Migration Process and Data Modeling in National and University Library in Creating ILS

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Abstract— **The migration of the existing Voyager library system to the Aleph library system is currently in progress at the National and University Library in Zagreb. Involved at the same time in the Integrated Library System implementation process are the libraries of the University of Zagreb and scientific institutes, which had used other library systems up till now. The objective of the implementation is the integration of the libraries into a single system using the same software base, in which the access and the use of library resources will be more efficient and accessible, regardless of their location.**

Keywords-National and University Library in Zagreb; implementation; Aleph ILS

I. INTRODUCTION

Until now, libraries within the University of Zagreb used diverse library software (for instance, Medved, ISIS, SAND, Crolist, etc.), which has prevented the creation of an integrated library system for the University of Zagreb, including NUL, faculties and institutional libraries. Currently in progress in NUL and in the 23 faculty libraries of the University of Zagreb and 12 institute libraries is the implementation project of the Aleph library software. The project plan is taking place within 36 institutions. NUL has assumed the role of coordinator of the Aleph implementation process and, accordingly, the obligations related to monitoring of the system, training of staff working on the new system, collecting and tracking of data for conversion, analyzing of test loads in all phases of the implementation process, ensuring data security at the system level, as well as maintaining a support system for libraries/users of the system. Faculty libraries of the University of Zagreb and scientific institutes had the obligation of preparing their data for conversion and migration, give the description of data, as well as to perform testing of their own system at all phases of the implementation procedure.

Libraries of the University of Zagreb and libraries of scientific institutes included in the implementation of the Aleph library system:

- Academy of Dramatic Art
- Academy of Fine Arts
- Faculty of Architecture
- Faculty of Education and Rehabilitation Sciences
- Faculty of Chemical Engineering and Technology
- Faculty of Mechanical Engineering and Naval Architecture
- Faculty of Pharmacy and Biochemistry
- Faculty of Philosophy of the Society of Jesus – Juraj Habdelić Library
- Croatian Studies
- Faculty of Geodesy
- Faculty of Civil Engineering
- Faculty of Graphic Arts
- Medical School (4 libraries)
    - Central medical library
    - Petrova Medical library
    - Rebro Medical library
    - Andrija Štampar School of Public Health
- Faculty of Metallurgy, Sisak
- Faculty of Science (6 libraries)
    - Department of Chemistry
    - Department of Biology
    - Department of Geophysics
    - Department of Geography
    - Department of Geology
    - Department of Physics
- Faculty of Law (2 libraries)
    - Faculty of Law Library
    - Faculty of Law Social Work Study Center
- Faculty of Food Technology and Biotechnology, Regional library
- Faculty of Mining, Geology and Petroleum Engineering

- School of Dental Medicine
- Faculty of Forestry
- Faculty of Textile Technology, Zagreb
- Faculty of Textile Technology, Varaždin
- Faculty of Veterinary Medicine
- Institute of Archeology
- Institute for International Relations
- Old Church Slavonic Institute
- Institute of Economics
- Institute of Physics
- Croatian Institute of History
- Institute of Naval Engineering
- Institute of Philosophy
- Energy Institute Hrvoje Požar
- Ivo Pilar Institute of Social Sciences
- Institute for Anthropological Research
- Institute for Electrical Engineering.

II. System Structure and Settings

A. System Settings

MARC 21 is used as the record format for bibliographic data in the National and University Library. Aleph library software is widely spread throughout libraries worldwide.

The specific characteristics of NUL setting, as well as of the libraries that form an integral part of the system, were taken into consideration when configuring the system. Established within NUL is a system for providing technical support to the libraries that are part of this joint system. The joint library system was given the international standard code for its bibliographic database [1].

B. Technical Characteristics of Aleph

Aleph is a client/server application that supports various Unix and Unix-like operating systems on the server side. In NUL, Aleph is installed on a Sun server with four 64-bit UltraSPARC IV processors, running the Sun Solaris 10 operating system. For storage of data on the server, Aleph uses an Oracle 10 database and XML.

The client side of Aleph is a modular Windows application used by library staff. The four modules cover the individual sections of library operations: Acquisitions/Serials, Cataloging, Circulation, Interlibrary Loan (currently not in use in NUL), while the fifth module, Administration, is operated by system librarians who administer Aleph.

In NUL, the client is installed on one computer running the Windows Server 2003 operating system, and library staff run it on their computers from the shared network disk, while in the other libraries, the client is installed directly on personal computers running the Microsoft Windows XP operating system.

The client interface is in English, however, it can be entirely translated through the Administration Module. It supports full Unicode for all languages and scripts, including Croatian diacritics [2].

C. Acquisitions/Serials

The Acquisitions/Serials Module is intended to place orders, make payments, searching and receiving of serial materials. The options that it offers and its main characteristics are as follows:

- Ordering, claiming, paying and receiving of all types of materials
- Direct access to bibliographic and holdings data, as well as information on orders, funding and vendors
- Extended use of the EDI (Electronic Data Interchange) protocol
- Supports MARC 21 standard for prediction patterns
- Importing existing check-in patterns established by some other user (other library)
- Issue check-in centralized or decentralized
- “Undo” the status of issues checked in
- Advanced functions related to the binding of individual issues and creation of the new volume

D. Cataloging

The Cataloging Module allows the user to create and modify bibliographic and authority records. The options offered by this module and its main characteristics are as follows:

- Modifying, importing and creating of bibliographic, authority and item records in the MARC format
- Full Unicode (UTF-8) support
- Simultaneous support of MARC and other bibliographic formats
- Checks and validates MARC records
- Supports global database changes by field, subfield, or specific word
- Numerous options for exchanging records (downloading and uploading of records)
- URL administration in bibliographic records
- Administration of digital materials

E. Circulation

The library activities involving the direct services to library patrons are carried out in the Circulation Module. The options

and services offered by this module and its main characteristics are as follows:

- Flexible loan policy
- Smooth creation of patron records by importing them from other databases and formats
- Support of photocopy requests
- Integrated with Interlibrary Loan module
- Integrated payment system
- Integrated offline circulation
- Extensive circulation statistics and reports
- Detailed control of circulation financial operations
- ALEPH self-check interface with built-in support for SIP2 protocol

F. Web OPAC

OPAC (Online public access catalog) is Aleph's web interface, used by patrons to search the library catalog to locate items under control of a library [3].[1] The features of OPAC are as follows:

- Searching other databases by using Z39.50
- SFX context sensitive search
- Full text search
- Simple options for finding and viewing digital material
- Administration and protection of metadata
- Multilingual and multiscript support based on Unicode
- Possibility of adapting services to individual patrons
- Support for interlibrary loans

G. Administration

The Administration Module is used by system librarians to administer the Aleph application as a whole. Most of Aleph's settings are defined in configuration files, so-called Aleph tables, which are located on the server. In addition to configuring Aleph tables, the following is possible in the Administration module:

- change the client language settings
- translate the interface
- add or modify patron profiles
- change employees profiles
- modify settings for viewing records

[1] For more on the Web OPAC develpoment, see: Historical Overview of OPAC Development A. Barbarić, Vjesnik bibliotekara Hrvatske, Croatian Library Association, vol. 46, n3-4, 2003, pp. 48–58

Nevertheless, some Aleph settings cannot be configured in the Administration Module; this must be conducted directly on the server.

III. HIERARCHIES OF ORGANIZATIONAL UNITS WITHIN THE SYSTEM

A. Library

The term library in the Aleph library system carries the following meaning: a directory on the server that contains the configuration files defining the storage and viewing of data from a certain database (for instance, NUL bibliographic databases), but at the same time, the contents of the databases themselves (therefore, the set of bibliographic records from the NUL database). There are many types of libraries, that is, databases on the basis of the type of records stored in them. Bibliographic library is an environment that is based on files that define the cataloging functionality and views of bibliographic records. Administrative library is an environment based on files that define ordering, circulation, control of series and other administrative functions. The term library is interchangeable with the term database.

B. Sub-library

The smallest administrative unit – a separate part of the library. For instance, orders, subscriptions, loans and other activities are entirely conducted at the sub-library level. Each sub-library can have its own circulation policy. Authorizations also do not have to be assigned at the level of the entire library, but can also be assigned at the sub-library level.

C. Collection

Entering the collection for a certain item is optional. With its entry, the exact location of the shelf for some item in the library can be described. Each sub-library has its own set of possible collections and locations.

IV. MIGRATION FROM ONE LIBRARY SYSTEM TO THE OTHER

During the implementation process of the Aleph library system specific insufficiencies were detected in the existing Voyager system, which was not fully implemented in NUL, after which the owner proposed Aleph as a replacement, given the fact that Voyager did not prove suitable for countries in which diacritical marks are used. Since the implementation was only partially completed, the system was not fully used, that is, the previous library system was not fully implemented in NUL.

For instance, the possibility of printing various loan slips on a printer at the counter was never realized, although it is a necessary service. Instead, various loan slips were written by hand despite the fact that services could be significantly expanded. Furthermore, the possibility of sending notifications on the expiry of the deadline for returning materials by SMS to the patron's mobile phone, and remote reservations of materials (for instance, from home, student dormitory and so on) via the Internet were never realized.

In this case, the successful implementation of the integrated library system depends in large part on the transfer of existing data and settings from the existing systems into the new one (with the exception of libraries not transferring data, i.e. starting from scratch).[2] While the transfer of bibliographic, holding and normative data is relatively straightforward – from existing systems, after eliminating possible errors, the data are exported in ISO 2709 file format, which allows importing directly into the Aleph system with regular routines for storing such standardized data – the transfer of administrative data (circulation and acquisition data) represents a greater challenge since the administration data are stored in various applications in various ways, and not according to standard.[3] However, the biggest challenge is represented by the transfer of settings, given the fact that the configuration of Aleph is conducted in a totally different manner from, for instance, the configuration of Voyager [4] [5].

V. CONCLUSION

As with most integrated library software, Aleph is structured as a client/server application with a relational database in the background and a modular client. In terms of technical characteristics and options, Aleph is comparable to the other available contemporary integrated library software. However, unlike Voyager, the software currently in use in NUL, it possesses support for diacritical marks. Given that libraries within the University of Zagreb up till now have used various library systems, which has resulted in inadequate efficiency in the consortium subscription of online information resources (databases), as well as their processing and use, and has prevented the creation of an integrated library system for the libraries within the University of Zagreb. The implementation of Aleph ILS now provides the opportunity of forming a database for all involved libraries based on a single program.

[2]For more on the migration of data when transferring to the new library system see: Organization of Data Migration Project During NSK Move to New Library Information System, Brozović, S., Conference proceedings: A Step Toward the New Voyager Library System, Zagreb, 2008, pp. 88–99

[3] For more on the implementation of the Voyager library system in NUL see: Challenges and Experiences in Data Migration Project During NSK Move to New Library Information System, Brozović, H., Conference proceedings: A Step Toward the New Voyager Library System, Zagreb, 2008, pp. 100–111

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[4] S. Brozović, "Organization of Data Migration Project During NSK Move to New Library Information System," Conference proceedings: A Step Toward the New Voyager Library System, Croatian Library Association, 2008, pp. 88–99

[5] H. Brozović, "Challenges and Experiences in Data Migration Project During NSK Move to New Library Information System," Conference proceedings: A Step Toward the New Voyager Library System, Croatian Library Association, 2008, pp. 100–111