

**The fifth SEEDI International Conference
Digitization of cultural and scientific heritage,
May 19-20, 2010, Sarajevo, BiH**

THE BOOK OF ABSTRACTS

**The fifth SEEDI International Conference
Digitization of cultural and scientific heritage,
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Hotel Europe, <http://www.hoteleurope.ba/>**

Conference Program

19. May

9:15-9:30	OPENING	
9:30-10:15	Towards a Digital Mathematics Library, Invited talk	Petr Sojka
10:15-10:30	COFFEE BREAK	
10:30-10:45	Life after Digitization, Deschooling Society—2010 & beyond	Mihal Orela (Михал Орела), Mícheál Mac an Airchinnigh
10:45-11:00	The Emperor's New Digital Suit	Žarko Mijajlović, Aleksandar Pejović, Vojin Jovanović, Dušan Vasiljević
11:00-11:15	Astroinformatics and digitization of astronomical heritage	Nikolay Kirov
11:15-11:30	Digital Library of Slovenia – dlib.si	Zoran Krstulovic, Tine Musek
11:30-11:45	Designing User-centred Digital Libraries: Usability and Accessibility Issues	Andrina Granić
11:45-12:00	Virtual Museum of Bosnian Traditional Objects	Selma Rizvić, Aida Sadžak
12:00-12:15	OpenAIRE – a project for piloting open access in Europe	Constantinescu Nicolaie
12:15-12:30	Calendar database and algorithms for calculation and conversion: Christian's and Muslim's calendars in our region	Biljana Samardžija, Stevo Šegan, Dušan Marčeta, Slaviša Milisavljević
12:30-12:45	Digitization's chain	Massimo Colombo
12:45-13:00	Digitization strategy in Macedonia	Lazar Šumanov, Smile Markovski, Stana Jankoska, Saša Krstevski, Goran Patčev
13:00-14:30	LUNCH BREAK	
14:30-15:00	European Heritage Network - the Herein 3 Database	Anna Trigona
15:00-15:20	User-centric Evaluation of Cultural Heritage Digital Libraries: Three Case Studies	Milena Dobрева, Pierluigi Felicati
15:20-15:35	Data Mining – Revealing the Sound Recordings Metadata Meaning	Vesna Aleksandrović, Ivan Pešić
15:35-15:50	Digitization of Bulgarian folk songs with music, notes and text	Nikolay Kirov
15:50-16:05	Digitalization, Restoration, and Audio Mastering Practices at the Institute of Art Studies in Sofia, Bulgaria	Aleks Nushev
16:05-16:20	How to Digitalize Folklore Song Archives?	Lozanka Peycheva, Grigor Grigorov
16:20-16:30	Music Folklore Archive Collection at the Institute of Art Studies – BAS in Sofia, Bulgaria, and its Restoration and Digitization	Diana Danova, Maria Kumichin

16:30-16:45	COFFEE BREAK	
16:45-17:00	Digital storytelling in presentation of cultural heritage: The case study of the Vizier's residence in Travnik	Vanja Jovišić
17:00-17:15	A Modern Surveying of Ancient Počitelj Fortress	Aida Sadžak, Zina Ruždić
17:15-17:30	Exhibition of Virtual Emona on dLib.si using 3D technologies	K. Antlejš, M. Savnik, B. Zupanek, K. Celec
17:30-17:45	Digitization of cultural heritage of Toplica region in Serbia	Ž. Mijajlović, M. Milovanović, A. Valjarević, D. Radovanović, A. Simonović
17:45-18:00	Foundation of the Serbian Astronomical School and connection with adjacent national school	S. Milisavljević, B. Samardžija, D. Marčeta, S. Šegan
18:00-18:15	Online Presence of Meša Selimović's Literary Heritage: Digital Heritage Repository in the Function of Literary Studies	Lejla Kodrić, Sanjin Kodrić, Teo Eterović
18:15-18:30	Arianna 3 and AriannaWeb, software tools for the archival sector	Snežana Pejović

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Conference Program

20. May

9:30-10:15	Where Cultural Heritage meet new technologies, Invited talk	Denis Pitzalis
10:15-10:45	Europeana: From inspirational idea to sustainable service	Anne Marie van Gerwen
10:45-11:00	COFFEE BREAK	
11:00-11:15	Doctoral dissertations in NCD Virtual library	Žarko Mijajlović, Nada Pejović, Zoran Ognjanović
11:15-11:30	DC-NET, Digital Cultural Heritage Network	Giuliana De Francesco
11:30-11:45	Recommendation for the national standard for describing collections	Zoran Ognjanović, Bojan Marinković, Tamara Butigan Vučaj
11:45-12:00	Digitization of books by Jelena J. Dimitrijević	Snežana Nenezić, Miljko Veljković
12:15-12:30	Education for knowledge society: based on the example of digital repository BISER	Senada Dizdar, Lejla Hajdarpašić
12:30-12:45	The Digital Collection of Cultural Heritage Institutions as the Cultural Product	Vaska Sotirov-Đukić
12:45-13:00	Multimedia project "Aleksandar Aca Popović"	A. Vukadinović, B. Mitrović, M. Đurić, I. Valjević, J. Hadži-Purić, G. Pavlović-Lažetić
13:00-13:15	Astronomical heritage in NCD Virtual Library	Nada Pejović, Žarko Mijajlović
13:15-15:00	LUNCH BREAK	
15:00-17:00	SEEDI MEETING	
17:00	EXCURSION	

Towards a Digital Mathematics Library

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I will start with the success story of the DML-CZ <http://dml.cz> library, and with the vision and goals of the project of the European. Digital Mathematics Library. I will describe the challenges of math OCR, indexing and search, digital library visualization, and other problems of document engineering and how we have tackled them in the DML-CZ and in EuDML.

**Life after Digitization,
Deschooling Society—2010 & beyond**

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Schooling may now be considered to be an intrinsic part of the society. The term may be taken to cover all those formal institutions established to school young people from approximately the age of 7-11 (primary school), passing through 12-17 (secondary school) until, in the end, 18-21 (tertiary school). The schooling is aided and abetted by the use of prescribed (text)books and the outcome is measured by the formal examination process. Conformity is the norm. Naturally, the young often rebel, in all kinds of different ways.

The purpose of the Newspaper is not only to provide “news” but more significantly to build up a particular view of the society amongst its “loyal” readership. The edited output is always subject to policy. The Book, on the other hand, is materially and socially different in nature. The time of its making, lasting perhaps a year or more, lends it an authority and offers a sort of cultural world view to its readers. In its guise of textbook it has been the basic foundation of all schooling (and still is). There are books that survive and endure; there are many others that do not.

The arrival of the Internet, and then the World Wide Web, and now the multimedia devices that free us from fixed location, all point towards a new social contract between teacher and student, and parent and school. How will the stamp of authority be given to those students who are successful in an Open Schooling Society?

In this paper we explore the extent to which the Web has been and can be used to facilitate the upskilling of those who have already been schooled. In particular we focus on the “hands across the cultural barriers,” linguistic and ideological.

Keywords: deschooling society, Dublin Core, hyperlink, hypertext, learning web, multimedia, semantic web, technology enhanced learning.

Astroinformatics and digitization of astronomical heritage

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The new interdisciplinary area of Astroinformatics combines scientific knowledge from astronomy and Information and Communication Technologies (ICT), based on Internet developments. Recently, four institutes of the Bulgarian Academy of Sciences launched a joint project called "Astroinformatics" and aimed at the development of the necessary methods and techniques.

Astroinformatics has arisen from the need of ICT methods for preservation and exploitation of the scientific, cultural and historic heritage of astronomical observations. The Wide-Field Plate Data Base (WFPDB) is an ICT project, which has been launched in 1991, by the working group "Wide-Field Sky Surveys" of the International Astronomical Union and is unique by its nature at international level. So far 150 000 photographic plates have been digitized through several European research programs. Advanced technologies for digitization plates and also astronomical logbooks, as well as WFPDB improvements and additions are now under development in the frame of the current project. Some new approaches and methods in this field will be presented.

Keywords: Astroinformatics, Information and Communication Technologies, Photographic Plates, Astronomical Logbooks, Digitization

Digital Library of Slovenia – dlib.si

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The Digital Library of Slovenia (www.dlib.si) operates within the framework of the National and University Library. www.dlib.si is a portal for knowledge management, and it is constantly being developed and improved according to users' needs and current standards. The Digital Library of Slovenia fulfils its basic mission, which is the same as any libraries, to which achievements of the past years are the proof. The basic strategic starting point of dLib.si has been to enable the users a simultaneous internet access to library catalogues and collections of materials digitized from classical carriers (The Digital Library of Slovenia Development Strategy – dLib.si 2007-2010, Ljubljana 2006). Technological solutions of the portal which enable access to digitized contents are based upon the implementation of the protocol Open Archive Initiative, automatic data harvesting and metadata model Dublin Core. At the same time, the portal enables access to the catalogue of the national library using the protocol Z39.50. In this way, a user can search any number of digital or metadata collections. It is connected with similar projects in Europe and contributes significantly to the recognition of the Slovenian cultural heritage. It cooperates with home establishments, educational institutions, research institutes and other important partners. As a provider of the broadest coverage of and open access to digital cultural and scientific digital content, the Digital Library of Slovenia remains, and more and more it also becomes, a key factor in the democratization of the society and the basis of its progress. Based on the existing solutions from international research and development projects, the National and University Library provides web-services to each citizen and thus participates in the worldwide digital cultural content provision. The solutions are a result of close cooperation between information specialists and librarians in national, research and university libraries. Such international collaboration leads to several positive aspects and benefits, such as: costs reduction (open code solutions are normally cheaper), high level of synergy between the participants (libraries and research institutions) and interoperability. Using the same services makes the connecting of different subjects and the information flow much easier. Some examples of good practice are: Europeana - a joint portal of European libraries, museums and archives, Web Curator Tool - a tool for web content harvesting, EODdigitization on demand service and others.

The National and University Library as the Digital Library of Slovenia (dLib.si) web portal administrator are fully aware of the information needs and requirements of current web users. The paper describes techniques and approaches also, applied within dLib.si, to exchange of information (metadata) on digital contents through the use of modern communication protocols, thus enabling access to information outside the local web portal as well. In this way, dLib.si has been successfully connected to The European Library portal, while nationally co-operation with IZUM should be pointed out. dLib.si web portal has won the 2007 Netko Bronze Award and has become finalist of 2009 Netko Award, the best business web site in the Media and Information Portals category.

Designing User-centred Digital Libraries: Usability and Accessibility Issues

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Digital libraries (DLs) have contributed significantly to the provision of structured, declarative knowledge about a wide range of subjects. At the moment, they are often set behind monolithic user interfaces that can offer an overwhelming richness of data. Nevertheless, that should not blind us as to their potential to provide utilizable support for human learning in the context of the inclusive, information and knowledge society. It is also clear that much of the concern with usability and accessibility is focused on aimed the user interfaces rather than the deep structure of the digital library. The extent to which current DLs can be made sufficiently usable and accessible to support an inclusive information society and the aspiration of universal access was explored. Using a range of converging methods to evaluate a random sample of digital library websites, it is concluded that there is potential for improvement. Furthermore, if digital libraries are to form the basis for the realization of what has been called the "digital ubiquitous knowledge environments" (DUKE) or "post digital libraries" (PDL), then there would be a possible convergence of technologies like digital libraries, ambient intelligence and ubiquitous computing. Terms like DUKE and PDL emphasize the development of user-centred DL-systems acting as communication and collaboration tools, also reducing customization efforts for individual stakeholders. In any case, it is clear that a lot of further work is still needed in order to shape the future research in this field.

Virtual Museum of Bosnian Traditional Objects

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Virtual Museum of Bosnian Traditional Objects is a museum possible to visit from any place in the world. This museum is a virtual environment with the multimedia content. It contains the information on the artifacts, galleries of their photos, movies about their purpose and their virtual models. With this kind of museum it is possible to view the objects from all sides, as if we have them in our hands. In this paper we will present the background of this project, its implementation and give an overview of the created content.

**Calendar database and algorithms for calculation and conversion:
Christian's and Muslim's calendars in our region.**

Biljana Samardžija, Stevo Šegan, Dušan Marčeta, Slaviša Milisavljević
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Starting from original calculation of Sun's and Moon's ephemeris, especially from so called cycles of the Sun and Moon, authors give an high accuracy algorithm for determining calendar's base for Solar and Lunar calendars. The authors generate these calendars regarding to worldly and spiritual rules of Christianity and Islam in real intervals of application and give conditions for proleptic calculation. They also give algorithms for mutual conversion of these databases and their social events through Julian day number.

Digitization's chain

This contribution presents an integrated offer of services and digital solutions, ideated as a value chain and aimed at the acquisition, preservation and valorization through Internet of cultural resources. This contribution presents three Italian entrepreneurial realities which have represented a consolidated partnership for some years and which have been active in the Italian and international cultural heritage sector: furthermore a lot of interesting hints will be suggested, analysing the services, the technologies and the provided solutions.

The partnership is formed and run by three Italian enterprises with a long experience concerning the treatment and management of cultural resources, and it guarantees quality and innovation in every single project.

The first one is Metis Systems, a Roman enterprise; it has been specialized since 1988 in the production of hardware and software systems within the digital imaging sector: thanks to the consolidated know-how within the technologies and digital photography field, Metis realized planetary scanners for the acquisition of high-resolution images which can be adapted to different cultural resources, from ancient books to cadastral maps and historical cartography.

The second enterprise, M.I.D.A. Informatica, is a company placed in Bergamo and specialized in services of digitization and cataloguing of cultural resources and in the planning and development of projects, solutions and technologies for the valorization and multimedia.

The third one is Hyperborea, based near Pisa and specialized in services for archives and libraries and in the planning, production and commercialization of software for archives and museums. It answers to specific needs of management, preservation and promotion, through web, of archival documentation and cultural heritages (museums' resources and cartographic ones).

The partnership among these three enterprises offers a process whose main goal is the preservation and valorization of cultural heritages, by exploiting the new ways of communication provided by Internet.

First of all we start from a cultural heritage (a work of art, a map, an archival document) that we want to make digital and useful for a vast and heterogeneous public. The ideal process starts with a scanner Metis, endowed of a vanguard technology for the digital acquisition; it goes on with the M.I.D.A. competences, which guarantee an accurate digitization process and into line with qualitative and certificated operative standards; it ends with Hyperborea's technologies, in particular with E-gallery and AriannaWeb, web-based software which allow the digital preservation of cultural heritages, and assure their fruition in Internet thanks to the use of advanced tools of visualization and consultation.

With this contribution we have two main goals. The first one deals with the archival description role, carried out by Hyperborea, in the already described process: it is an essential activity to identify and contextualize correctly the documentary heritages which will be digitalized and placed at people's disposal through the use of advanced technologies. The second goal consists in underlining the role of the two technologies, AriannaWeb and E-gallery, in the process of digitization of cultural heritages of historical relevance. AriannaWeb and E-gallery represent the final result of a process whose main goal is to valorize and make useful different kinds of cultural resources in digital format. The valorization and promotion take place thanks to a technology, which is available in any moment, through a simple browser for the web navigation, in any place, and by any user in a completely free way. The visualization of the digitalized cultural heritages takes place thanks to advanced navigation tools, capable of managing high-resolution images.

National Strategy on Cultural Heritage Digitalization in the Republic of Macedonia

by

Lazar Sumanov¹, Smile Markovski², Stana Jankoska³
Sasa Krstevski⁴, Goran Patcev⁵

According to the efforts and decision of the Government of the Republic of Macedonia to support and develop of Information society on 2005 adopt National Strategy and Action Plan for Development of Information society, Ministry of Culture on 2009 establish an Expert Working Group⁶ to prepare Draft of the National Strategy of Cultural Heritage Digitalization.

In the prepared Document, accordingly Targets and Needs has been proposed in accordance of the Legal framework as well as with the international recommendations especially those by EU and CE. Role and responsibilities of National institutions in the field of Cultural Heritage Protection has been defined.

Special attention has been given to the importance the organization of the institutional network for digitalization of Cultural Heritage divided in the three main categories: immovable, movable and intangible (according to the Law for Cultural Heritage Protection since 1st January 2005). According to the National Strategy for Cultural Heritage Digitalization for implementation main role will have Cultural Heritage Protection Office, in the frame of Ministry of Culture and the Regional Center for Cultural Heritage Digitalization. For implementation of the National Strategy and National Programme for Digitalization of Cultural Heritage a Fund for Digitalization of Cultural Heritage has been proposed. It is planed that National Strategy for Cultural Heritage Digitalization will be adopted and approved by the Government of the Republic of Macedonia. Period of 2010-2012 is proposed as a Pilot Period⁷.

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⁶ other members of the EWG are: Katica Atanasovska, Marija Nikoloska, Darko Krzovski, Vera Korosec, Goran stjkovski, Petar Volnarovski, Mihailo Cikovski, Dr. Bone Velickovski, Dr. Ubavka Gajdova.

⁷ Procedure of approved by the Government is already started.

User-centric Evaluation of Cultural Heritage Digital Libraries: Three Case Studies

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Cultural heritage digital libraries have a range of users including professionals; “digital natives” as well as general users. Their motivation and needs differ and one of the challenges in evaluating how digital libraries are perceived is to understand the specific points of view of various communities. The identification of stumbling blocks and features which are not satisfying users’ expectations aims not only to develop a clearer understanding of users and to serve them better but also to sustain a steady user community.

The paper will address how user evaluations could help to adapt the digital libraries to the users. Three case studies will illustrate how a range of user communities within the cultural heritage domain were studied. The first one, within the project DiSCmap, addressed the needs in digitised materials within the Higher Education institutions in the UK. It involved intermediaries and end users and used a combination of web questionnaires, interviews and focus groups to identify user-driven priorities for digitisation across both user communities. The second one assessed the European digital library Europeana through a combination of focus groups and media labs held in four countries. This study was qualitative but gathered a range of quantitative data providing evidence of user behaviour (queries used; eye tracking data and data on the users’ performance on a standard set of tasks). The third one treats the user survey initiative held for the Italian Association of Librarians AIB portal, launched in the phase of its re-styling through a web questionnaire that collected more than 600 answers. All those studies synthesised recommendations on the preferred characteristics and features of the digital libraries from the point of view of specific user communities. The paper will provide practical examples which illustrate how quantitative and qualitative elements in a user study help to build a better picture of the users’ needs.

Data Mining – Revealing the Sound Recordings Metadata Meaning

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What brings together bibliographic record (its format and content), labels, names, gramophone 78 rpm record, matrix numbers, roles, subjects?

In case of digital library and information accessibility, that would be certainly – metadata. Every librarian knows the meaning of information. Things work right when you do have information to offer, and get. The problem arises when information are limited and almost do not exist.

Now and here, in our hands are so valuable and precious, words, tones, tunes, information, voices of the past, written on one of the earliest sound carrier – 78 rpm gramophone record, representing cultural heritage of the mankind. Besides audio data, every single gramophone record has its story *behind the scene*, which we can hardly find even in old and dusty catalogues of gramophone records publisher houses, archives or in the memories of unique but informal, *The 78 rpm Gramophone Records Collectors and Fans* union.

Our obligation is to find, explore and represent these data, such as recording and publishing date, location, matrix numbers, to resolve pseudonyms, initials, find out who composed or wrote lyrics or libretto and many other things which vary from record to record. Furthermore, these discoveries have to be put in some user friendly form and system, and publicly presented.

The topic of this paper is information extraction for the purpose of wider digital object denotation and presentation. The present COBISS2 platform (used in National Library of Serbia) does not have an appropriate data export format suitable for this type of material. Therefore, we devised a process which extracts all necessary fields and subfields from a record, apply further processing of data, and store it in an XML file. We also developed an XML schema for internal purposes which is used in MapForce mapping to represent the metadata in the final XML format. Also, there is a plan to create an additional mapping into DUBLIN CORE compatible format.

Digitization of Bulgarian folk songs with music, notes and text

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A digitization project for Bulgarian folk songs has been started last year, joining the efforts of various experts from three institutes of Bulgarian Academy of Sciences (Institute of Mathematics and Informatics, Institute of Art Studies and Institute of Folklore) and two universities (Sofia University and New Bulgarian University). The research that is carried out under this project aims at the development of a technology and corresponding supporting software tools for the creation and usage of heterogeneous institutional digital libraries. The tools will satisfy the needs of the researchers for information technologies in the fields of ethnology, ethnomusicology and folkloristics.

In the project frame a technological environment for digitization of notations is created, specially adapted for Bulgarian folk songs. Now a database with notes (coded with LilyPond software), lyrics and music (digitized from old types) is under development. An initial digitization and preservation of the Bulgarian cultural heritage will be carried out by means of digitization and insertion into the system of over 1000 songs that were recorded and written down during the 60s and 70s of XX century.

Keywords: Digitization, Bulgarian Folk Songs, Digital Library

**Digitalization, Restoration, and Audio Mastering Practices at the Institute
of Art Studies in Sofia, Bulgaria (Article Summary)**

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In this upcoming paper I will share with you – with the aid of some video clips – an overview of our production cycle, i.e., “the process”: vinyl preparation, hardware and software setup, decision making on the most appropriate processing for each particular piece of digitized material, processing, storage and backup.

The first part of my article will cover (in the format of text, PowerPoint slides, and video) the following aspects of our archive:

- Vinyl collection presentation
- Hardware (Laser Turntable, hardware ELP declicker with 88 kHz high-grade AD converter, Vacuum Cleaner for LP’s, TC Electronics professional ASIO compatible audio interface, etc.)
- Project funding source: The Bulgarian Art Archives, Resources, and Research Technologies Project (BAARTI)

The main part of my paper will be focused on technical aspects like signal flow processing applications such as Crackle, Hiss and Pops removal as well as multiband compression, RMS level optimization, pitch correction.

Our digital audio workstation is Samplitude Master Edition supported by Waves Restoration – Mastering plugins and a UAD card with a Master Bundle. I will conclude with an overview and discussion of the different perspectives on the question “Does our digitized material benefit significantly from additional processing or do pure and unprocessed versions serve our purposes better?”

I will also include an overview of the digital audio database, data storage, backup, and outreach initiatives we are considering.

Thank you very much for the opportunity to present our project.

Kind regards,

Как да бъдат дигитализирани фолклорните песенни архиви?

Лозанка Пейчева, Григор Григоров

Че фолклорните песенни архиви трябва да бъдат дигитализирани, е несъмнено. Въпросът е как? Според нас, три задачи трябва да бъдат изпълнени. Първо, да бъде създадена дигитална библиотека, която да побере три информационни масива: автентичен звуков файл, нотопис и словесен текст на песенните образци. Второ, записите да бъдат снабдени с множество метаданни, описващи техническите, имплицитномузикалните и имплицитнотекстовите характеристики на образците, така че библиотеката да се превърне в база-данни, облекчаваща ползването на архива и научните търсения. И трето, да бъде създаден подходящ софтуер, който да облекчава използването на създадената база данни (като напр. интелигентна търсачка, преодоляваща фонетичните записи, географска карта, на която се визуализира разпространението на песни с определен критерий и пр.). Целта на настоящата презентация е да предостави експертно мнение какви метаданни трябва да бъдат предвидени и какъв софтуер трябва да бъде разработен, за да може така създадения архив да бъде полезен за научни разработки в сферата на фолклористиката и етномузикологията.

How to Digitalize Folklore Song Archives?

Lozanka Peycheva, Grigor Grigorov

Beyond all question the Folklore song archives must be digitalized. The problem is how? From our point of view three tasks must be accomplished. Primarily, the creation of a digital library, which must contain three information massifs: the authentic audio-file, the verbal and the note texts. Secondly, the digitalized songs must be supplied with many technical, implicit musical and textual meta-data, which will transform the digital library in database, useful for science researches. On third place, a specific software must be developed, e.g. an intelligent search program, overcoming the phonetic text records or a program solution, which visualizes the territorial spreading of selected through specific criteria songs on the geographical map. The purpose of the current presentation is to present an expertise on what kind of meta-data must be provided and what kind of software must be produced for the facilitation of the science researches in the fields of the ethnomusicology and the folkloristics.

Music Folklore Archive Collection at the Institute of Art Studies – BAS in Sofia, Bulgaria, and its Restoration and Digitization

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In this paper we present archive collection with authentic Bulgarian musical folklore which is possession of the Institute of Art Studies, and its digitization.

The Folk Music Archive of the Institute of Art Studies keeps Bulgaria's folkloric heritage, which has been collected from the end of 19th century by prominent ethno-musicologists: Angel Boukoreshtliev, Konstantin Zagorov, Pavel Stefanov, Vassil Stoin, Rayna Katzarova, and others. It contains recording tapes with traditional Bulgarian folklore music, original papers (notated songs with lyrics and notated instrumental tunes), transcriptions, descriptions, copies and decodes from phonic recordings.

The urgent and timely collection, restoration and preservation of rare, valuable and rapidly vanishing traditional Bulgarian culture artifacts is the long-termed process which includes recording, scanning and digitization. Processing of the collected archive needs technical description, scientific recognition and etc. due to a general database is created.

Creation of this database aims to provide better conditions for using the Folk Music Archive.

Key words: Digitization, Cultural Heritage, Archive, Database

DIGITAL STORYTELLING IN PRESENTATION OF CULTURAL HERITAGE: THE CASE STUDY OF THE VIZIER'S RESIDENCE IN TRAVNIK

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Virtual presentation has become an integral part of the presentation of cultural heritage. It applies worldwide, and although this approach raises many questions related to authenticity and accuracy, number of the projects applying these methods increases each year. These drawbacks are outweighed by the advantages of increasing public awareness about the world heritage and the importance of protecting it.

Old Vizier's Konak in Travnik was a residence building for over 77 viziers during the Ottoman Empire. The monument was demolished in May 1950, when its sole existence and historical value could not offer enough justification to be preserved for the future generations.

This paper covers different stages of creating of virtual reconstruction of the vanished monument and using created outputs in a story based on digital storytelling principles and techniques. It also evaluates the impact this digital story has made on participants of the survey conducted before and after the screening of this digital story.

Keywords - virtual heritage, cultural heritage digitalization, digital storytelling

A Modern Surveying of Ancient Počitelj Fortress

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This paper gives an overview of the Master Thesis Project titled “Instruments and Methods for Cultural Heritage Conservation and Valorization” done at the University of Urbino “Carlo Bo”, Italy. The subject of our research is the medieval fortress of Počitelj historic site in Bosnia and Herzegovina, built in a Mediterranean and oriental style over the period from the fifteen to the eighteenth centuries. Different methodologies of survey and management using the modern IT techniques of architectural survey methodologies, with particular focus on survey using 3D data, will be presented. We will consider the questions of the analytical and theoretical set up of the modern instruments and techniques necessary for constructing the 3D metric model of the surveyed ruins of the medieval part of fortress.

“Virtual Emona” on dLib.si using 3D technologies

K. Antlejš, M. Savnik, M.Sc. B. Zupanek, K. Celec

Digital Library of Slovenia - dLib.si is a web portal for free accessing to digital and digitized library materials and virtual exhibitions. This paper is describing the use of 3D technologies in development and preparation of exhibition Virtual Emona. The title is related to Roman settlement Emona (Colonia Iulia Emona), which was located on a place, where present city of Ljubljana, the capital of Slovenia, is lying today. Content of the exhibition in 3D form will be public accessible on dLib.si and it will be linked to other resources about Emona on the same web portal. The beginning phase of the project includes 3D digitization of the model of archaeological site NUK II and 3D digitization of some artefacts, found on the mentioned site. NUK II consists of four Emona's insulas (building blocks) and crossing of two roads between them; under the road which ran in direction E-W, laid a cloaca. In late Roman period three of four researched insulas (XVII, XIII, XXVII) were thermal city baths. The project of Virtual Emona was formed in cooperation with the owner of dLib.si web portal, National and University Library of Slovenia, Museum and galleries of Ljubljana, which keeps and interprets archaeological artefacts, and with 3D technologies implementator, IB-PROCADD company. Virtual exhibition is already in realization process.

Key words: 3D technologies, 3D digitization, digital library, virtual exhibition, Emona

Digitization of Cultural Heritage of Toplica Region in Serbia

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In this paper we describe the project *Archeological and sacral objects of Toplica region*, a part of the general project *Application of information technologies in the digitization of scientific and cultural heritage*. The aim of the project is to collect data in digital form on archeological sites and sacral objects situated in this region. The data will include main information about this objects and sites, GIS data with accessing roads and photos. Up to now several expeditions were organized in this region to support these goals and more than fifty objects and sites of about one hundred are explored. The project is partly financed by the Serbian Ministry of Science.

Foundation of the Serbian Astronomical School and connection with adjacent national school.

S. Milisavljević, B. Samardžija, D. Marčeta, S. Šegan

In this paper authors give review of beginning of Serbian Astronomical School, its first lecturers and their books and publications. Also, most astronomers from the surrounding national schools of that period are mentioned, as well as mutual cooperation of those schools with the Serbian astronomical school.

**Online Presence of Meša Selimović's Literary Heritage:
Digital Heritage Repository in the Function of Literary Studies**

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Potentials of scientific research in general are obviously subject to changes in accordance with current digital information and communication environment, which is capable to give new, advanced performances, or those essentially different from the traditional ones, even in the domain of humanities, including literary studies as well. In this connection, developing a digital heritage repository, as a way of organizing and composing objects of heritage in selected thematic entities, is demanding, but also inspiring possibility in the case of literary heritage as well. This is exactly why it is important to think about developing a strategy for building a particular, although until now not existing, but as scholarly, educational and teaching aid increasingly more interesting digital repository of Meša Selimović's literary work, which is one of the most important canonical values of the entire Bosnian-Herzegovinian culture.

The aim of the proposed paper is to examine potentials and advantages of developing a digital repository of Meša Selimović's literary work. The focused problem is going to be approached in a holistic manner, which means in terms of its practical and cultural values, but also in terms of its feasibility, especially in the domain of often very complicated copyright, technical, financial and preservation problems.

The authors of the proposed paper are taking interdisciplinary methodological sides, which is caused by the authors' different academic education and positions within the academic community (library and information sciences, literary history and literary and cultural theory, as well as electrical engineering). This is exactly what gives an opportunity to observe potentials of developing a literary heritage digital repository from different perspectives: the perspective of increasingly more necessary information sciences and information technology, but also the perspective of literary and cultural studies. Finally, efforts of this kind are even more important in the year 2010, since this year the entire Bosnian-Herzegovinian culture celebrates the 100th anniversary of Meša Selimović's birth

DIGITIZATION OF BOOKS BY JELENA J. DIMITRIJEVIĆ

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In this paper we present digitization of books by Jelena J. Dimitrijević which was printed in the first half of XX century. In Public Library Kruševac we started process of making digital books from printed editions. The digitization of these books is a part of small project to promote her work in an interesting and innovative way and to bring it closer to our users. Digitizing this old titles and making them available electronically, dynamic, interactive also promote cultural contents and our local cultural heritage. We want to create similar contents in order to develop one database on literary man and women from Kruševac accessible for educational and information purposes. Jelena J. Dimitrijević was born in Kruševac 1862., died in Belgrade 1945. Between 1883 and 1889 she spent some time studying and working. During Balkan Wars 1912 - 1914 she was a nurse. She wrote lyric poetry, descriptions from her travels, travel story as well as novels. The most famous are Letters from Niš, Regarding harems – contents pictures from women's life in the Turkish harems, when Niš was a part of the Ottoman Empire. Jelena J. Dimitrijević also wrote Fati – sultan, 1907., Letters from Thessalonica, 1918 which were published in Srebian Literary Review, Letters from India, 1928 Letters from Egypt, 1929. The New World, In America for a Year, 1934. She also wrote Seven seas and three oceans: Around the World, 1940. Jelena J. Dimitrijević wrote about women's life in XIX and used very interested terminology, some Serbian and Turkish word used in XIX century. She is one of the first feminist authors in Serbia. Some of this books was translated into several languages. Some titles are authentic testimony about life on Balkans in 19 century. Descriptions of lifestyle are important for cultural history. The development of digital library especially in public library introduces many technical problems. We based our digital local history collection on open source software My SQL. This digital collection will be able soon at the Virtual library - Digitalna biblioteka www.nbks.org.rs. In this article we give short reviews of Jelena J. Dimitrijević works and biography.

Key words: digitization, digitized book, Jelena J. Dimitrijević, local history collection.

Arianna3 and AriannaWeb, software tools for the archival sector

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This contribution presents an integrated offer of technologies for the archival sector; these technologies can support users, administrations, and private structures in the aspects related to the documentation's management, preservation and valorization. The products, which will be described, have been projected, implemented and commercialized by Hyperborea s.r.l., an Italian company which has been operating for years in the Information Technology sector, applied to the cultural heritage domain: Hyperborea devotes itself with great attention to the problems and needs of the archival sector, with competences and professionalism for the historical archives.

Hyperborea's integrated offer for the archival sector conjugates technology and innovation with a series of profits for the structures which decide to adopt solutions to manage their archives: the offer is based on two products, Arianna3 and AriannaWeb; they satisfy the needs of description and preservation of the documentation and of the structured data, and they guarantee the complete Internet valorization of archival and documentary heritages.

Arianna3 is Hyperborea's historical product; it was born in 2000 and it has been created just to manage the activities of description, reorganization and indexation of the documentary material preserved in historical archives, through the Information Technologies. Arianna3 is a modular application, it operates respecting the international ISAAD (G) and ISAAR (CPF) standards and it can adapt itself to different realities and archival contexts; the software interface is available in three languages, Italian, English and Montenegrin, while the adoption of the UNICODE standard allows to manage the characters of all the other languages. Arianna3 exploits evolved technologies such as the XML/AED standard, which guarantees the interoperability with other kinds of systems and software. Finally it is convenient to underline the fact that Arianna3 uses a tree representation to virtually reproduce the archives' structure; moreover through the topographic map the user can always see the documentation's physical collocation.

AriannaWeb is a web application created to publish and consult in Internet the archival descriptions and highresolution images, by guaranteeing any user or enterprise the possibility of preserving, valorizing and managing documentary heritages of historical archives. AriannaWeb's interface reproduces an archival structure, allowing a rapid navigation through the preserved material: it presents the archival descriptions in a contextualized way, it guarantees rapid researches through a "google-like" engine, it allows the visualization of high-resolution images associated with the archival description. Under the technological point of view the adoption of the XML/EAD standard and the integration of the open source solution IIPImage for the visualization of images make AriannaWeb a vanguard technology for its sector.

One of the goal we want to pursue with the presentation of this contribution is to underline Arianna3 and AriannaWeb 's internationalization, after the recent translation in Montenegrin language. The translation represents an important meeting between two different archival traditions, the Italian and the Montenegrin one, under the technical and conceptual point of view. Under the technical point of view all the software interface's elements have been translated to allow the complete use of the Montenegrin language. Under the conceptual point of view the way of operating and the archival concepts have been exported, examined and used. This work also represents an important evolution for the spreading of software outside the Italian context.

Multimedia project "Aleksandar Aca Popovic"

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mr J.Hadži-Puric, teaching assistant
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The paper presents a multimedia project "Aleksandar Aca Popovic", dedicated to our famous play writer. This is a co-authored project of master students of Informatics, Faculty of Mathematics, developed for the course Development of Multimedia Systems, and students of library science of the Faculty of Philology, developed for the Multimedia course. During the project, with approval and recommendation of both faculties, a broad collaboration has been accomplished with many institutions of culture, from Belgrade and Serbia. These institutions are: National Museum in Belgrade, National Theatre, Atelje 212, Belgrade Drama Theatre, Kinoteka, Yugoslav Drama Theatre in Belgrade, Theatre Museum of Serbia, Radio Belgrade, Radio-television Belgrade, Zvezdara Theatre, House of Culture Nova Varoš, House of Culture Prijepolje, Kragujevac Theatre, Kruševac Theatre, National Theatre Leskovac, and Šabac Theatre. Library science students, supervised by professor dr Cvetane Krstev, collected comprehensive material consisting of texts, photographs, audio and video records. Informatics students, supervised by professor dr Gordana Pavlovic-Lažetic and mr Jelena Hadži-Puric, preprocessed the materials, designed and implemented multimedia web presentation showing parts of theatre performance, radio play, interviews, photographs. We used W3 technologies, specifically integrated multimedia language SMIL. A multimedia database has been designed and implemented providing for interactive search of the material. We shall present main characteristics of the multimedia material and technical solution. Complete web presentation will be available at the Faculty of Mathematics web site.

The 3D-COFORM project

Denis Pitzalis

The 3D-COFORM project aims to advance the state-of-the-art in 3D-digitisation and make 3D-documentation an everyday practical choice for digital documentation campaigns in the cultural heritage sector. The project addresses all aspects of 3D-capture, 3D-processing, the semantics of shape, material properties, metadata and provenance, integration with other sources (textual and other media); search, research and dissemination to the public and professional alike. A strong technical research program is complemented by research into practical business aspects: business models for exploitation of 3D assets, workflow planning and execution for mass digitisation, socio-economic impact assessment; and the creation of a Virtual Centre of Competence in 3D digitization. The VCC-3D will act as a catalyst in enhancing the sector's capacity for mass digitization of 3D assets – the tangible artefacts of the physical cultural heritage of the world. The 3D-COFORM consortium brings together 19 partners to form a world class team on 3D-digitisation complemented by an equally prestigious group of Cultural Heritage organizations, with the Victoria and Albert Museum as a full partner and collaborations from the Louvre, the Florentine Museums authority the Museum of the Imperial Forums in Rome; World Heritage Sites in Cyprus and the Staatliche Museen zu Berlin. The consortium also contains organizations tasked at a national level with helping museums move in these directions. C2RMF, the research arm of the French National Museums and CULTNAT the digitization body for cultural and natural heritage funded by the Egyptian Government. All these institutions have a declared intention to develop their 3D-digitisation capability in order to move forward on the integration of these assets into the infrastructure that is being enabled by initiatives such as Europeana (the EDL).

Mapping the manuscript matrix

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The Text Encoding Initiative's *Guidelines for Electronic Text Encoding and Interchange* ('TEI P5') provide extensive facilities for the encoding of data pertaining to persons, whether actors in history or those living today, using the <person> element. Such data include:

- physical characteristics such as sex and eye colour;
- cultural characteristics such as socio-economic status, ethnicity and religion;
- information on occupation and education, and the events in people's lives such as birth, marriage or appointment to office;
- the various names by which a person may be known.

Information about places can be encoded in a similar way, using the <place> element, including:

- the physical location of the place, for example as a street address or a set of geographical co-ordinates;
- information on population, climate and terrain;
- descriptions of events associated with a place;
- the various names by which a place may be known, either in different languages or over time.

The <relation> element can then be used to describe any kind of relationship between a specified group of people, between people and places or between people, places and objects, such as manuscripts.

Using these mechanisms one can create an extensive system of authority files, associated for example with descriptions and/or transcriptions of primary source materials such as a collection of manuscripts. This not only helps to prevent repetition of information and minimise the possibility of error, it also allows one to map the relationships between the artefacts and the people who produced, disseminated and consumed them, to show in a dynamic way how the 'manuscript matrix' worked. It is this latter aspect which will be the focus of my paper.

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Recommendation for the national standard for describing collections

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During the last SEEDI meeting we presented an XML scheme and a data base based on a recommendation for the national standard for describing digitized heritage. Now, we are going one step further. We propose a recommendation for the national standard for describing collections. Also, we have developed an application which follows this recommendation. In this paper we will present methodology and tools that we have used, as well as, the realized software solution.

Catalogue Metadata in an Academic Digital Library
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The paper presents some aspects of an ongoing project aimed at the development of a methodology and proper software tools for building academic digital libraries. A particular functional model of a class of academic digital libraries has been proposed and analyzed. Some solutions of the variety of problems concerning the development of adequate mechanisms for semantics oriented search in multilingual academic digital libraries are discussed. An ontology-based approach is suggested in order to standardize the semantic annotation of the library resources and to facilitate the implementation of the functionality of the search engine. The emphasis of the discussion falls on the metadata used in the catalogue descriptions of the different types of research and learning materials in a particular academic digital library being under development at the Faculty of Mathematics and Informatics, Sofia University. These metadata are picked out in accordance with some internationally approved classification schemes, the traditional experience of Sofia University and the needs of the target groups of users.

Keywords: Electronic Publishing, Digital Library, Metadata, Semantic Annotation, Ontology, Semantic Web

Providing and Maintaining Interoperability in Digital Library Systems

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The paper presents in parallel some aspects of two ongoing projects aimed at the development of methodologies and proper software tools for building academic digital libraries. Some open questions in the field of building descriptions of objects and repositories and some proper solutions of the variety of problems concerning the development of adequate mechanisms for semantics oriented search in multilingual academic digital libraries are discussed. An ontology-based approach is suggested in order to standardize the semantic annotation of the library resources and to facilitate the implementation of the functionality of the search engine. This approach is analyzed from the point of view of providing and maintaining interoperability in digital library systems. Some suitable examples are given as illustrations of the suggested ideas and tools.

Keywords: Digital Library, Interoperability, Metadata, Semantic Annotation, Ontology, Semantic Web

Education for knowledge society: based on the example of digital repository BISER

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The usage of the information and communication technologies (ICT) in an everyday life, including the field of education, brought the need for a both thorough and lifelong educational reorganization. It became clear that a standard educational environment, standard library and standard technological resources can not address at the best the new requirements that are being put upon by the need for a new education. In order to implement the education that is being requested by the knowledge society, a new environment is needed, the one with the foundations in the usage of modern ICT, respectively establishing the electronic learning (e-learning) environment that implements learning objects as its foundation entities. As an important place for storing the learning objects, digital repositories are emerging, such as BISER (Bibliotečki Sarajevski Elektronski Repozitorij), which is being used at the Faculty of Philosophy in Sarajevo, at the Department for Comparative Literature and Librarianship. This papers' goal is to introduce the creation and the usage of BISER, as a mechanism that enables a systematic handling of publishing processes, accessing processes and processes of storing the teaching/educational content.

The Digital Collection of Cultural Heritage Institutions as the Cultural Product

Vaska Sotirov-Đukić, librarian (Public Library of Sarajevo)

The European Union recognized its policies in the European cultural heritage as an invaluable property in economic terms and in the area supports a large number of projects that would financially support the different cultural heritage and heritage institutions in efforts to digitize cultural monuments in an attractive manner.

Museums, libraries and archives are part of the culture industry and the key participants in the progress towards a society that is based on knowledge and managed by the digital technology, they can help in the development of strong local economy by supporting enterprise have attracted tourists in a virtual cultural tourism.

The aim of this work is to actively involve and written cultural heritage in tourism Bosnia and Herzegovina, to heritage institutions have become an attractive place not only for foreign, but also for domestic tourists, and order through them again alive authentic Bosnian tradition and culture with its diversity and richness. In this way heritage institutions have sufficient arguments to interest the government, media and society in general for additional investments in them.

For example will be given a prototype of cultural itineraries: the permanent exhibition of medieval Bosnia in the National Museum of Bosnia and Herzegovina (Department of Archeology, "Culture of the written word") - from traditional settings to create high-quality digital collections and offer it as a cultural tourism product on the market.