Comparative Study of Software available in the Indian Market for Library Automation

DR Patel & Rachna Bhargava

SAC Library, Space Applications Centre
Ahmedabad-380 053

ABSTRACT

This paper aims to highlight the present Indian scenario of library automation and presents a brief overview of some existing software available in the Indian market. It discusses in brief the framework, text retrieval and library management features available with these packages and also the pros and cons of various software and their implications in the library environment. Brief outline of the modules and sub-modules of some prominent library software is also given.

1. INTRODUCTION

In the eighties, software development for libraries gained momentum and many software packages were developed for various in-house activities of the library. As a result of this, recently, a number of software packages for handling library-related activities have been introduced in the Indian market. And now, India is in a position to export the software developed for library automation and networking to other countries.

In spite of the availability of foreign-made software for library automation, most of the software are now being developed in India. It is because of the high cost and non-suitability of these ready-made packages to the specific requirements of libraries. Moreover, indigeneously developed software are configured according to the hardware available in the Indian market and can run in multi-user and networking environment.

Many library network projects viz, the INFLIBNET (Information and Library Network) of the UGC at the national level, and regional library networks like ADINET (Ahmedabad Information Network), BONET (Bombay Network), CALIBNET (Calcutta Library Network), DELNET (Delhi Library Network), MALIBNET (Madras Library Network), Poona Library Network, etc., are in different stages of implementation and will bring significant improvements in the Indian library automation scene.

Computer software for library and information work can be categorised into the following groups :

(a) *Library management functions* : Acquisition, cataloguing, circulation, and serials control.

(b) *Management support functions* : Statistics, MIS, accounting, and Budget control.

(c) *DBMS & information retrieval functions* : Database creation, database searching, generation of SDI, indexes and bibliographies, directory generation, etc.

2. SOFTWARE PACKAGES FOR LIBRARIES

Some of the prominent library automation software are briefly discussed here.

2.1 Archives

This is an integrated software package developed in multi-user Foxbase by Minifax Electronics (Pvt.) Ltd., Bombay. It is a comprehensive package offering acquisition control, serials control, budgetary control, cataloguing, circulation control, information storage and retrieval, SDI, etc. Its 'speed search' facility using Norton Utilities saves time, effort and minimises errors.

2.2 CDS/ISIS

It is a menu-driven library software package, supported by Unesco, which is designed specially for handling non-numerical information. To promote computerisation in Indian libraries, this software was distributed free of cost by NISSAT (National Information System for Science and Technology). Now, the latest 3.07 version of the software with manual is available from many regional information centres of NISSAT at a nominal cost of Rs. 1500.

The package can perform a variety of functions related to information storage and retrieval. Its three main functional components are listed below.

File Maintenance : It includes data preparation, entry of data, modification of existing data, and updation of master and inverted files.

Retrieval : Data retrieval can be performed either with the help of online routines or by batch retrieval routines.

Sorting and Printing : This facility is used for the production of catalogues, indexes, bibliographies and other specified types of output from the databases.

Main advantages of CDS/ISIS software are as follows :

■ Suitable for IBM or compatible microcomputers.

■ Provides powerful search capabilities.

■ Makes efficient use of disk memory space as it does not allocate fixed space for each field in a record.

■ Is a flexible database management system.

■ Allows a record to be linked with another database.

■ Allows the use of more than one data entry worksheets to provide a new data entry sheet.

■ It allows the same set of computer programs (without recompilation) to manipulate various databases which may contain different data elements. This facilitates interchange of information and conforms to ISO-2709 format.

Some disadvantages of CDS/ISIS are listed below :

o A user has to use separate menus to modify or remove data while searching which is a lengthy process.

o The software is not suitable for graphic information (sketches, photographs, prints

and drawings) and does not use windows, mouse, etc.

o There is no facility for viewing different records simultaneously.

o One Field Definition Table (FDT) can be used only for one database , though many databases may have identical record structures.

o Regeneration of serial numbers after sorting the entries is not possible.

o There is no facility to control the right margin in printing, printing of discrete numbers of MFN(s), retrieval of numeric data, etc.

CDS/ISIS is rapidly becoming a useful package for library and information centres and scientific institutions in India. It is almost accepted as an industry standard for information storage and retrieval services and is being used for current awareness and SDI services. The LAN version of CDS/ISIS has just arrived in India. It may prove much helpful in networking applications.

2.3 Defence Library Management System

This software package is developed by Defence Scientific Information and Documentation Centre (DESIDOC), Delhi. Written in COBOL language and supported on UNIX operating system, the software is developed into four modules, i.e. acquisition, circulation, serial, and online catalogue. Variable field and variable record length, ISO 2709 format and standard input format (CCF) are the distinctive features of the software.

2.4 Golden Libra

Golden Libra is a library management software that runs on IBM PC XT compatibles. It keeps track of subscription, and storage and retrieval of books/periodicals. Reports on various matters such as overdue periodicals, list of magazines and books, reports of publishers and members for non-receipt of periodicals and books can be generated.

2.5 Krvger Library Manager

It is a menu-driven and user-friendly software developed by Blitz Audio Visuals, Pune. It is a complete library management package for online information. It runs on PC XT/AT compatibles. It includes facilities for validation of data entry, circulation control, catalogue card printing, information services for books, reports, articles, and periodicals. Preparation of catalogue cards according to AACR II, and searches by author, subject, accession number, etc. are possible. Circulation control allows printing of list of books pending with members.

2.6 LIBMAN

Datapro Consultancy Services, Pune has developed a library management software package called LIBMAN. Creation of Databases of books, members, issue and return, inter-library loan, generation of overdue lists, computation of fines, etc. are possible with this software. It allows printing of reports such as accession number register, list by author, title, call number, etc. Generation of lists of new additions, subject bibliographies, books withdrawn, stock verification; compilaion of statistical data on circulation, query search by title, author, call number, subject, and Boolean combinations, etc. are also possible.

2.7 LIBRA

LIBRA is a multi-user, multilingual, user-friendly package available from Ivy Systems Ltd., New Delhi. It facilitates acquisition control, circulation control, cataloguing, and online retrieval. It also offers data security and data privacy and

can be linked with Dialog and similar services.

2.8 LIBRARIAN

It is a library management software developed by a team of computer professionals in consultation with experienced library personnel. This menu-driven user-friendly software operates in single user mode. Multi-user version is also available under Xenix and Novell Netware environment. It provides facility for cataloguing, circulation, serial control, acquisition, budget, and bibliographic service.

2.9 LIBRIS

LIBRIS is a comprehensive, user-friendly and menu-driven library management system developed by Frontier Information Technologies Pvt. Ltd., Secunderabad. The system covers all the functional aspects of library activities viz., acquisition, cataloguing, circulation, periodicals, newspapers, enquiries and library administration.

Some advantages of LIBRIS are as follows :

■ Easy to understand messages and help menus guide the user smoothly throughout the package.

■ LIBRIS is a modular package; it can be implemented in phases. Initially, the library can go for the required modules, and then can add more modules to the existing package as the requirement increases.

■ Both single and multi-user environments are supported.

■ Selective Dissemination of Information (SDI) facility on the latest arrivals in the library is provided depending upon the area of interest of various members.

■ Bar code facility for automatic identification of members and documents

loaned is provided. LIBRIS generates the bar code labels at the cataloguing stage itself.

■ Online help is provided in almost all the screens of the package. Online help is also available for a particular field.

■ Uptodate and online information regarding the availability of material to the members and staff of the library is provided.

■ Facilitates generation of catalogue cards in AACR II format.

■ Various statistical reports and notices can be generated for reviewing system performance, to analyse profit and loss, etc.

LIBRIS contains the following modules :

(a) *Acquisition :* This module helps in the acquisition of books through requests and approvals. It also helps in placing orders and maintaining invoices received for the documents. It also generates various reports pertaining to this module.

(b) *Periodicals :* This module helps in the acquisition of periodicals for the library. It helps to add new periodicals, modify the existing ones, etc., and to generate various reports pertaining to this module. It also helps in solving the enquiries made by the members whether an issue is received or not.

(c) *Newspapers :* This module helps in the acquisition of newspapers for the library. It helps to subscribe new newspapers, modify the existing ones, delete the unwanted ones and generate various reports.

(d) *Cataloguing :* This module allows to enter the bibliographic data whenever a document is received by the library. It also updates the information of the existing documents, prints catalogue cards in AACR II format and generates various reports pertaining to this module. This module gives a unique

identification code (for the accession number) to each item of the library, which helps in circulation and handling enquiries about the documents.

(e) *Circulation* : This module allows to circulate the library material among the members. It also allows various tasks like issue, return, renewal, loan, reservation and cancellation of documents; identifying the lost material and enquiries about materials availability, etc. It helps in maintaining records of material lost and due with the members and other libraries.

(f) *Enquiries* : This module provides online enquiries about the availability of material in the library. Boolean search is also possible. Queries can be made on titles, accession number, subject, etc.

(g) *Library Administration* : This module helps the System Administrator to configure the system accordingly to meet the requirements of the library.

2.10 LIBSYS

LIBSYS is an integrated library management system developed by Info-Tek Consultants Pvt. Ltd, New Delhi. It is a multi-user system designed to run on super micro/mini computers under UNIX/XENIX/ VMS environment. It is built around its own bibliographic database following international standard ANSI Z-39 format. It supports variable field lengths for different types of documents in the database. LIBSYS is developed in 'C' language. It has an index generation procedure and therefore, does not require any separate database software. However, if required, LIBSYS can be modified to operate with other software such as ORACLE, UNIFY, INGRES, etc. LIBSYS also supports CD-ROM, networking (LAN & WAN) and multilingual use. It has the following features :

■ Integrated functions

■ Interactive and screen oriented

■ User friendly and menu-driven

■ Minimum possible data entry

■ Powerful data editing facility

■ User defined security at subsystem and function level

■ Database recovery procedure

■ Import and export facility

■ Retrospective conversion

■ 'Help' facility at field level.

LIBSYS supports all the activities related to library in-house functions and user services. The various subsystems are as follows :

(a) *Acquisition* : This subsystem covers initiation of titles for ordering, approval process, placing order, receiving material against firm orders, invoice processing and accessioning, payment requisition, order follow-up, online queries by titles, orders, invoices, vendors, and budget heads, etc. It allows generation of various reports such as approval request form, order form, overdue notices, budget and expenditure analysis, payment requisition report, accession register, bill register, etc.

(b) *Cataloguing* : Cataloguing subsystem makes various catalogues/indexes available online for instant reference. It has a powerful data entry facility which also provides option to accept data in machine-readable formats such as CCF (ISO-2709), MARC (ANSI Z.39), etc. It also provides facilities to generate bibliographies, current awareness services, SDI, and export/import of bibliographic data in standard exchange formats.

(c) *Circulation* : Circulation subsystem supports operations such as issues, returns, renewals, reserves/holds, membership record keeping, collection updates including monitoring of items on display and in

bindery, overdue follow-up and recall facility, inter-library loans, etc.

(d) *Serials* : Serials subsystem supports new subscription, subscription renewal, subscription extension, invoice processing, recording of issues received, claims monitoring which include generating notices for 'not received', overdue, damaged/soiled issues, bindery management, back issues recording, reporting of duplicate issues, missing issues, various classified and specialised indexes/lists, and online queries on various aspects of serials control including holdings.

(e) *OPAC (Online Public Access Catalogue)*: This subsystem provides various catalogues/indexes such as author catalogue, title catalogue, subject/classified catalogue, KWIC/KWOC indexes, keyword-based Boolean searches, SDI facility, online thesaurus and various authority files. The OPAC also provides a periodic list of recent additions to library collection and allows users to find the material issued out to them as well as to put material on reserves, etc.

(f) *Article Indexing* : This subsystem provides facility to create separate database of articles. Apart from addition, modification and deletion of records in the database, it has options to provide different services like SDI, documentation, bibliographies, etc. from the database.

2.11 *MAITRAYEE*

MAITRAYEE is a library computerisation and networking software. It has been developed by CMC Ltd. under CALIBNET (Calcutta Library Network) Project funded by NISSAT. The package aims to provide library computerisation, resource sharing, standardisation, connectivity and modularity.

Main features of the software are as follows:

■ It has been developed on INGRES ver 5.0/6.0 RDBMS, supported by UNIX 3.2 and can be upgraded with new features based on ISO 2709 for internal structure and networking.

■ It uses TCP/IP with X.25 protocol for networking. It can be used as a MARC communication software.

■ It is an open-ended software and its design is such that the enhancement (both in hardware and software) can be adapted quite easily.

■ With little modification, CCF or UNIMARC content designators can be incorporated. So, the communication from one format to the other is possible.

■ SDI is developed by searching article titles against user profile.

■ Several hardware enhancements like incorporating barcode reader, OCR, colour workstations, LAN-WAN gateways, etc. is also possible.

The package consists of the following modules.

(a) *Acquisition* : This module is related to the purchase and procurement of library materials. The processes include accepting requests for item procurement, accepting list of items available with vendors and allowing users to select from them, getting approvals and sanctions from authorities, formation of purchase lists, receiving items against order, maintaining information on publisher and suppliers.

(b) *Cataloguing* : This module is designed to catalogue items entered in the system online or through retrospective/offline data entry. The system is designed to support both AACR2 level 3 access points and selection of content designators of UNIMARC. Catalogue cards can be prepared using full text formatting flexibility and selectable fonts.

(c) *Circulation :* This module includes registration of members, issue, return, reservation and online integration of various details on several entities which result from query service.

(d) *User search services :* Extensive user search services (all available over network) are provided by MAITRAYEE. These include OPAC search, keyword/descriptor search, SDI search, and Boolean search.

(e) *Serials control :* Serials control supports acquisition process, pre-monitoring controls, registration, SDI data population and bindery.

(f) *Central host and networking services :* This module provides very user-friendly, menu-driven screen to perform networking and central host services. These services allow making of queries to any of the remote libraries, transfer documents, messages, replies to queries to any of the networked libraries.

2.12 MINISIS

MINISIS is an ideal package for bibliographic information management and textual database applications. It has been developed by the International Development Research Centre, Canada. MINISIS installation requirements are written in Hewlett Packard's System programming Language (SPL). Therefore MINISIS runs only on HP-3000 mini-computers with minimum 512 KB memory.

It is an online interactive system for information processing, storage and retrieval, and provides facility for online catalogue, circulation control, serials control, report generation, etc. It also provides interfaces to remote online information systems. To facilitate interchange of information with other organisations, MINISIS conforms to ISO

2709. It is also compatible with Unimore format as well as standard databases like AGRIS, DEVSIS, etc.

2.13 SANJAY

A library automation package based on CDS/ISIS (Version 2.3) named *SANJAY*, has been developed by DESIDOC for NISSAT. It is an integrated package that interfaces about 25 Pascal programs with CDS/ISIS. It is more flexible, and user friendly than CDS/ISIS. A number of predefined display formats, print and sort worksheets have been provided for generating different types of reports. The package is capable of interlinking two or more databases for a single application. It is also capable of handling numerical calculations and carrying out some other library housekeeping activities.

For the purpose of data security and to provide selective access, the whole system has been divided into two modules :

(a) *Maintenance Module :* Entry to this module is controlled through a password and its access is restricted to a set of users who are authorised by the DBA (Database Administrator). The main functions of this module are entry of new data, modification in the existing data, updation/creation of the inverted files, backup of the databases at regular intervals, checking existing formats, insertion of new formats, etc.

(b) *User Module :* This module provides a number of services to help the library staff to carry out daily routines and to assist the library users. Acquisition module provides facilities like data entry according to indenter's request, decision of the book selection committee or receipt of the publication, updation of 'Vendor/Budget' databases, online query on 'Books' or 'Vendor' databases, and printing of various reports pertaining to this module.

(c) *Circulation Module* : This module provides book issue/return/reservation, online query search on 'Books' database on fields like title, author, publisher, class number, accession number, keywords, etc., and printing of various reports pertaining to this module.

(d) *Online Catalogue Module* : This module provides online query on a number of fields like author, keywords, ISBN, accession number and combination of any of these fields by Boolean operators, online help to the users of the system, and printing of various reports.

2.14 *TRISHNA*

Developed by NISTADS, New Delhi under contract from NISSAT, *TRISHNA*–a version of CDS/ISIS–supports data creation, storage and retrieval in Indian language scripts such as Assamese, Bengali, Gujarati, Hindi, Kannada, Malayalam, Oriya, Punjabi, Tamil, and Telugu. NISSAT provides free software and technical support and training at nominal cost.

2.15 ULYSIS

Wipro Information Technology Ltd., Secunderabad offers a comprehensive library software package called ULYSIS (Universal Library Information System). The package is developed in C language for use on WIPRO PC-AT (Xenix OS), Wipro S-6820 (Unix OS) and WIPRO S-386 (Unix OS) machines.

It is a fully integrated system taking care of acquisitions, serials control, circulation and has a powerful query function software. Acquisition module includes suggestions from readers, pre-order searching, order placement, reminders, vendor evaluation, funds control, payment, accessioning and informing requesters. Circulation module is comprehensive including calculation of fines, circulation statistics, special loans, due date slips, order letter for lost books, etc. Maintenance module covers binding, stock checking and cataloguing. Query module provides three types of queries: (i) precise access point when user knows exactly how an author, title or keyword is entered into the system (ii) right truncated search, and (iii) any term searches.

2.16 WILISYS

WILISYS (WIPRO Integrated Library Information System) is an integrated library automation software package. It aims at mechanising the routine library activities and effective dissemination of information to the library users. It is developed in 'C' language. It uses UNIFY RDBMS for data management. WILISYS also provides different levels of data security for the users and library staff.

WILISYS comprises of two packages, viz. WILIMAX (WIPRO Library Management System) and WILITRAX (Wipro Library Abstracts System).

WILIMAX covers the books and periodicals management part of the library activities. It aims at mechanisation of the in-house activities like request processing, order placement, monitoring the receipts of the documents, accessioning, circulation, maintenance, cataloguing and queries about the various documents. It is divided into five modules namely, Acquisition, Circulation, Maintenance, Search and Query, and Periodicals.

WILITRAX provides an effective means of storing and retrieving abstracts. Main functions of this package are the exchange of information (abstracts) with different sources and databases, retrospective search facility through a WILISYS Query Language (WQL), selective dissemination of information, maintenance of a user profile, report generation, etc.

Main modules of WILITRAX are as follows :

(a) *Data Entry and File Maintenance* : This module enables the user to enter data through the data entry screens; modifications and amendments to the entered data can be done through the file maintenance module.

(b) *Selective Dissemination of Information* : The database of users may contain abstracts pertaining to any specialised field of knowledge. A member profile is maintained in which the details of the members along with their areas of interest are entered. This program can be run periodically to generate reports of the latest abstracts for all the members, based on the member profile.

(c) *Retrospective Search* : Retrospective search of the database is possible through a specially written WILISYS Query Language which enables the user to query on the database in simple English. The output of the query can either be displayed on the screen or printed using print option.

(d) *Reports* : Both routine and detail reports can be generated in a formatted manner. The report outputs can either be displayed on screen, listed on the printer or directed to a file.

(e) *Utilities* : Some general purpose utilities have also been provided to the user for house-keeping tasks. These include backup and cleanup programs.

3. CONCLUSION

Each package provides a number of modules for performing the various activities coming under each of the house-keeping operations. In general, the facilities provided by various packages are cited below in Table 1.

Table 1. A check list of facilities available with some chosen library software packages

Software package	Acquisition	Cataloguing	Circulation	Serial control	OPAC	Online help
CATMAN	N	Y	N	N	N	Y
CDS/ISIS	*	Y	*	*	Y	N
DELMS	Y	Y	Y	Y	Y	Y
GOLDEN LIBRA	Y	Y	-	Y	-	-
LIBRARIAN	Y	Y	Y	Y	Y	Y
LIBRIS	Y	Y	Y	Y	Y	Y
LIBSYS	Y	Y	Y	Y	Y	Y
MAITRAYEE	Y	Y	Y	Y	Y	Y
MECSYS	Y	Y	Y	-	Y	Y
MINISIS	Y	Y	Y	Y	Y	Y
NIRMALIS	Y	Y	Y	Y	Y	Y
SANJAY	Y	Y	Y	-	Y	Y
TULIPS	Y	Y	Y	Y	Y	Y
ULYSIS	Y	Y	Y	Y	Y	Y
WILISYS	Y	Y	Y	Y	Y	Y

* Can be developed using the Pascal interface   - Not available

Advantages of automation are enormous. Many libraries in India have made some progress towards automation. Both the library computerisation and networking have put a few libraries on the international scene. However, many Indian libraries have yet to catch up. Software manufacturers and vendors often claim their products as the best in the market. For selecting and evaluating a software, librarians must observe certain general as well as technical criteria like language compatability, ease of use, supplier details, interface and integration, documentation, training, maintenance, user groups and their report, published reviews, etc. In general, the exercise of developing software continues to be characterised by constant struggle for meeting deadlines, for avoiding cost overruns and for maintaining, often unsuccessfully, an acceptable level of quality. Hence, quality of software remains a challenge for the system technologists.

Looking at the comparison (Table 1), we can say that most of the library software support in-house activities and online search facility in DOS/UNIX environment. A library with budget constraints can opt for CDS/ISIS package; the rest can select other software packages which support integration and networking in multi-user environment.

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