Scientific and Technical Information and Documentation Unitary National System

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Abstract: This paper presents a design of a modern information system intended to assist large Romanian libraries. The work illustrates the way in which technical interoperability among different information providers should be made available. The novelty consists in a systemic approach to ensure interconnectivity and information sharing among different types of libraries (university, public or specialized ones) that make use of disparate hardware and software platforms. The system is based on Roedunet communication network infrastructure as well as on specialized library software.

Professor Doina Banciu is a computer scientist, head of the National Institute for Research and Development in Informatics, ICI Bucharest and chair of Applied Computer Science at the University of Bucharest. She has made an important contribution to the development of Romanian information society, with special achievements on *e-Government* issues. She coordinates the *e-Government* master degree program at the University of Bucharest. Prof. Doina Banciu is author/co-author of: 13 books published in Romania or abroad; 9 manuals, courses, guides; over 90 technical articles and studies, published in Romanian and international journals. She holds a PhD in Systems Engineering. Her research interests include the theoretical and practical aspects of the systematic informatization at national level, and particularly the development of electronic documentation resources.

Project objectives: Libraries across Romania are piloting a new resource sharing service that will enable the public to have easier access to materials located in libraries across Romania.

> The analysis of the requirements and the opportunities offered by the National Unitary System of Information and Documentation in Science and Technology (NUSIDOC), the study of possibilities to ensure an integrated and uniform development of each partner library and to develop a global system.
> Set-up of concepts, principles and procedures to create the National Virtual Library in Science and Technology.
> On line catalogue Unification process that will link together the largest university / research libraries in Romania by offering a single locating and supply management solution.
> Enable simultaneous users to access all virtual catalogues in the system and to locate the required documents by using context sensitive criteria.
> Defining a communication infrastructure, based on Internet service providers from the academic and research area and who should be able to unitary manage the existing resources from the library consortium members.
> set-up unitary data structure to retrieve information from on-line library catalogues in consortium

The **partners** in this project are: the "Politehnica" University of Bucharest and the

National Institute for R&D in Informatics.

The **beneficiaries** are the most important university libraries and a specialized library in science and technology:

- Central University Library of Bucharest
- "Mihai Eminescu"Central University Library of Iasi
- "Eugen Todoran" Central University Library of Timişoara
- "Lucian Blaga" Central University Library of Cluj
- "Horia Hulubei" National Institute of Physics and Nuclear Engineering Library

The Stages of the Project Achievements

Stage 1. An overview of the requirements regarding the Unitary National System for Information and Documentation in Science and Technology.

Stage 2. Unitary development of an information system capable of harmonizing disparate library information systems

Stage 3. Integration testing to ensure that all components of the "National Union Catalogue" system interact and interface correctly with each other

Stage 4. Expansion of the information retrieval system and preparation of the appropriate documentation

Stage 5. Analysis of possibilities for the existing library information systems to perform multilingual functions

Stage 6. Integration of the multilingual interface in ROLiNeST portal and in a trial library Integrated On-line Library System (IOLS).

Technical and Scientific Presentation of the Project

The project sets out with the aim to create, for the first time in Romania, a virtual union catalogue based on the catalogues of large academic/research libraries for science and technology, as a basis for a future national network for information and documentation.

By means of this project it has been achieved for the first time in Romania a meta-search type system that enables simultaneous search in on-line catalogues of consortium libraries and other electronic resources. The project laid the foundations for electronic document libraries and virtual resources in science and technology in Romania.
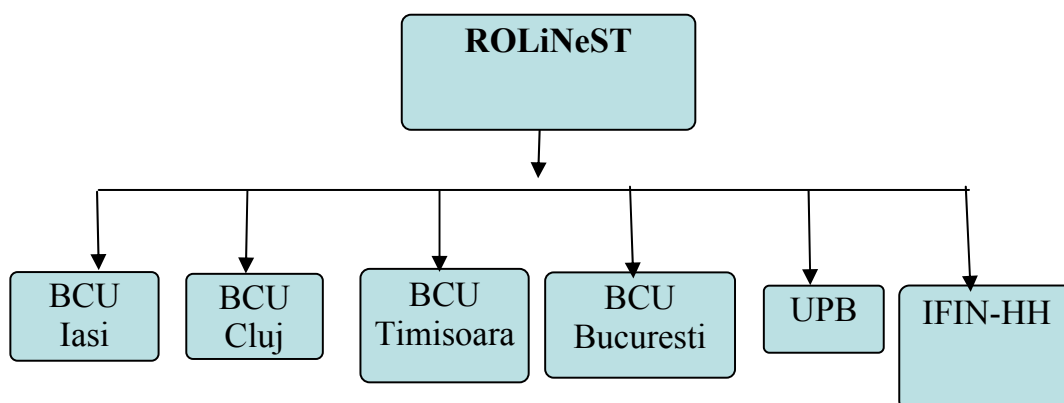
Methodology and Techniques Used

Beneficiary libraries have a well known expertise in IOLS utilization.

NUSIDOC project uses existing IOLS of consortium member libraries, which hold a significant volume of records, creating the ROLiNeST portal.

Internet connection provided by RoEduNet is chosen to interconnect distributed databases. Cataloguing (database creation) is performed in local integrated library systems. The information is retrieved in virtual catalogue. Consortium members benefit of additional services (records import/export, administration facilities, statistical reports, etc)

Virtual catalogue allows consortium members to offer centralized services both to librarians and users. The union catalogue is accessible to the science and technology community in Romania. Local IOLS can have different origins, but communication inside ROLiNeSt portal is based on standard protocols (Z39.50, http. XML)

The chart of library consortium created in NUSIDOC project is presented below:

ROLiNeST portal structure

- Enable adequate access speed and effective portal response
- Z39.50 protocol or other standard protocol of communication, between IOLS of beneficiary libraries to enable bibliographic data exchange.
- Modularity
- Simultaneous search into the data bases, localised inside the country and in perspective abroad
- The possibility of simple and advanced search
- The possibility to use Boolean operates for refining the search
- The existence of a unitary format to display the search result
- The possibility to display the original MARC format and the converted format of METALIB system
- The possibility to customize the user workspace.

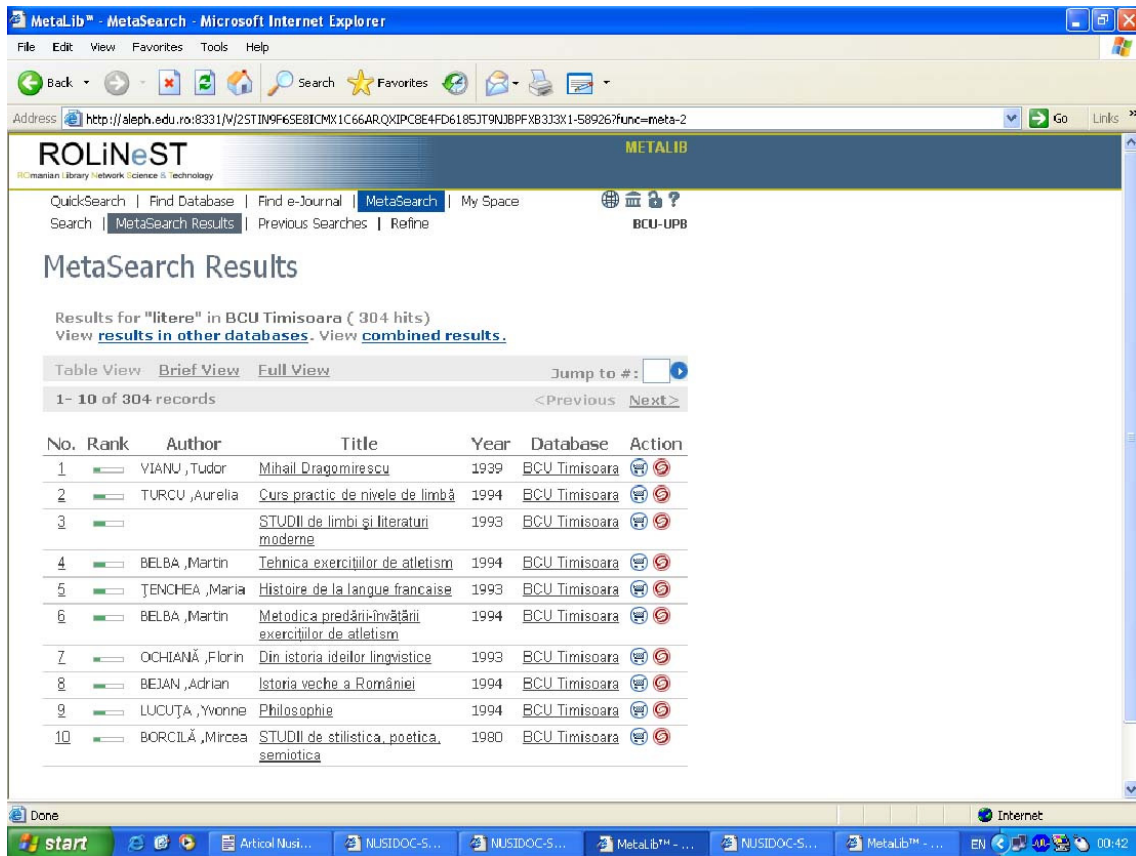In the following pages is presented how ROLiNeST portal is working.

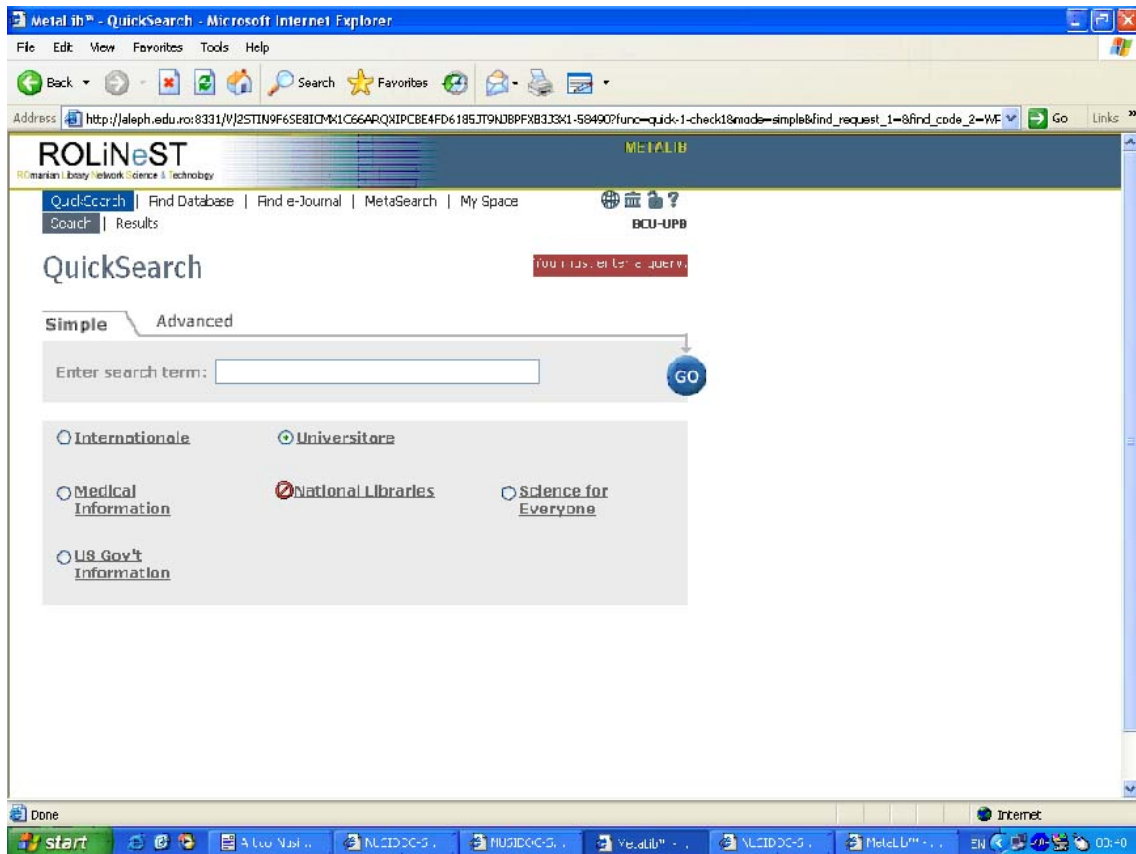**Figure 1: The Selection of the Databases for Search**

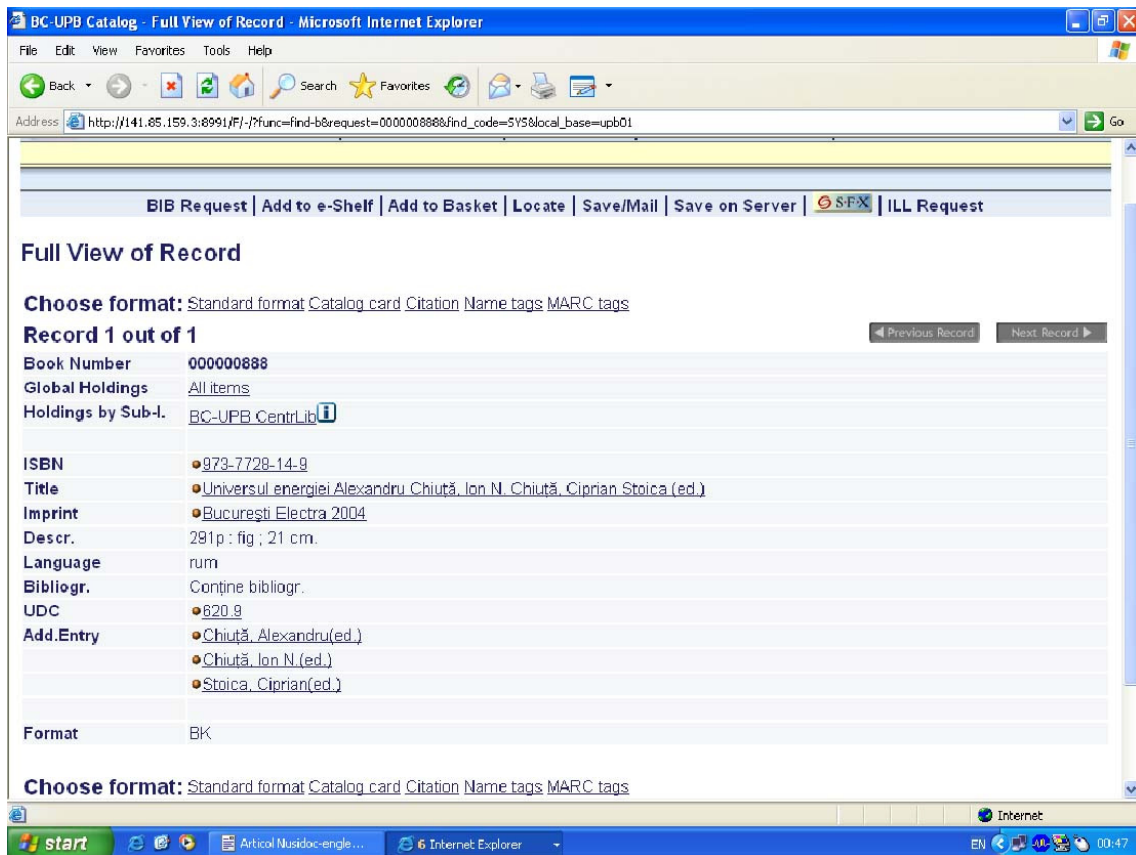**Figure 2:Unitary Format for Display**

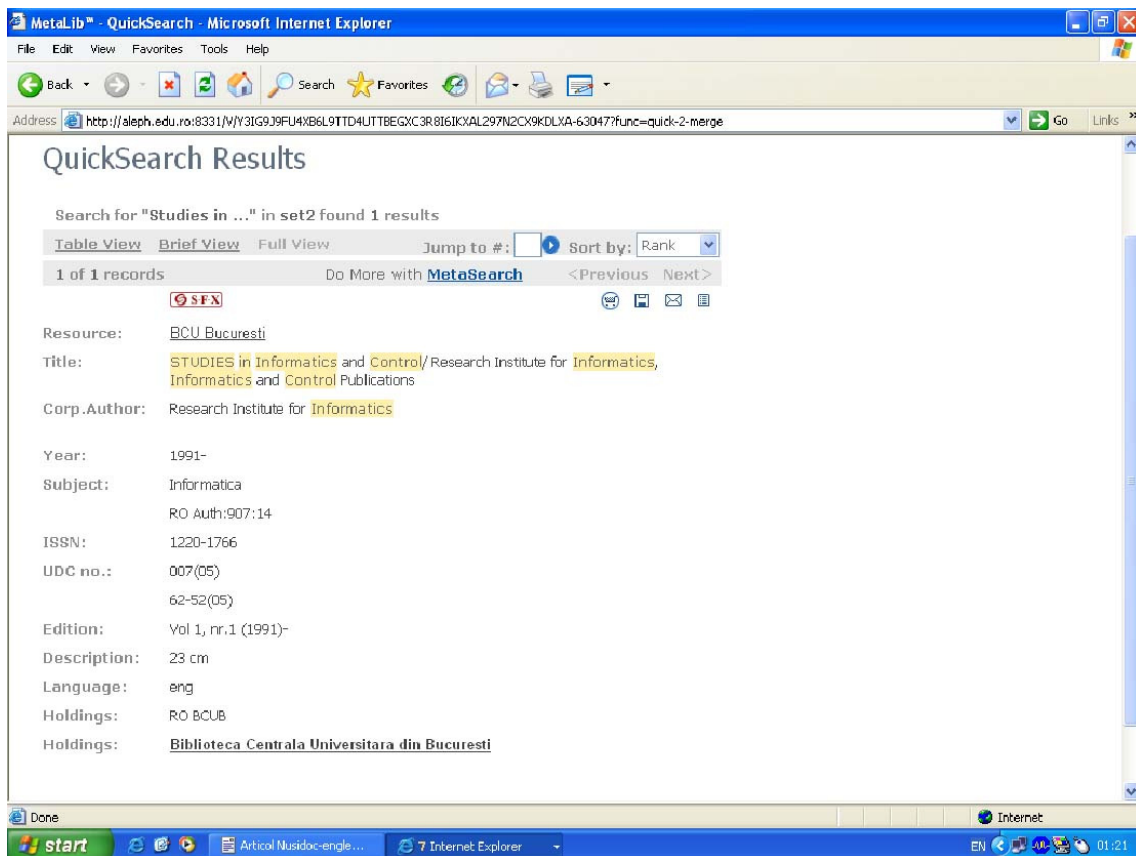**Figure 3: Record in the Online Catalogue of Central Library of "Politehnica" University of Bucharest (BC/UPB)**

Figure 4: Display of the Same Record, Searching for Title, in ROLiNeST

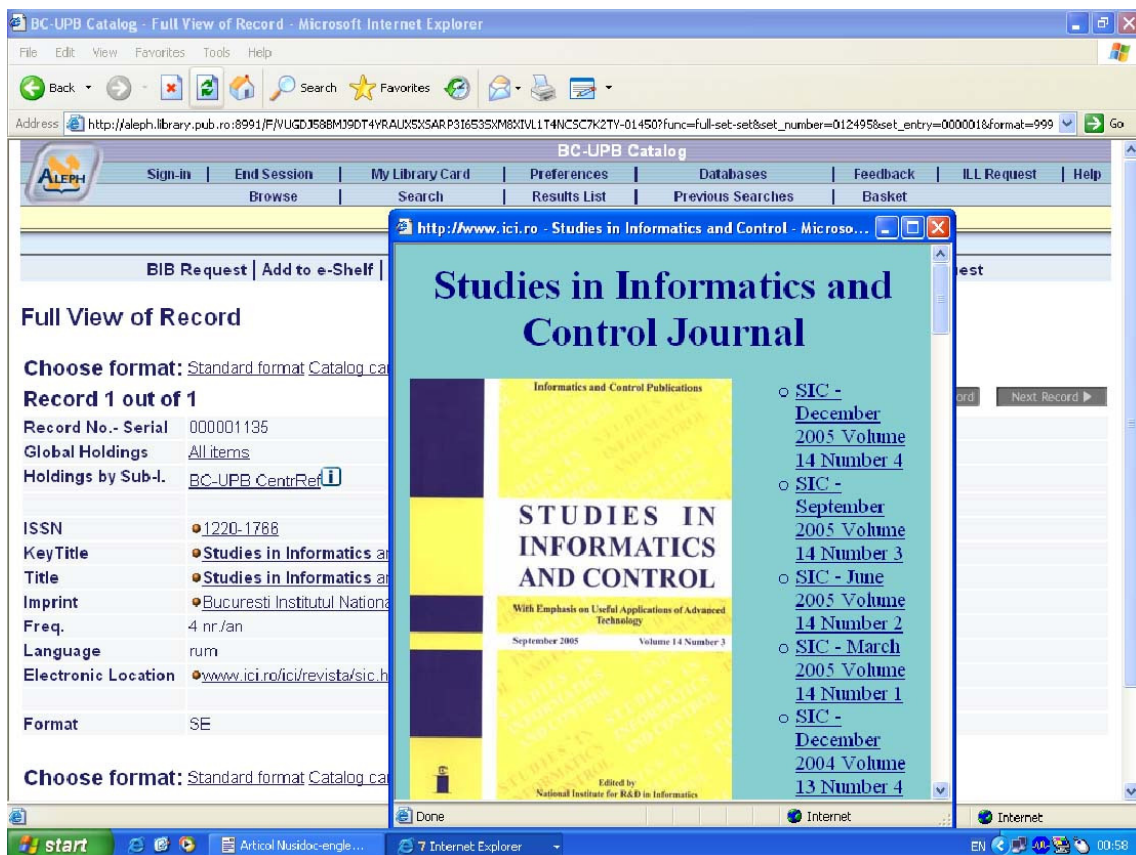**Figure 5: USMARC Record Format**

Figure 6: One Serial Format (SE) Record Displayed in the Online Catalogue of the Central Library of "Politehnica" University of Bucharest with Access to the Electronic Information.

Figure 7: Record of Rare Book, in the Online Catalogue of Digitized Document
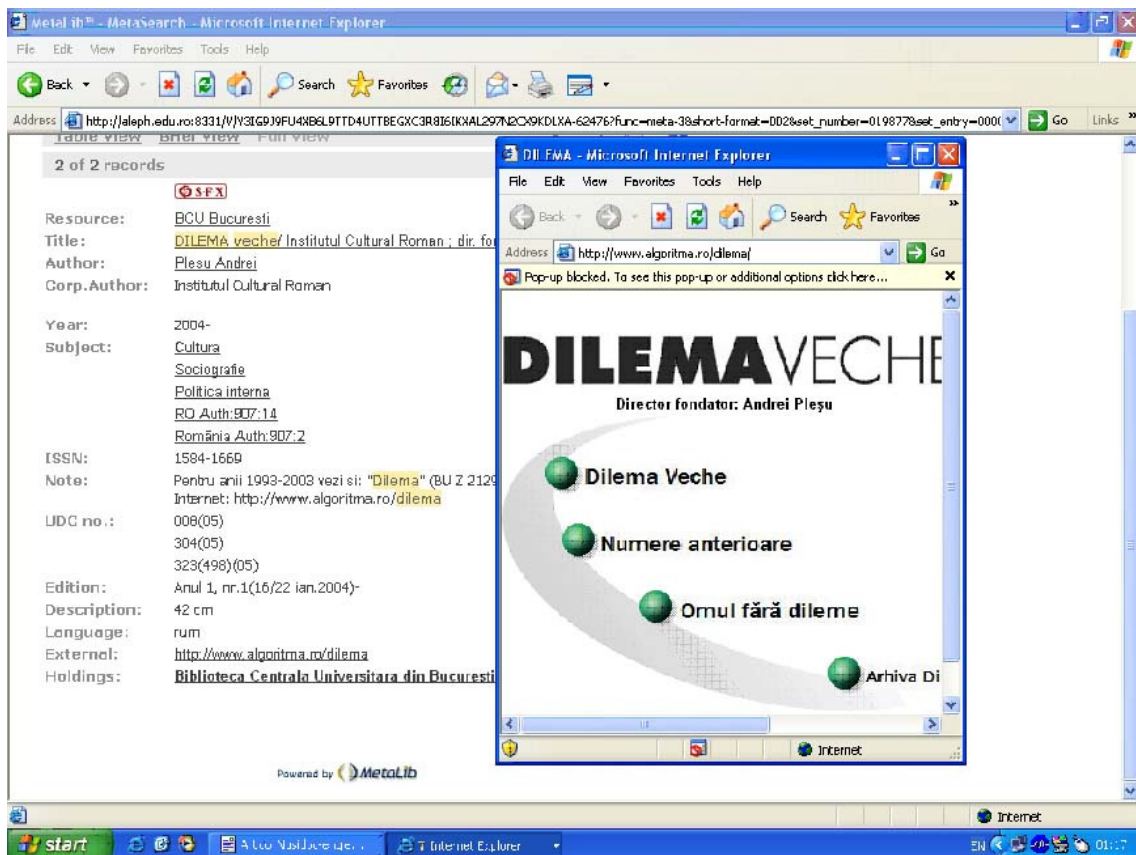

Figure 8: Registration of a Periodical, in the Online Catalogue of Central University Library of Bucharest (BCU Bucharest), with Access to Electronic Information

Non-functional requirements

The system offers non-quantified facilities both to users and administration:
- easy maintenance of the system
- complexity of data to be processed
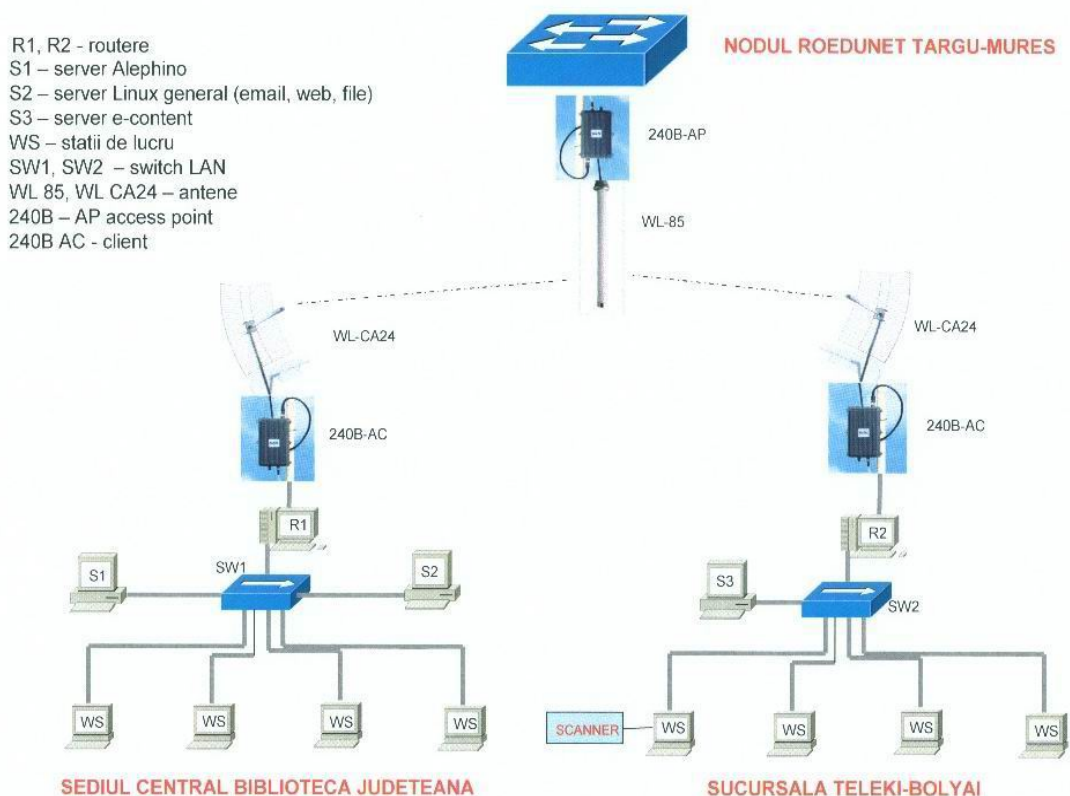- integrity
- data security

Test for functional requirements

Access speed
- All the participants in this project are connected to RoEduNet national network, having main nodes in Bucharest, Iasi, Târgu Mureş, Cluj-Napoca, Timişoara, Galaţi and Craiova. Data transmission speed between participant libraries is in a bandwidth about 2x155 Mbps.
- The tests demonstrated that the data packages speed in RoEduNet between participant institutions is 2 Mbps for packages up to 10 MB and 1.7 Mbps for packages between 10 MB and 100 MB.

The project is extended to the public library in Târgu Mureş. The main objective of this extension is the building of multilingual user interfaces. The project will be focused on TELEKI branch. Because the library has not a good connection to the internet, the project will develop a wireless connection to the internet via RoEduNet Târgu Mureş. The schema of this project is presented below:

ARHITECTURA INFRASTRUCTURII SISTEMULUI BIBLIOTECII JUDETENE MURES din TARGU -MURES

At the end of the project, the multilingual interfaces will cover: German, English, Hungarian, and French.

Conclusions

After the tests, it was demonstrated that ROLiNeST portal corresponds to the purposes and objectives proposed in NUSIDOC project.

The performance of RoLiNeST portal are correlated with hardware / software components optimization of the interconnected libraries.

The national virtual catalogue, based on Metalib system, is a distributed virtual catalogue enabling the user to interrogate simultaneously both bibliographical databases and heterogeneous electronic resources. In the future, the virtual catalogue will include more databases from Romanian libraries as well as electronic resources from other suppliers.

The system was designed as an open one, allowing other Romanian university and Academy libraries, to be connected to it.

The project will be developed by a new one oriented to the *e-content* management. The project entitle (SINRED) is just a beginning, but the same libraries are involved in it. The system is open to be connected to other similar systems from abroad.

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