to manage a wide range of literature associated with numerous departments and educational programmes of the academic institution. Furthermore, in an academic library the collections will be diverse unlike a special research library where the collection is relatively homogeneous. The user group will also range widely, including faculty, staff, students, scholars, administrators and the general public. The position of an academic library funded largely by the government further complicates the process of identifying and prioritizing objectives. As difficult as the task might at first appear, it is nevertheless essential to the process of establishing automated systems of any type. In addition the overall health of one's library operation will benefit from a modicum of intellectual rigor in this area.

### **AREAS OF LIBRARY AUTOMATION**

As a first step in a planning process, it is desirable to formulate a model for computerization listing all itemized and prioritized information systems being maintained on a manual basis by the library. For this exercise it is necessary to break down these procedures into their constituent parts. When further subdividing these activities, each item is to be considered of its functional elements. The systems and subsystems listed below are only indicative and may vary with differing library system environments.

These are:

#### Acquisitions

- selection
- ordering
- claiming/cancellation
- receiving/invoice processing
- extended procurements
- gift tracking
- Fund Control
- Maintains information about all library related funds
- Ability to group funds (nesting)
- Track fund allocations and adjustments
- Fund encumbrance
- Fund expenditure
- Cash Balance
- Free Balance
- Automatic updating of fiscal information through recording of specific transactions
- Track year-to-date expenditures
- Create Purchase Orders

#### Technical Services

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- Books
- Serials
- Special Collections

Cataloguing

- Books
- Serials
- Special Collections

Circulation

- Charge/Renewal
- Discharge
- Loan Periods
- Processing schedules
- Holds
- Messages
- Blocks
- Notices
- Transaction Recording Devices for off-line processing
- Member control
- Inventory Control

Serials Control

- Receipt (check-in)
- Claiming
- Bindery control
- replacements
- monographic serials
- invoice processing

Reference Services

- Desk services

User tools

Bibliographic utilization

Reprography

Inter-library communications

General Administration

Grants Administration

Library Publications

Bindery

Periodical Citation Searching

OPAC

Bibliographic Database

**PLANNING OF LIBRARY AUTOMATION**

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Planning for library automation has been defined as planning for "integrated systems" that computerize an array of traditional library functions using a common database. While this is still generally true, rapid technological change is forcing a reexamination of what it means to "automate the library." As physical, spatial and temporal barriers to acquiring information are crumbling, libraries must plan for a broader and more comprehensive approach to providing automated services.

### **DEVELOPING A LIBRARY "PROFILE":**

One of the most important planning tools involves collecting basic statistical information on the library and its operations. You will find that the same basic data will be needed again and again -- whether for vendors from whom you are requesting cost estimates, or for other libraries with whom you may be seeking to cooperate in implementing automation.

The following are examples of commonly needed data:

- ? 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 address 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."

### **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:

- ? Plan on a two-day, intensive planning effort.

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- ? Ask participants to identify strengths, weaknesses, opportunities and threats in the library's environment (known as "SWOT" factors in strategic planning) that are characteristic of or that confront the library.
  - ? 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 identify ideas and perceptions in relation to the question: "How do you see the library providing user-friendly, cost-effective automated services in five years?"
  - ? 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.

### 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.

Determining the functions that you wish 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. Moreover, it is a way to develop credibility with funding agencies and be able to take advantage of "sudden" funding opportunities. Finally, evaluations of systems and options will be easier and more productive if you are able to match your highest functional priorities against the corresponding modules available in the marketplace.

### A WORD ABOUT COSTS...

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.
- ? **PURCHASE OF THE SYSTEM** includes the cost of acquiring the initial system hardware and software, as well as the cost of preparing a site for the computer system.
- ? **TELECOMMUNICATIONS** costs are those fees paid to telephone companies for connecting remote terminals or workstations to a central computer system.
- ? **CONVERSION** costs are those associated with the creation of machine-readable bibliographic and, for circulation systems, patron, records.
- ? **ON-GOING OPERATING** costs include...
  - ✍ maintenance fees
  - ✍ utility costs
  - ✍ bar code labels
  - ✍ miscellaneous supply costs
  - ✍ telecommunications costs
  - ✍ salaries and benefits (if extra staff are hired)

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- ? ADDITIONS TO THE EXISTING SYSTEM may be required to maintain performance specifications, to accommodate new users, or to allow for additional automated functions.

## **SYSTEM SPECIFICATIONS**

At some point, you will need to re-formulate your functional priorities into "functional specifications," which may be defined as what you want an automated system to do for you, including things that your current manual system cannot do. "Technical specifications" must also be established. These 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 your library is one of the most important, if not THE most important, activity that you will engage in as you plan for your automated system. These specifications will carry you through the entire procurement process, and will ensure that the system which most closely matches them will be the most useful and the most responsive to your needs.

## **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.

An RFP document should include these essential elements, among others:

- ? background information on the library;
- ? 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.

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## **EVALUATING VENDOR PROPOSALS**

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.

## **PUTTING SYSTEMS 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, a 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.



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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.

## **RETROSPECTIVE CONVERSION**

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 recataloged; 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, who will require such adherence as a condition of participation.

## **CONCLUSION**

In an increasingly complex and global information environment, a Automation of library is of vital importance in enabling end users to search through large quantities of information. Effective resource sharing nowadays requires an infrastructure, which permits users to locate materials of interest in both print and electronic format. Access across multiple collections is becoming increasingly critical. A central union catalogue linked to article citation databases, full text resources and local library resources, in combination with a functional user interface and powerful search- and index engine, offer important benefits to users. Predictions based on current trends of course ignore one importance factor. Technological advances are often unpredictable, and frequently the most exciting and the most significant are those which can least be foreseen. When breakthroughs come, therefore it seems reasonable to think that the profession will be ready for them, and eager to put them to effective use.

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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 plans on an annual basis.