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Evaluation of Library Software Packages Available in India

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Abstract

Some of the important library software packages such as Granthalaya, Libsys, Sanjay, Suchika, Basisplus-Techlibplus, etc., have been evaluated by the authors. Parameters selected for evaluation of software packages include facilities provided in the software packages, hardware requirements, operating system platforms, language of software development, search facilities, etc. The author concludes that for small libraries, Sanjay (ver 2.0) and for big libraries Suchika, Granthalaya, and Libsys are the most suitable software packages.

1. INTRODUCTION

Design and development activity of library software packages in India started in a big way during mid-eighties with the introduction of CDS/ISIS software package of UNESCO in Indian libraries by the National Information System on Science and Technology (NISSAT), New Delhi. NISSAT organised a number of short term training courses on applications of CDS/ISIS on library and information activities to make senior professionals aware of the benefits of computerisation in libraries, to train library staff to make it operational in the libraries and to develop computer culture among the librarians and information scientists. From the experience of use of CDS/ISIS, MINISIS, etc., some of the libraries and information centres developed/got developed their own software, such as DESIDOC developed Defence Library Management System (DELMS) during 1988 in COBOL language under multiuser Unix environment and implemented it at Defence Science Library (DSL) in DESIDOC. Also Catman was developed by the Indian National Scientific Documentation Centre (INSDOC), New Delhi and implemented at National Science Library (NSL) in INSDOC. Sanjay package was developed for small libraries by DESIDOC under NISSAT project to popularise CDS/ISIS and to develop a model automated library by implementing it at Technology Bhawan Library in DST, New Delhi, etc. Now, libraries are fully aware about the needs of computerisation and many software packages are available for their use depending upon the needs. However, selection of a suitable software for library is a problem because of lack of good, and uptodate comparative studies on software packages. Thus, some attempts have been made here to evaluate some of the software packages used in Indian libraries and information centres based on published literature, demonstration in conferences, practical experience, personal discussions, etc. This study may help other libraries in selecting the software for their automation.

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2. LIBRARY SOFTWARE PACKAGES IN INDIAN LIBRARIES

Besides CDS/ISIS, Minisis, etc., a number of library software packages have been designed and developed indigenously[14] and these are being used in various Indian libraries and information centres. Some of the library software packages are given in Table 1.

Since there are many software packages and it may not be possible to discuss all the software packages in detail, only a few selected software packages including recently developed ones are discussed below in brief:

Table 1: Some library software packages and their developing agencies

No.	Software Package	Developing Agency
1.	Archives(1,2,3)	Microfax Electronici Systems, Bombay
2.	Acquas, Ascat, Ascir, Asire, Seras	Ober Information System, Calcutta
3.	Basisplus & Techlibplus	Information Dimention Inc (IDI), USA (Marketed in India by NIC)
4.	Catman	INSDOC, New Delhi
5.	Defence Library Management System	DESIDOC, New Delhi
6.	Golden Libra	Golden Age Software Technologies, Bombay
7.	Granthalaya	INSDOC, New Delhi
8.	Krvger Library Manager	Blitz Audio Visuals, Pune
9.	Libman	Datapro Consultancy Services, Pune
10.	Libra	Ivy System Ltd., New Delhi
11.	Librarian	Soft-Aid, Pune
12.	Library Management	Raychan Sysmatics, Bangalore
13.	Library Manager	System Data Control Pvt Ltd., Bombay
14.	Libris	Frontier Information Technologies Pvt. Ltd., Secunderabad
15.	Lib Soft	ET & T Corpn., New Delhi
16.	Libsys, Micro-Libsys	Libsys Corpn., New Delhi
17.	ListPlus	Computer Systems, Bangalore
18.	Loan Soft	Computek Computer Systems, Hyderabad
19.	Maitrayee	CMC, Calcutta (for the CALIBNET Project)
20.	MECSYS	MECON, Ranchi
21.	NILIS	Asmita Consultants, Bombay
22.	Nirmals	Nirmal Institute of Computer
23.	Salim	Expertise, Tiruchirapalli, Uptron India Ltd., New Delhi
24.	Sanjay	DESIDOC, Delhi (Under a NISSAT Project)
25.	Slim 1.1	Algorythms, Bombay
26.	Suchika	DESIDOC, Delhi.
27.	Trishna	NISTADS, New Delhi. (Under NISSAT Project)
28.	Tulib	Tata Unisys Ltd., Bombay
29.	Ulysis	WIPRO Information Technology Ltd., Secunderabad
30.	Wilisys	Wipro India, Bangalore

2.1 Basisplus and Techlibplus

Basisplus software[9], designed and developed by Information Dimensions, Inc (IDI), USA, is being marketed in India by the National Informatics Centre (NIC), New Delhi. The Basisplus provides facilities for the storage, retrieval and electronic management of documents. It is based on relational technology and supports client-server architecture. The software has the following integrated features:

- ☆ Relational Database Management System (RDBMS)
- ☆ Full text capability with free text searching and thesaurus
- ☆ Object management
- ☆ Converter technology for document interchange
- ☆ Library automation

Techlibplus is built on Basisplus and designed to streamline and facilitate all the day-to-day operations of a fully electronic library. Techlibplus provides patron access, catalogue maintenance, circulation, serials management, acquisition, processing and MARC cataloguing.

2.2 Delsis

Delsis,[10] the networking software, is an integrated modular package developed on Basisplus by DELNET to undertake complex cataloguing and union cataloguing functions in the libraries, library networks and information centres. Some of its special features include:

- ☆ Enquiries through OPAC by author/title/subject/call no./series/keyword, etc.
- ☆ Boolean enquiries
- ☆ Full text search retrieval
- ☆ Display records in AACR II format
- ☆ Data import/export
- ☆ Automatic index generation
- ☆ Input format: Common Communication Format (CCF) developed by UNESCO
- ☆ Duplicate checking of records
- ☆ Creation of bibliographic records in Indian languages for 13 languages (using GIST card)
- ☆ Interface to CDS/ISIS

All DELNET databases and online inter-library loan facility, etc., are functioning on this software presently.

2.3 Granthalaya

It is a complete library automation package designed and developed in Foxpro by the Indian National Scientific Documentation Centre (INSDOC), New Delhi[11]. This package is available in MS-DOS. Salient features of the package are as follows:

- ❑ *Modularity*—The package comprises seven modules (Data administration, query, circulation, acquisition, serials control, technical processing and library administration) designed to handle all functions of a library and information centre. Since the package has different modules, the library can implement complete package or acquire stand-alone module(s) depending upon the needs of library to implement, and remaining modules can be implemented and integrated with the existing module(s) as and when need arises.
- ❑ *Object Oriented Design*—The package has been developed based on object-oriented design which offers qualitatively superior end product.
- ❑ *CCF Compatibility*—The package adopts common communication format (CCF). It incorporates all mandatory fields of CCF which facilitates import/export of data from/to Granthalaya to/from various platforms. Export and import of data to and from ISO-2709 and ASCII format is possible.
- ❑ *Dictionary Concept*—Dictionary facility is provided in the package for data elements like publishers, keywords, accompanying materials, etc.
- ❑ *Powerful Query and Search Facilities*—The package is provided with sophisticated tools for retrieval of information by different search parameters. Search can be conducted by using boolean logic operators. Search terms can be typed or selected through dictionaries.
- ❑ *Ease of use*—The package is easy to learn and use. It provides on screen messages to help users.

INSDOC is marketing and promoting this package for library automation in India. The

package has already been implemented at National Science Library, INSDOC, New Delhi. Its UNIX version has been implemented at the Nuclear Science Centre Library, New Delhi.

2.4 Libsys

Libsys is an integrated library management software package designed and developed by Libsys Corporation, New Delhi[12]. It was initially developed in Cobol language but now converted into C language and covers all the activities of library related to acquisition, circulation, cataloguing, serials control, article indexing and abstracting plus online public access interface. Libsys follows international standards such as CCF, MARC, etc., Libsys has been installed at about 70 libraries in the country. Libsys has the following special features: interactive and screen oriented, menu-driven, powerful editing facility, user-defined security, flexible operations, variable field length, help and multilingual use, etc. The package is available under UNIX, VMS, LAN on PC-ATs and minis. Micro-Libsys, a subset of Libsys can be operated under XENIX and MS-DOS. The package can be made available based on any preferred RDBMS such as ORACLE, INGRES, etc.

2.5 Maitrayee

The package has been developed by CMC, Calcutta for Calcutta Libraries Network (CALIBNET) with the support of NISSAT, New Delhi. The package has been developed on INGRES as the underlying framework and works in UNIX environment. It is the first package which has been developed in India for a library network programme, providing specific network and communication facilities using TCP/IP as the communication software with X.25 protocol in addition to library management functions.

2.6 Sanjay

Sanjay is a library automation software package which has been designed and developed by DESIDOC, Delhi, with the support of NISSAT, by augmenting CDS/ISIS (ver 2.3) to cater to the need of library management. Special features of the package are as follows:

- ☆ User-friendly for library house-keeping operations;
- ☆ Has a set of 70 pascal programs and 25 special menus;
- ☆ Faster response time—1 minute for a query on 12,000 documents;
- ☆ Effective interlinking of database;
- ☆ Modified CDS/ISIS augmented to cover several additional applications.

The package is marketed by NISSAT, New Delhi, at a nominal price. The package has already been implemented at 15 libraries including Technology Bhawan Library and Indian Oil Corporation (R&D) Library, New Delhi.

2.7 Suchika (ver 1.0)

Suchika is an integrated software package for library automation, designed and developed during 1996 by the Defence Scientific Information & Documentation Centre (DESIDOC), Delhi for its Defence Science Library and other libraries/technical information centres (TICs) of Defence Research & Development Organisation (DRDO), scattered all over India. The purpose of developing this software is to automate all the DRDO libraries/TICS, to create and maintain a DRDO libraries holdings' database and help the libraries to follow uniform standard practices. The package has been developed in C++ language in MS-DOS and UNIX versions keeping in view the requirements of big and small libraries of DRDO. The package is menu-driven and user-friendly. The package conforms to international standards like Common Communication Format (CCF), ISO-2709, AACR2 and allows data conversion from CDS/ISIS, etc.

Suchika has powerful search facilities. Search can be conducted on any field by specifying the field(s) or through the various indexes like author, subject, keywords, report no., patent no., etc. Query may be typed or selected by using the concerned index. Boolean search operators can also be used. Suchika also provides facility for free text searching. Search results can be displayed according to desired format, and after selecting the relevant records, printouts can also be taken. Suchika has inbuilt

facility for data validation and data duplication checking. This package has been developed in modular form, such as acquisition, circulation, OPAC, serials control modules. Therefore, its implementation is quite easy. Either all the modules may be implemented at one time, or module-wise implementation can also be made depending upon the needs of library. The package (both DOS and UNIX versions) has been implemented at Defence Science Library and it is under implementation in other DRDO libraries/TICs. DESIDOC, being a Government agency, has decided to offer this software package to non-DRDO libraries also at nominal price to help them in their automation.

3. EVALUATION OF SOFTWARE

Evaluation of library software package is a very complex process. For evaluation of packages, all the packages must be used by the evaluation team under the same conditions but it may not be possible practically due to various factors. CDS/ISIS and MINISIS are not included here for evaluation because these software packages are well known internationally and a lot of literature has already been published on these software packages. Some attempts have been made earlier on the evaluation of library software packages[1,2,4] but after that many software packages have been added and their evaluation is not available. Thus, attempts have been made here to evaluate a few important software packages on the basis of published literature, demonstration of software packages in conferences/exhibitions and practical use, etc. The software packages are evaluated here from the aspects of hardware requirements, operating system platform, language of development, various facilities available related to library activities, search technique, data storage technique, etc. The main purpose of evaluation of software packages is to provide some idea to libraries for selecting a suitable software.

3.1 Hardware and Operating Systems

For implementing software in a library, a suitable hardware is needed according to operating system (OS) of the software. Availability of suitable hardware in Indian libraries is a problem mostly due to non-availability of funds or non-priority to libraries. Thus, a library selects software either according to hardware facility available at the institute or the software which requires less costly hardware. Operating system of software is also selected according to the needs of library, skill of manpower, availability of hardware, etc. Hardware requirements and operating systems for some of the software packages are given in Table 2.

3.2 Programming Language of software

Programming language is also taken into consideration at the time of development or procurement of software because many facilities such as fixed field, variable field length, variable format, search facility, etc. are provided in the software by using suitable programming language. Every language or RDBMS has some special features. Software packages for libraries written in older, higher programming languages, such as Cobol, Fortran, Basic, etc. generally face problems in their maintenance, upgradation, customisation, etc., due to non-availability of suitable manpower, not much interest of young computer scientists in these languages, etc. Thus selection or development of software should be made properly. Table 3 shows some of the software packages and their language of development.

3.3 Search Response Time and Data Storage Techniques

Response time of the search module of a software depends on the following factors:

(a) File organisation, file access
(b) Operating system
(c) Hardware platform
(d) Backend software used
(e) Number of records in the database

Data storage techniques also play a vital role in search response time. It has been experienced that invert file structure is faster than B-tree structure and B-tree structure is faster than RDBMS. Thus software's search

Table 2: Library software packages, their operating systems and minimum hardware requirements

No.	Software Packages	Operating system	Minimum hardware requirements
1.	Basisplus and Techlibplus	UNIX SVR 4.0 or above	1 Basis server Intel 80X86, Pentium RAM 16MB, 150MB Cartridge 2. Basis Client Intel 80386 MS-Window 3.1 RAM 4MB but 8MB preferred HD16MB, 20MB, TCP/IP, PC-NFS
2.	Granthalaya	1. MS DOS 6.0 and above 2. SCO UNIX ver 5.3.2 3. Ingres ver 6.2 or above 4.Oracle ver 6.2 or above	PC-AT 486 RAM 8MB HD 540MB
3.	Krveger Library Manager	MS DOS	PC XT/AT
4.	Librarian	XENIX LAN	PC-AT 386
5.	Libsys	1. MS DOS 6.0 and above 2. SCO XENIX 3. SCO UNIX 4. VMS or ULTRIX 5. NOVEL LAN	PC-AT PC-AT PC-AT 386/486, Motorola 68000/ Intel 386/486 based mini Micro VAX
6.	Maitrayee	UNIX 3.2	PC-AT 386
7.	Sanjay (ver 2.0)	1. MS DOS ver 3.2 or above (developed by augmenting CDS/ISIS (V 2.3)	PC-AT, 1MB RAM and 40MB HD
8.	Suchika	1. MS DOS 6.0 on higher 2. UNIX 3. LAN	PC-AT 486, 8MB RAM 540 MB HD PC-AT 486 or above 8MB RAM 540MB HD
9.	Tulib	UNIX	PC-AT 386
10.	Ulysis	XENIX UNIX	Wipro PC-AT Wipro S-682 & Wipro 5.386
11.	Wilsys	UNIX XENIX	PC-AT 386

response time can be measured only when all the software packages are tested on the same samples under same conditions. Data on search response time of software packages are not available in the literature. However, in case of Sanjay, it has been measured as 1 minute for query on 12000 documents. For quick glance, data storage techniques of some of the software packages are given in Table 3.

Table 3: Some of the library software packages, their programming language/RDBMS and data storage techniques

No.	Software Package	Programming Language	Data Storage Technique
1.	Archives	FOXPRO	Relational database
2.	Basisplus & Techlibplus	Visual Basic	Relational database
3.	DELMS	Cobol	B-tree
4.	Delsis	Visual Basic (developed on Basisplus)	Relational database
5.	Granthalaya	FOXPRO	Relational database
6.	Libman	dBase III	Relational database
7.	Librarian	Clipper & Foxbase	Relational database
8.	Libris	Ingres, C	Relational database
9.	Libsys	C	Inverted file and B-tree
10.	Maitrayee	Ingres	Relational database
11.	Sanjay	CDS/ISIS, PASCAL	Inverted file
12.	Suchika	C++	B-tree
13.	Tulib	Oracle with C	Relational database
14.	Ulysis	C	B-tree
15.	Wilisys	Unify RDBMS and C	Relational database

3.4 Coverage of Library/Information Activities

Superiority of the software packages depends upon their capabilities and versatility. Software providing more facilities to automate different activities in library and information centres may be treated most suitable for libraries as compared to those having limited facilities. Table 4 shows the facilities provided in a few software packages.

3.5 Software Upgradation/ Customers' Support

Software maintenance, its customisation and upgradation depending upon the needs of library are very important. This service may be good in case of software packages like Libsys, LIBRIS, etc. developed and marketed by a private company, for their survival in the market.

However, in case of software packages developed and marketed by Government agencies like DESIDOC, INSDOC, NIC, etc., it may not be possible to pay serious attention on these aspects unless some private companies are involved to maintain the software on some payment basis, but cost-wise, the software packages developed by the Government agencies may be cheaper and procurement of such software may be easier.

4. CONCLUSION

Till now many library software packages have been developed in India as mentioned in Table 1, to cover more and more areas of library automation and information retrieval functions in a single-user, multi-user, and LAN environment. Among these software packages, the recently developed software packages, such as Suchika and Granthalaya are found to be quite user-friendly, versatile and cheaper for library automation, specially in case of big libraries and information centres because they cover almost all the aspects of library automation in an integrated manner.

However, Libsys is also very powerful because it provides facility for articles indexing, abstracting, SDI, etc., also in addition to library automation but it may be costlier than Suchika

Table 4: Facilities provided in the selected library software packages

No.	Software package	Cataloguing	OPAC	Online help	Acquisition	Circulation	Serials control
1.	Archives	Y	N	N	Y	Y	Y
2.	Basisplus and Techlibplus	Y	Y	Y	Y	Y	Y
3.	DELMS	N	Y	N	Y	Y	Y
4.	Delsis	Y	Y	Y	N	N	N
5.	Golden Libra	Y	N	N	Y	N	Y
6.	Granthalaya	Y	Y	Y	Y	Y	Y
7.	Krvger Library Manager	N	N	N	N	Y	N
8.	Libra	Y	Y	Y	Y	Y	N
9.	Librarian	Y	Y	Y	Y	Y	Y
10.	Libris	Y	Y	Y	Y	Y	Y
11.	Libsys	Y	Y	Y	Y	Y	Y
12.	Maitrayee	Y	Y	Y	Y	Y	Y
13.	Mecsys	Y	Y	Y	Y	Y	N
14.	Nirmals	Y	Y	Y	Y	Y	Y
15.	Sanjay	Y	Y	Y	Y	Y	Y
16.	Suchika	Y	Y	Y	Y	Y	Y
17.	Tulib	Y	Y	Y	Y	Y	Y
18.	Ulysis	Y	Y	Y	Y	Y	Y
19.	Wilisys	Y	Y	Y	Y	Y	Y

Y= Yes; N = No

and Granthalaya as it is developed by a private company.

Sanjay is the cheapest one covering all the aspects of library automation, but it is suitable for small libraries only. Basisplus and Techlibplus is also suitable for big libraries but its hardware requirement is costlier. Now there is a need of more powerful software packages with more facilities in view of many libraries networks coming up in the country in near future.

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REFERENCES

1. Chowdhury, GG & Chowdhury, Sudatta. Text retrieval and library management software in India. *Program*, 1994, **28**(3), 253-261 and *NISSAT Newsletter*, 1994, **3**, 13-18.
2. Singh, Shankar. Selection of library software for library automation—Aa critical study and evaluation. *In* Proceedings and Souvenir of National Seminar on Library Automation—Problems and Prospects, held during 24-26 May 1997. UP Library Association, Roorkee.
3. Seth, MK & Dalai, BK. Library automation in India. *DESIDOC Bulletin of Information Technology*, 1995, **15**(3), 29-34.
4. Patel, DR & Bhargava, Rachna. Comparative study of software packages available in the Indian market for library

automation. *DESIDOC Bulletin of Information Technology*, 1995, **15**(3), 3-12.

5. Srivastava, RK & Saxena, SC. Software requirements and existing software in India for library automation. Paper Presented at the Indo-British Meet on Library Networking, 14-15 Jan 1997, DELNET, New Delhi.
6. Saxena, SC & Mehta, SN. Software packages for libraries. *In* Advances in Library and Information Science, edited by CD Sharma & DC Ojha, Vol 3. Scientific Publishers, Jodhpur, 1992. pp. 143-56.
7. Vyasmoorthy, P. Software packages in India for library and information work. *In* Advances in Library and Information Science, edited by CD Sharma & DC Ojha, Vol 3. Scientific Publishers, Jodhpur, 1992. pp. 157-66.
8. Sinha, AK. Information management in 21st century. *Annals of Library Science and Documentation*, 1992, **39**(3), 106-12.
9. Booklet on Basisplus & Techlibplus—software product profile. National Informatics Centre, New Delhi.
10. Pamphlet on DELNET. Delhi Library Network, New Delhi, 15 April, 1997.
11. Brochure on Granthalaya—a library automation package (ver 1.0), INSDOC, New Delhi.
12. Antony, Jose. Libsys—a selection for library automation and networking. *In* Proceedings and Souvenir of National Seminar on Library Automation—Problems and Prospects, 24-26 May 1997, UP Library Association, Roorkee.
13. Bhargava, JK, Srivastava, RK & Murthy, SS. Sanjay—an Indian library automation package based on CDS/ISIS. *Program*, 1993, **27**(1), 51-66.
14. Brochure on Sanjay (ver 2.0). NISSAT, New Delhi.