Digitization of scientific and cultural heritage, TR6201, 2005 - 2007

Serbian archives, museums and libraries keep large number of textual, image data and other values from the national scientific and cultural heritage. Many of them are of the great national interest. Problems in their direct use and exploration are well known. Modern information science provides very efficient means for storing and retrieving information for this type of data. That gives us very good capabilities for archiving, searching and presentation of the scientific and cultural heritage to the general public, but to specialists and scientists as well. Digitization has the key role in this area: creating digital counterparts with accompanying system of metadata and software for manipulation with them. The subject of investigation of this project is: Technological aspects of digitization, world standards and protocols in this area and their implementation in Serbia. Launching and strategy of substantial digitization projects and coordination of national institutions in this area.

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The proposed project is a continuation of two earlier projects: Innovation project I.1.1130 MST R. Serbia (1996-1997) and Technological project ***Development of standards for digitization, computer archiving and restoring of cultural values*** IT.1.24.0013.A MSTD R. Serbia (2002-2004). Several activities were started and completed during the work of these projects. Some of them were of continual nature and they are connected to the tasks of the proposed project:

1. NCD (National Center for Digitization) http://www.ncd.matf.bg.ac.yu, which brings together leading scientific and cultural institutions in Serbia in the field of digitization (Mathematical faculty, Mathematical institute and Archeological institute of Serbian Academy of Science and Art, National Library, National Museum, State Archive of Serbia, Yugoslav Film Archive, Serbian Institute for Monument Protection, Museum Nikola Tesla).

2. Publishing of the journal **NCD *Review***, e-edition is on display on the above internet site.
3. Organization of annual national and international conferences on digitization (2002, 2003, 2004).
4. Participation of our country in **SEEDI** (South-Eastern European Digitization Initiative, http://www.ncd.matf.bg.ac.yu/seedi/)**.** NCD Review became a journal of this organization since 2004.

Besides these continual tasks the following investigation will be the part of our project:

1. Standards and protocols in digitization for:

A. Organization of data and forms for computer archiving of textual, image, video and audio data in national heritage.
B. Organization of local bases and protocols for access to databases of institutions involved in the project.
C. Equipment and protocols in protection of digital data.

2. Development of information systems and software:

A. For implementation of proposed standards and metadata.
B. That could enable one to manipulate already existing databases.
C. For digital restoration and protection of digital counterparts and author rights.
D. Electronic publishing.

3. Internet oriented software for presentation of scientific and cultural heritage:

A. Virtual library.
B. Virtual museum of 3D objects.
C. Portal for information exchange on digitized entities.

4. Digitization of selected collections of institutions involved in the project.

Bibliography: 1. Ž. Mijajlović, ***On some undertakings in the field of digitization in the last decade***, NCD Review 1(2003), 12-27,

http://www.ncd.matf.bg.ac.yu

2. Z. Ognjanović, ***National Center for Digitization***, ibid, 3-11.

The aim of the project is development and introduction of current technologies in digital archiving and multimedia presentation of scientific and cultural values from the national heritage:

1. Identification of world standards and their introduction at the national level:

- Digitization and electronic archiving of scientific and cultural heritage:

A. Textual data - old Serbian books, manuscripts and journals, taking into account particularities: Cyrillic alphabet, old Serbian language, etc.
B. Image data.
C. Audio data.

- Digital restoration.

- Protocols for data transfer and exchange.

- Multimedia presentation and electronic publishing.

- Design of specific data bases.

2. Development of software which should cover needs of the project participants

in this area.

3. Coordination and flow of ideas among institutions having requirements for digitization. This aspect of the project would be realized through the National Center for Digitization and journal NCD Review.

The project has the following important features:

General aspects.

1. Preservation for future world of national heritage and works from science and art in general by digital collections has the universal sense.

2. The final aim is to design models and construct prototypes of information systems that should be used in Serbia for studies and presentation of scientific and cultural heritage at all levels, to general public, but experts as well.

3. Well designed digital presentations of national heritage to World, will contribute to the prestige of the country and ascertain the national identity as well.

Particular aspects. Applications of information technologies in digitization coincide partly with applications in e-business, particularly in today popular electronic archiving of business documents, electronic publishing, development of nonstandard types of data bases that include image and audio data, virtual 3D objects, etc. Technologies in this area comprise OCR, data mining, data compression and protection, design of complex data base, but practical software as well, e.g. programs for transliteration of texts from Cyrillic to Latin and vice versa. Besides programming tools, sophisticated algorithms and often complex mathematical methods are supposed in real implementations in digitization area. The project will cover also development of particular algorithms and mathematical methods of this kind, with possible applications in the other mentioned areas.

European countries have unique and significant wealth in its cultural and scientific heritage. According to the Lund Principles (http://www.cordis.lu/ist/directorate_e/digicult/lund_p_browse.htm), digitisation of that resources is a vital activity for providing improved access for the citizen, for preserving Europe's collective heritage and promoting cultural diversity in a global environment, and is crucial for education, tourism and media industries. However, cultural and scientific heritage collections in our country still cannot be widely accessed in electronic form. Having in mind these facts, the project will offer the following opportunities for return of the investment:

1. Possibility of producing CD and/or DVD collections containing presentations of parts of the national cultural and scientific heritage with applications to cultural tourism.

2. Possibility to improve access to the international cultural and scientific collections. An example of such resources is Manuscriptorium database of the National library of Czech Republic (www.manuscriptorium.com) which contains more than 1000 entirely digitized manuscripts and early books. The license for the full access costs 3000 EURO/year. However, thanks to already established international cooperation through the National Center for Digitization, our institutions have been offered the opportunity to obtain the license in exchange for the access to our own databases of digitized documents.

3. Technology transfer will enable the project participating institutions to undertake further digitization activities and to collaborate with the similar institutions from abroad in the international programs like FP6.

4. Possibility for improving accessibility, visibility and recognition of the national cultural and scientific heritage in the framework of Europe's cultural and scientific resources.