

Aspects regarding Library Management

Library Management Systems

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Abstract

Today's libraries are faced with the innumerable challenges posed by an information universe on rapid expansion. The increasing expectations and the users' needs to access faster and easier the relevant information is in a constant relation to the institutional demand for the increasing of operational efficiency. The library integrated systems enable all types of libraries with accessible instruments and the necessary assistance needed in the working flow in order to cope with personal and institutional demands both in present and in future times. The integrated system can be configured in order to meet every type of library policy or procedure thus allowing the creation of a sole working flow.

Key words: management systems, library integrated system, database system administration (DBSA), metadata

A library integrated system is a system for a library resource planning, used to access the documents held, orders, payment or lending all made by the clients. Sometime, a phrase like library management system is employed, especially in the UK. Cynthia Lopta defines the integrated system as an automated system in which all the functional modules share the same bibliographic database.

“Integration” as a concept is very often found in biblioteconomy. It became a landmark over 20 years ago, and it has grown into an almost synonym for “integrated system”. Generally speaking, this adjective, “integrated” when used together with a library administration system (which is not necessary an automated one), stands proof for that systems multi-functional features and, at the same time, showcases the interdependence among those libraries (1).

Sometimes, integrated refers to a system in which the library functions are processed in a main bibliographic file. Genaway expands this definition and describes the system as a joint database and two or more operational subsystems accessible on line (2).

Other specialists, like Alain Jacquesson tries to define precisely a term like *integration*: “an assembly of informatised operations in a library, planned and made up in such a way that the modules or the subsystems bind harmoniously, and the users are offered operational facilities.” (3)

An integrated system includes a relational database, a software that administrates this database and graphical interfaces (both for users and the library personnel). Most of these systems use separated software within some programs named modules which are after that integrated in a unified interface. These modules include: acquisitions (orders and materials receiving), cataloging (document classification and indexing), circulation (documents landing), periodicals (newspapers and magazines administration) and OPAC (the public interface for users) (see fig. 1). Each client and each document hold a sole identification number in the database, allowing the system to localize him/it.

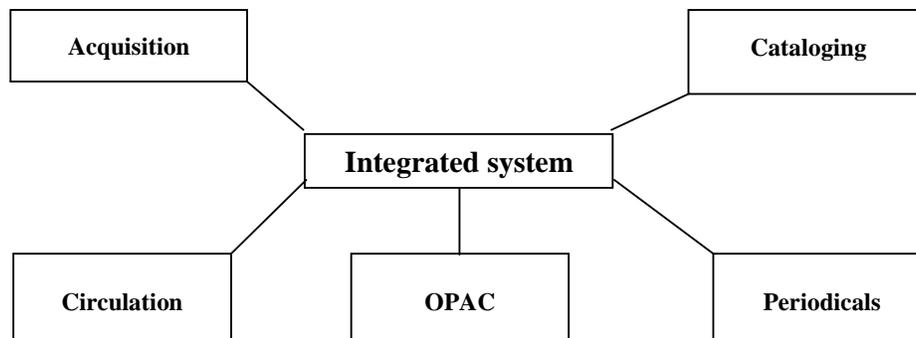


Fig 1. Library integrated system modules

The library integrated systems first appeared in the decade between 1970 and 1980 and was called library automated systems or automated

systems. Before the computer technology development, the library used to employ cards catalogues in order to locate the documents. Computers were used in order to automatise these catalogues and phrases like automated system were used. Making these catalogues automatic lead to economies in time and sorting these charts and permanent collection updating. Other automated activities consisted of: books checking, making statistics and reports, acquisitions and subscriptions, journal article subscription, interlibrary loan.

The first integrated systems were characterized by a certain rigidity, a certain level of complexity of the modules (a main focus was on the cataloging system). The alterations and the completions that were made required the alteration of the whole system and not only a specific module.

We may state that these represented an intermediary form between chain system and the present integrated automatic systems. The chain system was achieved by the libraries by means of their own effort, by internal development programs, the name of chain system originating in the fact that the files containing certain data were literally chained. The servers within the first library integrated systems fulfilled mainly a role of catalogues administration.

Before 1989 the library integrated systems were parts of universities and colleges automated systems, rendering these as outdated technologies. This is far from being true. Today, the ILS is a multimedia assembly, web based multifunctional system, included in a system of information management, generally based on a standard relational database. Whilst the system architecture remains focused on bibliographical citations, the basis of such indexes are transferred in MARC format and projected for text type information which include metadata descriptions of contents and multiple digital file formats.

Starting with the 1990s, Windows and multitasking systems allowed functional integration. Instead of separate applications one single application could be used consisting of multiple functional modules.

One of the changes appeared after 1990s within ILS is the connection between the bibliographical description and the content. Initially, this connection was made up by the content of the recordings. Today, this connection is made by means of the whole content that may contain texts, sounds, images, videos which are indexed as bibliographical unit as well as by indexing the whole content. Using such an indexing type, after one interrogation one can find citations and contents from multiple databases and on various software platforms.

This makes the systems to be highly efficient in finding information by combining the found elements, eliminating double entries and indexing

the file content. In case you find this lacking relevance, try using any web based search engine in order to select the relevant information from thousands of offered answers. ILS continues the work done for a long time by libraries, factor which made them crucially important, offering access to a huge amount of information by means of organized collection indexing.

Once the Internet developed, the integrated systems sellers started to offer a larger number of functions especially those based on the Internet. Most of the systems now offer Internet based portals where the users may log on, view their accounts, prolong their borrowing periods, and may authenticate in order to use the online databases.

There are many ways to integrate a system in a library:

- Buying an integrated system which contains more functional modules from a single supplier;
- Buying more modules from different suppliers and afterwards interconnecting those;
- Implementing more modules bought from one or more suppliers and then connecting those to the information sources outside the library.

The biblioteconomical literature discusses about two ways of integrating the library functions: **vertical and horizontal integration** (sole integration system, which is actually a central library database). Vertical integration is a rather ideal concept, impossible to put to practice. The possibility that many libraries use one and the same database is rather difficult to achieve since each library has its own specific elements which must be singled out (call number, inventory number, etc.) (4)

The horizontal integration replaces the vertical one and it is achieved by covering the functions in a specialized, module based libraries which communicate and make use of the central library database. This way the integrated automation of the library is based on the central database and an adequate software which enables all functions in a library: document acquisition, publication exchange, documents processing, providing information for the beneficiaries, periodical control.

An integrated system is superior to a non-integrated one since:

- The effort to create and keep multiple copies of the library records is eliminated;
- The effort is reduced when the recordings are processed only once and the modifications are distributed in the entire system;
- The librarians and the clients have access to all the information which is stored in a single location.

For instance, in an integrated system, a client can see a bibliographical recording in the online catalog as well as being able to see whether a book

was borrowed or when that book returns to the library. If a book is lent, the reader's recording may be attached to the bibliographical recording. It is obvious that the client does not have access to the other user's data and he cannot alter the recordings. But he is able to see the online catalog and also see whether a book was ordered but not yet received. In a non integrated system, this type of information is available only to the librarian.

In a non-integrated system, there is only one bibliographical recording in a catalog for each and every document and another one in the circulation file. In an integrated system, a bibliographical recording of a book created when that particular book was ordered can be transmitted to the catalogue module. There are systems which have duplicated bibliographical recordings but these are considered integrated since the recording changes are automatically transmitted. For instance, an alteration made in the acquisition file will also be made in the other duplicated recordings from the catalogues. In this system the data transfer among modules and the duplicated recordings is facilitated by some link mechanisms.

How can an integrated system be chosen? There is a very big number of integrated systems providers. An information source related to these suppliers can be *Automated System Marketplace* which is annually published by *Library Journal* (5). Making use of these instruments it is possible to identify the market leaders for the integrated systems but one cannot really find out which is the best option. A possible path to follow is a needs, resources and problems assessment for the libraries which have already purchased an integrated system. But one must also take into account that a certain system may be rendered ideal for a university library but completely useless for a small school library. The number of installed systems can also be a way of assessment as well as the number of clients the system can handle, and the satisfaction of those using that system.

There are, of course, other criteria which must be analyzed in the system selection process, for instance if the system has as capacity a specific number of transactions, say the number of books borrowed on a daily basis, without slowing the system down or reducing its performances. Another criterion may be the number of bibliographical recordings or the number of clients it can handle.

At the same time, the libraries must also take into account the changes that might appear in the future. One question might be how they will increase the number of clients and materials and if the systems can cope with this. Another may be whether these libraries can switch to another system without being forced to redesign the databases.

The selection process must also take into account the equally important features of the bibliographical file of the integrated system:

- The support for MARC formats for bibliographical recordings;
- Interface for converting bibliographical recordings from computer readable support;
- Interface for the online transfer of the bibliographical recording among library services;
- Ensuring an on screen format for the online bibliographical recordings;
- Making the bibliographical recording with reduced data element;

The capacity for modifying the recording by adding, changing, deleting some data from a recording without deleting the whole recording or without making a new recording.

Today, some libraries have designed and implemented their own library automated systems. These systems have become later on commercial products. An example is NOTIS a system developed from a system at Northwestern University. Another option is to buy off-the-shelf a system which is a general application. This may be a solution for libraries in which the cataloging or acquisition functions are carried on in the same way. Anyway, adapting these systems to the procedures from a specialized library is not an easy task. A third option is to bind together a general system and the specific one. This new system combines general functions with special functions for particular situations. For instance, such a system may include a standard function for book lending. The lending period may vary from one library to another, case in which the system may be tailored in accordance to each library policy. The systems may be extended to more modules or one can use only the standard ones according to the library needs.

Maybe more important that the actual proper selection of the system is the implementation of it and its integration in the library management. As already showed above, one of the most important features of the integrated system is the distribution of bibliographical recordings to the different modules of the system. Even this very single feature influences fundamentally the library administration. The change taking place after the implementation of the integrated systems were:

- Creating new communication methods among libraries especially between people form technical and those form public services;
- Increasing responsibility in the decision making process especially at the inferior level;
- The modification of librarians' technical skills and knowledge, with special focus on computer literacy.

Many libraries have redesigned their operations so that to get the most out of these new technologies available.

The software support for integrated systems

The minimal system requirements for an integrated system are:

- Allowing the description of any database structure in an unitary form;
- Allowing communication between the repertoire and the content metabase on one side, and between this and the bibliographic data metabase, on the other;

- Allowing access to the content;

- Containing facilities for allowing multilingual access both for interrogation and finding (Romanian, German, French, Magyar, etc.) and to consider acronyms and diacritical marks;

- To accept an adequate number of users that can simultaneously have access to the system;

- The main component of the software is the database system administration. This represents a programs assembly which ensure the link among data collections grouped in databases and users.

Such a system must allow:

- Data structure definition (collections and charts);

- Data uploading in the database;

- Using the database;

- Maintaining the database (actualization, new fields insertion);

- Reorganizing the database;

- Data security (deletion protection, and ensure back up);

- Minimal redundancy.

At the same time, such a system must offer the following facilities:

- The data can be used by many applications;

- Logical interdependence of the data (the possibility to add new data and fields);

- Optimized user access;

- Using languages and quick methods to find data;

- Data integrity: error protection, deletion and restoration and saving procedures;

- Existence of procedures forbidding unauthorized access;

- Existence of data validation procedures;

- Interconnectivity (the possibility of importing external data, from other applications).

Comparing it to the usual database system administration, the information systems must have a series of additional features:

- Allowing the administration a big data volumes;
- The ability to find information entities starting with various criteria of direct access.

Allowing the definition of fields with variable lengths without being necessary to predefine the lengths;

- Ensuring vertical and horizontal links among different informational entities and among the data within the entities;
- Allowing simultaneous database use for different users performing different actions on the database;
- Allowing a system of differentiated passwords for user categories.

When choosing the database, the following criteria must be taken into account:

- The operating system used;
- The number of modules;
- The information transfer from one module to another: partial or integrated systems;
- Step installation: modular or non-modular system;
- The accepted format: MARC or non-MARC.

Other necessary software components are represented by:

- A base soft (operation system);
- Software for personnel administration;
- Software for the local network administration;
- Software for data communication;
- Software for optical character recognizer.

The integrated system evolved from the distribution of bibliographical recordings to different local modules to systems allowing information exchange with other systems outside the library. The technical development such as client server relation, the standardized protocols and architectures for information exchange from one system to another are facilities leading to the integration of external information in the local systems. For instance, the new systems allow a librarian to search in a publisher's database, to select the bibliographical recording of a book he intends to buy and after that to upload that particular information in his own catalogue. At the same time, some libraries using OPAC may offer its clients access to the bibliographical and non-bibliographical data from other libraries and even grant access to the other libraries' OPAC.

The current tendency is for the new systems to be entirely based on the web so that all operations be done inside a browser.

The big libraries use integrated systems for orders, payments, catalogue making and circulation as well as document finding, while small libraries or non-profit organizations avoid buying an integrated system, too expensive and too hard to maintain, and still rely on automated library systems.

The integrated systems become vital in locating the information allowed by the libraries which cannot be found in their physical collections. The database providers offer access to journals, articles, courses multimedia documents used in class presentations or in online courses.

The online journals contain illustrations or multimedia files within the digital versions of the on paper articles. These are used in the learning process and can be easily integrated in the courses as digital objects other than the articles and the classical courses.

To everything said so far, one may still add the possibility of locating classical documents found in the collections own by them or by other libraries. In the high education environment these new facilities may be used in teaching activities but especially in those related to research.

Integrated systems used in Romania

ALICE FOR WINDOWS (6)

Softlink is the worldwide leader in providing integrated software for libraries as well as for information administration. This is used in more than 10,000 libraries, in 108 countries offering operating solutions in all the important languages.

Softlink is a global network of offices and agencies offering solutions and local support. Alice allows controlling and administrating a library in an efficient manner. This system automates the main functions of a library. In the last twenty five years it has developed to such an extent that it allowed it to become the market leader for library automation processes worldwide.

The standard configuration of the software includes the following:

- Management – collection cataloging;
- Circulation – rapid processing of borrowing, returning, reservations and fines for delayed returning, as well as administrating the information about the library members;
- Interrogation – visualizing information about library collection materials;
- Inventory – making rapid and efficient library material inventory;
- E-communication – email sending of notifications, formal notices or reports.

To all of these one might add:

- Periodicals – keeps the publication tracking and facilitates article cataloging;
- Multimedia – allows attaching images, movies and sound to the catalogues resources;
- Internet suite – allows viewing the catalogue online and makes connections to other libraries catalogues;
- Autocirculation – processes lendings and returns in a self-service regime;
- SDI – periodical updates of the library members about the new acquisitions which correspond to their specific interest;
- Secure Web browser – limits web browsing to catalogued sites;
- Fingerprint recognition – identifies the library members using their fingerprints.

This system is implemented with University of Medicine and Pharmacy Iasi Library, University of Agronomical Studies and Veterinary Medicine Cluj Library.

MICRO CDS/ISIS (7)

MICRO CDS / ISIS is an advanced program for storing and finding non-numeric information developed by UNESCO starting with 1985 in order to meet the needs expressed by many institutions, especially by the developing countries, so that their information processing activities are made efficient by using modern (and rather cheap) technologies.

This software has as basis the mainframe version of CSD / ISIS, developer in the late 60s having so a large experience in making software administrating the databases. During the years, there were more partners that contributed to the development of this product.

The software package allows:

- Defining the database which contains finding elements;
- Introducing new recording in the database;
- Modification, correction and erasing existing recordings;
- Displaying recordings or part of these in a report made considering the user's requests;
- Sorting following a certain criterion;
- Printing the whole database or part of it, as well as its indexes;
- Development of applications using CDS/ISIS facilities using PASCAL.

This system was used starting with 1990 in many small libraries and subsidiaries of larger ones.

TINLIB (8)

The most widely known product of the company is TinLib (The Information Navigator for LIBraries). TinLIB is an integrated library system (ILS – Integrated Library System) used on five continents by thousands of institutions. TinLIB become a standard solution for the Romanian Libraries because its: secure using, stability, constant updated to the users' requests, observing the technical and biblioteconomical standards in the field, creation of users' communities, technical and professional assistance, online publishing of catalogues. Its main modules are:

- OPAC module
- CATALOGING module
- RECORD module
- Circulation module
- Acquisition module
- Serials control module
- Archiving module
- Report generation module
- Administration

This system is used by V. A. Urechia Library in Galati.

ALEPH (9)

ALEPH library integrated system offers national, university and research libraries accessible tools and the assistance these need in their workflow in order to meet the increasing demand of today's and tomorrows' users.

For more than 20 years ALEPH has been the integrated system chosen by the libraries and library consortiums from all over the world due to its high flexibility in configuration. The system configuration can tailored in order to cope with almost all procedures and policies within a library so that unique working flows are created.

The system consists of the following modules:

- Web and GUI PAC;
- Circulation;
- Cataloging;
- Serial description;
- Acquisition;
- ILL;
- SDI.

The system is employed in BCU Cluj and BCU Iasi.

VUBIS (10)

VUBIS is a library integrated system which can offer its users a chain of tailoring tools and projects bettering the users' experience and offering data from all the sources and in any different formats. The systems includes convenient working flows and easy to use administrative tools. The personnel can define multiple formats, databases, indexes, search methods and others. The rules and parameters can be defined in order to meet either group or individual requests.

By using VUBIS Web OPAC, the libraries can offer its users many personalization and project tools bettering the users' experience and allowing his a highly personalized and dynamic working environment. The users are granted access to more databases, links among resources for which he has a subscription, and can personalize the Web OPAC interface related to displays, language and searches.

VUBIS has five modules operating one central database. The five modules are:

- Cataloging module
- Acquisition module
- Serials control
- Circulation control
- OPAC

The system was implemented years ago with BCU Bucharest.

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