

# Bibliographic Databases: Software Issues

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## Abstract

The success of any information centre lies not only on its own resources but also in identifying and enlisting the various sources of information and developing the requisite tools and systems for tapping those resources. The minimum requirement for ensuring such sharing of information is a common format for the maintenance of databases and the requisite technology inputs including software packages. This paper presents an overview of various software available for library automation and management of bibliographic databases and the various considerations in selecting a software.

## 1. INTRODUCTION

Information Technology, an invention of the twentieth century, has already entered in every field of human activity. The transformation of reading rooms and libraries into sophisticated information centres is also the result of this development. The primary objective of any information centre is to make available the required information within a reasonable period of time. The information thus made available should also be reliable and up to date and in a form and format that is convenient to use. It is, however, not possible even to imagine that an information centre could acquire and maintain every conceivable piece of information in its area of specialisation and become self-sufficient. The success of any information centre, therefore, lies also in identifying and enlisting the various sources of information and developing the requisite tools and systems for tapping those resources.

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The minimum requirement for ensuring such sharing of information is a common format for the maintenance of databases and the requisite technology inputs including software packages.

## 2. CHARACTERISTICS OF AN IDEAL SOFTWARE

The desirable characteristics of an ideal software package are:

- Easy to learn.
- Easy to use.
- Well designed on-screen help messages.
- Well printed manuals and documentation.
- Fast and efficient performance.
- Flexible and malleable.
- Compatible with other software products.
- Cost-effective as compared to the features.

The software which is easy to learn and requires least training is the best choice of the people who have to use the package but do not have much computer experience.

The ease of use is another important criteria which is provided by logical consistency in the applications of function keys and availability of short-cut keys that allow an experienced user to bypass menu choices and jump directly to the action required to be performed. Ease of use is very important in circumstances when a program has to be used often and for long periods of time by experienced programmers.

On-screen help messages are essential for understanding the working of various on-screen options to resolve any possible difficulty while executing a program. The software which incorporates such help messages to provide the necessary explanations for each of the options are, therefore, generally preferred.

Printed manuals are the backbone of good software. They often have:

- A reference section explaining the individual commands and/or menu choices,
- A tutorial section demonstrating step-by-step use of the software, and
- A good index to help easy location of the required command. Such manuals are presently available on disks instead of/or in addition to the medium of print on paper.

The efficiency and completeness of a package in performing a task to be completed in the existing environment determines its performance. The organisations using the same software for similar applications in comparable environments can provide valuable information on this aspect.

The capability of a software to perform efficiently in different situations determines its flexibility. It is achieved by providing a sequence of choices in the configuration section.

The compatibility of a software with others in terms of data transfer, ability to establish real-time links with other programs and visually similar display and identical responses is another major consideration in the choice. The minimum expected compatibility is in terms of data transfer from one package to another without any serious hassles.

Above all, the software packages has to be cost-effective which is determined on the basis

of a comparison of features and performances on one hand and price on the other side.

### **3. SOFTWARE SELECTION**

*The choice of a software package has to be based on a clear evaluation of its desirable features as objectively as possible. A few useful steps in this regard are the following:*

#### **3.1 Consult Software Guides and Directories**

There are a number of software guides and directories which enumerate different software products and describe their features and characteristics. Many of them even provide references to reviews and abstracts of product reviews. For the most up-to-date information one can consult an on-line software database like 'Buyer's Guide to Micro Software' from Online.

#### **3.2 Reading of Reviews**

Informed critical reviews about different software packages often appear in standard magazines and publications. These reviews can give a good understanding of the strength and weaknesses of a package.

#### **3.3 Word of Mouth**

Interactions with the existing users of a package can give valuable information about its practical pitfalls and advantages. However, one has to use interpretive filters to ensure that the views of the informant are reliable and objective.

#### **3.4 Site Visits**

A visit to one or more libraries already using the software under consideration is an essential pre-requisite if the application is important or the cost is high.

### **4. LIBRARY AUTOMATION PACKAGES**

A number of software packages are presently available in India for handling bibliographic databases and library management systems. They can be categorised into three

groups based on the functions being performed by them as listed below:

- Library management functions—acquisition, cataloguing, circulation and serial control;
- Management support functions—statistics, MIS, accounting and budget control; and
- Database and information retrieval functions database creation; maintenance; retrieval; generation of SDI, Indexes and bibliographies; directory generation; etc.

Some of the major packages available in India and brief details about them are given below:

#### **4.1 Archives**

This package, developed in multi-user Foxbase, is useful for library acquisition control, serials control, budgetary control, cataloguing, circulation control, information storage and retrieval, SDI, etc.

#### **4.2 LIBRA**

It is a multi-user, multilingual package for acquisition control, circulation control, cataloguing, and online retrieval. It can be linked with Dialog and similar Services.

#### **4.3 GOLDEN LIBRA**

This library management software running under DOS can be used for automation of subscriptions, storage and retrieval of books/periodicals. It has the facility for creation of reports on overdue periodicals, list of magazines and books, list of publishers and members, non-receipt of books and periodicals, etc.

#### **4.4 LIBRARY MANAGER**

This menu-driven library management package on DOS environment for online information has facilities for data validation, circulation control, catalogue card printing, information services on books, reports, articles and periodicals, etc.

#### **4.5 LIBMAN**

The package is developed to create databases of books, members, issue and return, inter-library loan, over-due list, etc.

#### **4.6 LIBRARIAN**

It is a library management package for online information of any library. It is developed in Foxbase and C and works on DOS, XENIX or Novell Netware. It is used for computerising cataloguing, circulation, serial control, acquisition, budget control, inventory control and bibliographic services.

#### **4.7 LIBRIS**

All the functional aspects of library activities, viz, acquisition, cataloguing, circulation, periodicals, newspapers, enquiries, and library administration are included in this package and can be implemented in phases. Both single and multi-user environments are supported. LIBRIS generates the bar code labels at the cataloguing stage.

#### **4.8 LIBSYS**

It is an integrated multi-user library system designed to run on a wide spectrum of hardware/software under platforms in client/server environments. Built around its own centralised bibliographic database based on ANSI Z39:50 format, LIBSYS supports almost all activities in the areas of acquisition, cataloguing, circulation, serial control, articles indexing and abstracting, OPAC and union catalogue.

#### **4.9 ILMs**

Integrated Library Management Software (ILMS) is developed by DESIDOC and INFLIBNET for cataloguing and circulation.

#### **4.10 MINISIS**

Minisis is a multilingual, multi-platform, relational database management system designed to manage text-based collection. The package was earlier designed on HP-3000 mini-computers for bibliographic information management and textual database applications. Now the package is available in DOS environment also. 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.

#### **4.11 TECHLIB plus**

TECHLIB plus is a comprehensive library automation package based on BASISplus, the world leading document DBMS and text retrieval system. It also provides direct access to information in current contents.

#### **4.12 ULYSIS**

The package ULYSIS (Universal Library Information System) is developed in C language for use in WIPRO series of computers based on Xenix/Unix operating systems. The four modules—acquisition, circulation, maintenance and query—perform all the library management functions.

#### **4.13 WILISYS**

WILISYS is also developed in C language for integrated library automation. It can be used for mechanising the routine library activities and effective dissemination of information to the library users. It uses Unify RDBMS for data management.

#### **4.14 DELMS**

Defence Library Management System (DELMS) is a COBOL based software package developed by Defence Scientific Information and Documentation centre (DESIDOC) for automating acquisition, circulation, serial and online catalogue. It is supported on Unix operating system.

#### **4.15 MAITRAYEE**

The package, developed by CMC Ltd. for CALIBNET under NISSAT funding, enables library computerisation, resources sharing, standardisation, connectivity and modularity. It has modules for acquisition and fund accounting, cataloguing, keywords, circulation, serial control, SDI services, OPAC, budgetary control, periodic job, network services and central host services. It uses TCP/IP with X.25 protocol for networking and supports MARC communication format.

#### **4.16 iit-KLAS**

The Indian Institute of Technology—Kanpur Library Automation System (iit-KLAS) supports

various functions of a large academic library like acquisition, technical processing, serials control, circulation, user services, current awareness services and retrospective conversion of catalogues. The user services are available through terminals situated in the library and other campus-wide local area networks.

#### **4.17 CDS/ISIS**

The acronym CDS/ISIS stands for Computerised Documentation System/Integrated Set of Information Systems is designed to store and retrieve structured variable length textual information. It was developed by the United Nations Educational Scientific and Cultural Organisation (UNESCO) and released in 1985. It is a generalised information management system defined by databases and programs. The databases are user defined and contain the information. The programs are provided with the system and are generalised to operate on a large variety of user defined databases.

#### **4.18 NIRMALS: Library Management Software**

Nirmal Institute of Computer Experts, Trichi has introduced NIRMALS, a library management package. The software has five sub-systems—acquisition control, bibliographic control, circulation control, desktop information services and serials control.

### **5. BIBLIOGRAPHIC DATABASE AND CDS/ISIS**

The fundamental requirement of any bibliographical information and storage package is that it should be capable of handling the following complexities of bibliographic data:

- (i) In bibliographical descriptions of documents, a few of the data elements may occur for some, but may not occur for other. For example, 'series statement' may be present in the description of some documents, but not in all.
- (ii) The length of each data element can be variable and unpredictable.

- (iii) A data element may be repetitive in nature, and it is not possible to visualise before hand its number of repetitions ( e.g., author field).

CDS/ISIS is one of the most widely used software in India which incorporates all the above features for bibliographic database management. The notable features of this software are that the software package enables:

- ✦ Defining databases with user selected variable length fields with or without sub-fields (about 200 fields per record and about 36 sub-fields per field, maximum length being 8K, the maximum number of records per database being 16 million);
- ✦ Making all or selected fields as repeatable fields;
- ✦ Entering records as per the definition of the user, guided by user defined help messages;
- ✦ Modification, correction and deletion of existing records;
- ✦ Creation of fast access inverted index files from user specified fields and/or sub-fields;
- ✦ Search terms to be selected from the inverted index file and/or by keying-in to form search queries;
- ✦ Retrieval of records on the basis of search queries formed using AND, OR, NOT, other proximity operators and field restrictions;
- ✦ Display and print out of records according to user defined formats;
- ✦ Recalling of queries, their modification and resubmission to different data bases without re-keying;
- ✦ Sorting of records in desired sequence before printing;
- ✦ Printing of records or indexes as per user defined formats from the whole database or from selective lists saved after search;
- ✦ Exporting/importing of records in ISO-2709 compatible format;
- ✦ Working in LAN environment; and
- ✦ Development of specialised applications in a restricted Pascal language.

Due to these features, CDS/ISIS has been in great demand world-wide, especially in developing countries. Moreover, there has been quite an amount of developmental work on the part of the users in exploiting the potential of CDS/ISIS to solve special local needs. As a result, a number of useful utilities and extended applications have been developed, as stand-alone programs and programs integrated with CDS/ISIS using its Pascal compiler. In India alone, the number of registered installations of CDS/ISIS has exceeded 1400. Because of the demand from various countries, a network of national, regional and special distributors has been set up to manage the distribution of CDS/ISIS and to cater to the needs of users of CDS/ISIS.

An important aspect of the application of CDS/ISIS in India is that a large amount of developmental work has taken place to solve special problems or for exploring the full potential of the package.

**SANJAY** is a package developed by DESIDOC for NISSAT using CDS/ISIS for library automation. It is an integrated package and interfaces about 25 Pascal programs with CDS/ISIS. The package is capable of interlinking two or more databases for application and for handling numerical calculations and library housekeeping activities.

**TRISHNA** is a version of CDS/ISIS which supports data creation, storage and retrieval in major Indian languages. It has been developed by NISTADS under a contract from NISSAT. NISSAT provides CDS/ISIS, **SANJAY** and **TRISHNA** softwares along with technical support and training at nominal cost.

## 6. CONCLUSION

There are several software packages available in India for library automation and bibliographic database management. These packages support internationally recognised bibliographic formats like CCF. The choice of any particular software by a user has to be based on the specific applications, previous experience in computerisation, and the trained personnel available. The other considerations are ease of training, ease of use, compatibility

and value to money. CDS/ISIS and its applications and variations like SANJAY and TRISHNA are the softwares available at nominal cost from NISSAT who also provide technical support and training. CDS/ISIS has, therefore, become very popular and is being widely used in India.

## FURTHER READINGS

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