seedi

The Ninth SEEDI Conference:

Digitization of cultural and scientific heritage

Belgrade, Serbia, 15-16 May 2014

BOOK OF ABSTRACTS

Organization

Support

Sponsor

Република Србија
**МИНИСТАРСТВО ПРОСВЕТЕ
И НАУКЕ**

CEI
CENTRAL EUROPEAN INITIATIVE

PROGRAMME COMMITTEE

Žarko Mijajlović (Serbia), Chair

Dunja Seiter-Šverko (Croatia), Co-chair

Umit Atabek (Turkey)

Nicolaie Constantinescu (Romania)

Zoran Krstulović (Slovenia)

Milena Dobreva (Malta)

Nikola Ikonomov (Bulgaria)

Zoran Ognjanović (Serbia)

Selma Rizvić (Bosnia and Hercegovina)

ORGANIZING COMMITTEE

Dragan Blagojević (Serbia)

Vesna Vučković (Serbia)

Gordana Nastić Todorović (Serbia)

Milica Milinković (Serbia)

Bojan Marinković (Serbia)

Miloš Milovanović (Serbia)

Marija Šegan (Serbia)

CONTENTS

Dear SEEDI participants,

The Ninth SEEDI Conference is organized by the Mathematical Institute of the Serbian Academy of Sciences and Arts under the auspices of SEEDI (South-Eastern European Digitization Initiative) and NCD (Serbian National Center for Digitization). The first intention of SEEDI conferences was to gather people from South-Eastern countries who work in digitization area. But digitization has an important place in the contemporary world. So quite understandably, this conference got much broader scope. Specialists and scientists from 17 countries came here to expose and hear new technological solutions in digital archiving of national heritage and discuss various aspects of digitization: program solutions, introduction of new standards and reviews of digital collections.

Digitization is an interdisciplinary area and specialists from many areas and different backgrounds participate the conference. True, precise and complete documentation of digitized objects is essential for conservation and long-term preservation of our cultural heritage. The maintenance of this documentation is the main duty of librarians and museum curators who also put in this way the order in digital collections. Programmers with their magic computer skills bring the functionality to these collections and make them accessible to the general public. Specialists develop new digitization technologies. Scientists decide what is the most important in their fields and what should be digitized first. They are also reviewing digital collections and often give the second birth and life to forgotten persons, events and lost or demolished monuments. The project CENDARI - Collaborative EuropeaN Digital/Archival Infrastructure, a European Commission-funded FP7-project addresses integration of digital archives and resources for research on medieval and modern European history and improving conditions for digital infrastructures in humanities for the benefit of researchers everywhere. We are grateful to the project director, Dr. Jennifer Edmond, who will share the project experiences with the conference participants.

In our work we are dealing not only with scanned 2D and 3D objects and related meta-data and standards. Colors, shadows, perspective and textures are important part of computer oriented presentations of digital entities, particularly of 3D objects. They form the key part in proper human perception of three-dimensional objects coming from cultural heritage. Without these properties, 3D

scans would be reduced to pure and cold geometrical objects. Therefore, we often call them "the fourth dimension" of artifacts.

This SEEDI conference is colored by COSCH - Colour and Space in Cultural Heritage, a thematic project devoted to studies of these attributes of 3D objects. The project is funded by COST, an intergovernmental framework for European Cooperation in Science and Technology. This conference is attended by several participants of COSCH action and we are particularly honored by the presence of Professor Frank Boochs, the leader of the project.

No event would be successful without industrious and meticulous engagement of certain people. The central figure and as mathematicians would like to say, the convergence point of the Conference is Professor Zoran Ognjanović. He gave the first impulse for organizing the conference in Belgrade, got the money from the Central European Initiative and Ministry of Education, Science and Technological Development of the Republic of Serbia to cover the expenses of the conference and succeeded in gathering the distinguished guests. I really admire his energy, persistence and organization skill. Also, I have to mention Dr Vesna Vučković and Marija Šegan, secretaries of the Conference who much helped to run smoothly all the jobs behind the scene, such as the correspondence and preparation the book of abstracts. Due to the efforts of Dragan Blagojević, technical editor of NCD Review (SEEDI Communication), we obtained just on time two volumes of the messenger of SEEDI, the 24th and the jubilee 25th issue, proceedings of the previous SEEDI conference held in Zagreb exactly a year ago.

The organization of the meeting is supported by CEI funds and it is helped by the participants of the national project III 44006, granted by the Ministry of Education, Science and Technological Development.

I wish to all participants successful work of the Conference and nice stay in Belgrade.

Prof. Dr Žarko Mijajlović
Chair of the Programme Committee

ABOUT THE SEEDI CONFERENCE

The South-Eastern European Digitization Initiative (SEEDI), http://seedi.ncd.org.rs/, is a Cultural Heritage Digitization network that gathers the organizations and experts from the European Union (EU), especially from the South-Eastern European (SEE) countries. It was created in 2004 on the basis of the Lund Action Plan, with a goal to develop and share the knowledge on the technology and discipline of the Cultural Heritage Digitization. The exchange of the Cultural Heritage Digitization knowledge was realized through the SEEDI expert meetings, eight conferences and dissemination activities (through Journal and Website).

SEEDI is an international effort to develop competence in digitisation, access and preservation of cultural and scientific heritage in SEE countries that aims to:

- Build awareness about digitisation of cultural and scientific heritage in SEE countries
- Improve communication and dissemination of information between organisations with similar projects and interests
- Initiate international projects with the participation of partners from SEE countries
- Facilitate cooperation between the EU countries and SEE countries
- Bring together specialists from different areas: archivists, librarians and curators, information technology developers, as well as scholars and all the others interested in digitisation of cultural and scientific heritage.

The Republic of Serbia and the Mathematical Institute of SASA are the host of the 9th SEEDI Conference. The idea of the Conference is not only to reinforce the existing network of previous country participants, but also to get close to a new possible members. The aim of the gathering is to get familiar with the current situation in the Cultural Heritage Digitization in SEE countries, to encourage the cooperation between the EU and SEEDI organizations and countries, as well as to encourage the unification of the digitization standards that would help such cooperation.

PROGRAMME
May 15th, 2014
Gallery of Robna kuća Beograd, Kneza Mihaila 5/II

08:30 – 09:15   Registration

09:15 – 09:30   Welcome addresses and the opening of the Conference

09:30 – 10:20   Moderator: Žarko Mijajlović

Invited speaker

Jennifer Edmond: Tradition and Innovation in the CENDARI Research Infrastructure

10:20 – 10:45   Coffee Break

10:45 – 12:25   Moderator: Nikola Ikonomov

Milena Dobreva, Krassimira Ivanova: Citizen Science and Digital Cultural Heritage: - New Demands and New Challenges

Pierluigi Feliciati: The Adriatic-Ionian Macroregion strategy: cooperation opportunities for the digitization of cultural heritage

Ivana Puljiz: Erasmus+: opportunities for regional cooperation in the field of education and training

Marina Pražetina: Horizon 2020 new possibilities for regional cooperation in social sciences and humanities research

Zoran Krstulović: National guidelines for digital cultural heritage ingest, preservation and access

12:25 – 12:40   Coffee Break

12:40 – 13:40   Moderator: Nicolaie Constantinescu

Milica Knežević, Bojan Marinković, Ivan Čukić, Nataša Bulatović, Zoran Ognjanović: CENDARI, a view from the technical side

Miloš Savić, Mirjana Ivanović, Miloš Radovanović, Zoran Ognjanović, Aleksandar Pejović, Tatjana Jakšić Kruger: The structure and evolution of scientific collaboration in eLib, a on-line library of Serbian mathematical journals

Marija Šegan, Miloš Milovanović, Sanja Rajić, Zoran Ognjanović, Žarko Mijajlović: The next step in development of eCatalog of nonmovable cultural monuments in Serbia

Vladimir Jelisavčić, Aleksandar Mihajlović, Bojan Marinković, Siniša Tomović, Vladimir Stojanović, Milan Todorović, Zoran Ognjanović, Veljko Milutinović, Miroljub Stojanović: Digital National Library of Serbia

13:40 – 15:00   Lunch

Poster Session

N. Pejović, S. Malkov, N. Mitić, Ž. Mijajlović: Scientific papers of Milutin Milanković in his digital legacy

Nikolina Vukša Popović, Žarko Mijajlović: OAI-PMH and Doctoral Dissertations

Bojana Koteska, Smile Markovski, Marija Mihova, Mile Jovanov: Web archive of all doctoral theses in Macedonia

Magdalena Kostoska, Nevena Ackovska, Mile Jovanov, Marija Mihova: Digitisation of Macedonian Sign Language

15:00 – 16:00   Moderator: Milena Dobreva

Dunja Seiter-Šverko: E-books in Libraries: The Organisation of Digital Resources at the National and University Library in Zagreb

Tomas Foltyn: Software Solutions Aimed ToLong-term Library Collections Preservation

Jelena Đurović, Nenad Jeremić, Vera Đukanović: Peter II Petrović Njegoš Digital Collection Project

16:00 – 16:15   Coffee Break

16:15 – 17:15   Moderator: Pierluigi Feliciati

Nikolina Vukša Popović, Žarko Mijajlović, Slaviša Milisavljević: The most searched items in eLibrary

Maja Nikolova: The Digitization of Archives in the Educational Museum in Belgrade – Handwritten Notes

Vesna Župan: The role of digital libraries in Economics and Management – Results from Serbian Academic Practice

PROGRAMME
May 16th, 2014
Gallery of Robna kuća Beograd, Kneza Mihaila 5/II

09:00 – 09:30   Registration

09:30 – 10:20   Moderator: Zoran Ognjanović

Invited speaker

Frank Boochs: COSCH: towards a better common understanding in cultural heritage documentation

10:20 – 10:45   Coffee Break

10:45 – 12:05   Moderator: Zoran Krstulović

Selma Rizvić, Daniel Pletinckx, Sofia Pescarin: Keys to Rome – The next generation virtual museum event

Peter Miladinov, Georgi Penkov: Self-Aware Mobile Museum Explorer – SAMME

İsmail Okay: Using 3D Digital Technologies For Navigation Systems in University Campuses

Ljubica Ćorović, Vesna Vuksan, Adam Sofronijević: Virtual exhibition as a medium for presenting scientific and cultural heritage to international audiences: Djordje Stanojevic – Rector who lit up Belgrade

12:05 – 12:20   Coffee Break

12:20 – 13:40   Moderator: Selma Rizvić

Emiliano Degl'Innocenti: TRAME – Texts and manuscript transmission of the Middle Ages in Europe

Koraljka Kuzman Šlogar: Ethical Code and Legal Aspects: Case of an Research Archive

Tatjana Mihalić: Sounds of the past : the musical heritage digitization project of the National and University Library in Zagreb

Nabhan AL Harrasi, Hilal Almoshafri: The development of a Video Digital Library: The case of PART in Sultanate of Oman

13:40 – 15:00   Lunch

Poster Session

Karolina Holub, Ingeborg Rudomino: Towards Web Archiving in the Region

Brankica Todorović: Cultural and historical heritage in the evaluation functions of economic development

Katica R. (Stevanović) Hedrih: 120.000 examples of university books in publishing house „Naučna knjiga": Author Prof. Dr. Ing. Dipl. Math. Danilo P. Rašković (1910-1985)

15:00 – 16:20   Moderator: Žarko Mijajlović

Alexey O. Shigarov, Igor V. Bychkov, Gennadiy M. Ruzhnikov: From unstructured to structured tabular data using a rule engine

Fedorov R.K, Shumilov A.S, Bychkov I.V, Ruzhnikov: G.M. Geoportal for crowdsourcing of relational data

Irena Eiselt: Serial Publications in the National and University Library of Slovenia – Digitizing or Microfilming?

Nadežda Pejović, Slobodan Ninković: An astronomical manuscript of an unknown author

16:20 – 16:30   Coffee Break

16:30 – 17:30   Moderator: Bojan Marinković

Đorđe Đorđević, Srbislav Nešić, Biljana Avramović, Ljubica Đorđević-Vidojković: Digitalization of Serbian-Romani and Romani-Serbian Dictionary

Etleva Domi: Albanian cultural heritage in digital area

Liviu Pop: Preservation of artifacts post-digitisation (workflows and policies); Open Source Folklore Archives - Disseminating Small Memory Boxes

Cezar Popescu: Costică Acsinte Collection

Jennifer Edmond

Trinity College Dublin, Ireland
edmonddj@tcd.ie

Tradition and Innovation
in the CENDARI Research Infrastructure

The traditions of research infrastructure development have created strong trends and centres of gravity, some of which are useful, and some of which need to be resisted by new entrants into the field. This is particularly true in the arts and humanities, where the analogue tradition of libraries and archives remains very strong, while new modes of engagement with sources and texts enabled by technological advances remain in their infancy. The Collaborative EuropeaN Digital Archival Research Infrastructure (CENDARI) has established itself as a firm proponent of reevaluating these trends and resisting the gravity where its pull distorts the possibilities for historians to work effectively in the digital age. As such, the project has leveraged its strongly user-centred design process to advance new perspectives on the federation of cultural material and application of knowledge resources within a digital environment. This presentation will discuss these innovations, highlighting both their technical and social potential to enable new forms of scholarly insight and communication.

Milena Dobreva

Department of Library Information and Archive Sciences, University of Malta
milena.dobreva@um.edu.mt

Krassimira Ivanova

Institute of Mathematics and Informatics, Bulgarian Academy of Sciences
kivanova@math.bas.bg; krass.ivanova@mail.bg

Citizen Science and Digital Cultural Heritage:
New Demands and New Challenges

Citizen science is a relatively new area which explores how people who are not professionally trained to do research can contribute to it. A particularly interesting avenue to explore is how citizen science could make best use of the current digital cultural heritage collections and infrastructures; there is a wide range of material of potential interest to members of the general public for their personal research but it is not quite clear to what extent citizens are informed about the existence of such material and have the necessary knowledge and tools to make the best use of it. A further emerging area is the engagement of citizens in structured research initiatives.

Thus a new set of challenging questions address how digital heritage collections and infrastructures could improve the engagement of such users using citizen science approaches. This requires understanding better the needs of the users but also, within the context of a systemic thinking paradigm, would mean that new feedback on the cultural heritage resources would need to be

integrated in their adaptation for use also within citizen science contexts.

The paper look into models of academic research lifecycles mapped to digital infrastructures even if they could help only to some extent because the nature of involvement of academics and citizens differs considerably. While the academic users' support is seen as most typically mapping onto phases from the traditional research lifecycle, such as resource discovery; experiments, research and analysis; publication; and administration and institutional process. Initial research done on citizen science suggests that such projects do not typically addressing the generic lifecycle but concentrates on specific activities (e.g. define question, gather information, develop hypothesis, design study, data collection, analyse samples, interpret data, draw conclusions, disseminate results, discuss results).

The paper will present examples of work done in this area and will explore the implications on creators of digital resources (in particular within the domain of digital cultural heritage) from a citizen science perspective.

Pierluigi Feliciati

Department of Education, Cultural Heritage and Tourism, University of Macerata
p.feliciati@gmail.com; pierluigi.feliciati@unimc.it

The Adriatic-Ionian Macroregion strategy:

cooperation opportunities for the digitization of cultural heritage

Before the end of 2014, the European Commission will launch a new EU Strategy for the Adriatic and Ionian Macro-region (EUSAIR), focusing on areas of (Macro) regional mutual interest with high relevance for the Adriatic and Ionian countries. Main priority areas and objectives of the Action Plan should emerge as shared aspirations and sustainable solutions to common challenges. This strategy will include an Action Plan to be submitted to the Council, during the Italian Presidency of the EU. The Adriatic-Ionian Macroregion Area concerns 8 countries: 4 EU Member States (Croatia, Greece, Italy, Slovenia) and 4 non-EU countries (Albania, Bosnia and Herzegovina, Montenegro, Serbia). The Action Plan will include 4 thematic pillars (1.Driving innovative maritime and marine growth, 2. Connecting the region, 3.   Preserving, protecting and improving the quality of the environment, 4. Increasing regional attractiveness) and 2 cross-cutting pillars (Research, innovation and SMEs development and Capacity Building). The Marche Italian region (appointed by the Committee of Italian Regions and Autonomous Provinces as responsible for the EUSAIR Italian working group's activity) coordinates the Research, innovation and SMEs development pillar, while the pillar 2 will be coordinated by Serbia, together with Friuli Italian region and the pillar 4 by Croatia, together with Albania and the Italian region Apulia.

This presentation, updated to the last news about the incoming Action Plan, aims at presenting to the SEEDI community the opportunities opened by the EUSAIR strategy, to foster the collaboration among the Adriatic-Ionian cultural organisations, at any level in order to support specific projects concerning the research and valorization of our scientific and cultural heritage by the application of ICT. The University of Macerata is coordinator and partner of several EU projects together with EUSAIR partners and many other R&D topics could be finalised, some under the umbrella of SEEDI Consortium.

Ivana Puljiz
Agency for Mobility and EU Programmes, Croatia
Ivana.Puljiz@mobilnost.hr

Erasmus+: opportunities for regional cooperation in the field of education and training

The presentation will provide an overview of the structure, goals and opportunities offered by the new and largest EU programme in education, training, youth and sport - Erasmus+. The presentation will concentrate on those key actions and programme' activities that are open to regional cooperation. Moreover, the key features of Erasmus+ programme overlapping with SEEDI agenda will be highlighted. These are the support to innovation (development, application of ICT - especially for education usage), cross-sectoral cooperation, capacity building and human resource development.

In order to contextualise the opportunities provided by the programme and illustrate its potential in the fields of interest to SEEDI network, an overview of the results of relevant programme predecessors (Lifelong Learning Programme, TEMPUS) as well as some examples of good practice will be provided.

Thus, the goal of presentation is to equip conference participants with information necessary to embark on elaboration of project proposals and inspire them for this endeavour through examples of successful projects relevant for their field.

Marina Pražetina
Agency for Mobility and EU Programmes, Croatia
Marina.Prazetina@mobilnost.hr

Horizon 2020 new possibilities for regional cooperation in social sciences and humanities research

The presentation will provide an introduction to the general structure and objectives of Horizon 2020, new EU Framework Programme for Research and Innovation which is defined by the strategy Europe 2020 aiming at securing Europe's global competitiveness through implementation of the Innovation Union, a Europe 2020 flagship initiative.

 The aim of the presentation is to identify new research perspectives for social sciences and humanities, their integration into each of the general objectives of Horizon 2020 and opportunities for digitalization of Europe's cultural and scientific heritage in the Horizon's subprogrammes "Inclusive, innovative and reflective societies" and "Science with and for Society".

 The main emphasize will be given to priority theme digitalization of Europe's cultural and scientific heritage focusing on the utilization of digital technologies for research in the humanities and social sciences, development of new forms of access to culture and opportunities for libraries in Horizon

2020 work programmes.

Zoran Krstulović
National and University Library in Ljubljana
Zoran.Krstulovic@nuk.uni-lj.si

National guidelines for digital cultural heritage ingest, preservation and access

In the context of achieving the objectives of the Digital Agenda for Europe in the field of culture, a process of establishing common guidelines for ingest, digital preservation and access to e-content for the entire cultural sector began in Slovenia in 2013. The process was supported by the Ministry of Culture and led by the National and University Library in cooperation with the Archives of the Republic of Slovenia and the NGO Society Ljudmila.

Three working groups were established to aggregate opinions, ideas and thoughts at the national level, and thus, help accelerate the development of digitization of cultural heritage, provide the efficient use of digitized and born-digital material, and create the conditions for entrepreneurial, creative, educational and academic use of this material. The process resulted in the first version of the document *Slovenian guidelines for ingest, preservation, and access to digital cultural heritage* (**"Smernice za zajem, dolgotrajno ohranjanje in dostop do kulturne dediščine v digitalni obliki«**). The document addresses the areas of creation, ingest, digital preservation of and access to e-content. It was adopted by the Minister of Culture as an official document at the end of 2013. The importance of this document lies in the fact that this is the first joint document of the entire cultural sector, including public institutions and NGOs. Findings, recommendations and guidelines are based on a prior review of the situation by the creators and administrators of e-content. New, updated versions will be developed on the basis of feedback from users of this document.

The document consists of three parts: the first contains general information on the area of digital content, the main topic is addressed in the second part, and the third includes the review of regulations, standards and best practice. The first chapter, the common part, brings forward concrete proposals to change the existing regulations that hamper the growth of digitization, digital preservation and wider availability of e-content. The second chapter includes individual provisions for digitized and born-digital material ingest. It covers the selection criteria for digitization, recommendations for ensuring the quality of the digitization of materials in the field of cultural heritage and instructions for the preparation and control of the born-digital material for digital preservation. The third chapter discusses guidelines for the acquisition and management of e-content during the digital preservation. Accessibility of e-materials is the theme of the final chapter which also addresses the issues of copyright, online publication and metadata.

National guidelines for digital cultural heritage ingest, preservation and access represent an important step for the development of public service of cultural institutions on the Web that will contribute significantly to the uniform access and digital preservation of e-content in the field of cultural heritage in the future.

Milica Knežević, Bojan Marinković, Ivan Čukić, Nataša Bulatović, Zoran Ognjanović
Mathematical Institute of the Serbian Academy of Sciences and Arts
knezevic.milica@gmail.com, bojanm@mi.sanu.ac.rs,
ivan@mi.sanu.ac.rs, zorano@mi.sanu.ac.rs

CENDARI, a view from the technical side

The aim of this presentation is to give deeper insight into work and activities of technical partners responsible for building the CENDARI e-infrastructure. The aim of the CENDARI e-infrastructure is to support, facilitate, and enhance the research process in the area of digital humanities. It provides centralized access to geographically dispersed data, but it is not "yet another search and browse environment". Tools and services being developed within CENDARI provide semantic enrichment of digitized resources and foster collaboration among researchers. We will discuss key components, selected tools and solutions for the CENDARI e-infrastructure.

Miloš Savić, Mirjana Ivanović, Miloš Radovanović
Department of Mathematics and Informatics, Faculty of Sciences, University of Novi Sad
svc@dmi.uns.ac.rs, mira@dmi.uns.ac.rs, radacha@dmi.uns.ac.rs
Zoran Ognjanović, Aleksandar Pejović, Tatjana Jakšić Kruger
Mathematical Institute of the Serbian Academy of Sciences and Arts
zorano@mi.sanu.ac.rs, pejovica@mi.sanu.ac.rs

The structure and evolution of scientific collaboration in eLib, a on-line library of Serbian mathematical journals

Digital preservation of scientific papers enables their wider accessibility, but also provides a valuable source of information that can be used in a longitudinal scientometric study. The Electronic Library of the Mathematical Institute of the Serbian Academy of Sciences and Arts (eLib) digitizes the most prominent mathematical journals printed in Serbia. In this paper, we study a co-authorship network which represents collaborations among authors who published their papers in the eLib journals in an 80 year period (from 1932 to 2011). Such study enables us to identify patterns and long-term trends in scientific collaborations that are characteristic for a community which mainly consists of Serbian (Yugoslav) mathematicians. Analysis of connected components of the network reveals a topological diversity in the network structure: the network contains a large number of components whose sizes obey a power-law, the majority of components are isolated authors or small trivial components, but there is also a small number of relatively large, non-trivial components of connected authors. Our evolutionary analysis shows that the evolution of the network can be divided into six periods that are characterized by different intensity and type of collaborative behavior among eLib authors. Analysis of author metrics shows that betweenness centrality is a better indicator of author productivity and long-term presence in the eLib journals than degree centrality. Moreover, the strength of correlation

between productivity metrics and betweenness centrality increases as the network evolves suggesting that even more stronger correlation can be expected in the future.

Marija Šegan, Miloš Milovanović, Zoran Ognjanović
Mathematical Institute of the Serbian Academy of Sciences and Arts
msegan@mi.sanu.ac.rs, milosm@mi.sanu.ac.rs, zorano@mi.sanu.ac.rs
Sanja Rajić
School for Mechanical and Electrical Engineering "Goša" in Smederevska Palanka
rsanja73@gmail.com
Žarko Mijajlović
Faculty of Mathematics, University of Belgrade
zarkom@matf.bg.ac.rs

The next step in development of eCatalog of nonmovable cultural monuments in Serbia

In 2014 the digital catalogue of the Cultural Monuments in Serbia, http://spomenicikulture.mi.sanu.ac.rs/, celebrates its 10th anniversary, and the paper gives a short overview of the Catalogue history. The authors of the paper also present the new digital content of the Catalogue: 1) the new digital documentation (photos, GPS data, maps, etc.) of about 80 cultural monuments from Toplica and Danube districts, as well as from Kosovo and Metohija. The paper emphasizes: 1) the further, important steps in the development of the Catalogue, such is the implementation of 3D documentation of cultural heritage, and 2) the significant role of the end users in successful development of the Catalogue, through active participation of high school teachers and students in the process of digitization of cultural heritage.

Vladisav Jelisavčić, Aleksandar Mihajlović, Bojan Marinković, Siniša Tomović, Vladimir Stojanović, Milan Todorović, Zoran Ognjanović
Mathematical Institute of the Serbian Academy of Sciences and Arts
bojanm@mi.sanu.ac.rs, zorano@mi.sanu.ac.rs
Veljko Milutinović
Faculty of Electrical Engineering, University of Belgrade
Group of Experts, National Library of Serbia

Digital National Library of Serbia

We describe the new Digital NLS which is built on the Serbia-Forum system, as a web application portal designed and implemented in cooperation of the Mathematical Institute of the Serbian Academy of Sciences Arts and the Digital National Library of Serbia. The aim of DNLS is to digitally make available many units of cultural heritage belonging to the national heritage of the republic of Serbia. The Serbia-Forum system cultural heritage portal is structured according to the existing Austria-Forum model

developed at the Graz University of Technology. We present innovative extensions of the original system.

Nadežda Pejović, Saša Malkov, Nenad Mitić, Žarko Mijajlović

Faculty of Mathematics, University of Belgrade
nada@matf.bg.ac.rs, smalkov@matf.bg.ac.rs, nenad@matf.bg.ac.rs, zarkom@matf.bg.ac.rs

Scientific papers of Milutin Milanković in his digital legacy

The aim of this paper is to present digital collection of scientific papers of the famed Serbian astronomer, mechanics, climatologist, civil engineer, professor of the Belgrade University and academician Milutin Milanković (1879-1958). The collection contains his 44 papers that were published in foreign and Serbian scientific journals. The papers were lately deposited in the digital repositories with open access of the Faculty of mathematics in Belgrade: Digital legacy of Serbian mathematicians, http://legati.matf.bg.ac.rs, Digital archive, http://digitalnilegati.matf.bg.ac.rs and Virtual library, http://elibrary.matf.bg.ac.rs. The large part of Digital archive is devoted to Milutin Milanković, but until recently it was deficient in his scientific papers. The particular value of this collection is that it contains all published Milanković's scientific papers. His curiosity in natural sciences was very broad, but Milanković's most important contributions were characterization of climate of the planets of the Solar system and the explanation of the Earth's long-term climate changes caused by astronomical phenomena. Besides papers on these topics, the collection contains his some less known papers, such as on the theory of relativity and cosmology. We classified the papers thematically and gave short descriptions of the content of each group. We believe that retro-digitization of Milanković's paper and free access to them, will give the opportunity to the wide audience, scientists, students, but the general public as well, to read and study directly Milanković scientific works.

Nikolina Vukša Popović, Žarko Mijajlović

Faculty of Mathematics, University of Belgrade
nikolina@matf.bg.ac.rs, zarkom@matf.bg.ac.rs

OAI-PMH and Doctoral Dissertations

One of the most important parts of our digitial library eLibrary of the Faculty of Mathematics in Belgrade is the collection of nearly 400 doctoral dissertations in the field of mathematical sciences. Since the University Library Svetozar Marković has its own collection of doctoral dissertations of the University of Belgrade we made an agreement to transfer our dissertations to their repository. We built another version of our library in which we deposited doctoral dissertations prepared for transfer. OAI-PMH (Open Archive Initiative Protocol for Metadata Harvesting) protocol is used for sharing metadata between repositories. We present an implementation of the protocol and the agreement.

Bojana Koteska, Smile Markovski, Marija Mihova, Mile Jovanov
Faculty of Computer Science and Engineering, St. Cyril and Methodius University in Skopje
{bojana.koteska, smile.markovski, marija.mihova, mile.jovanov}@finki.ukim.mk

Web archive of all doctoral theses in Macedonia

In this paper we present a web system for managing doctoral dissertations from Ss. Cyril and Methodius University in Skopje. The main motivation for the system comes from the idea to collect as many dissertations in one place and to allow easy access to them. This system offers many features like inquiries on the dissertations organized in categories, their download, adding dissertation and search by author, title and contact. It also contains older dissertations which are scanned and placed in .pdf version. The system allows insertion of all available doctoral theses, and offers bilingual support (English and Macedonian).

Keywords: Macedonian doctoral theses, web archive, Digitization

Magdalena Kostoska, Nevena Ackovska, Mile Jovanov, Marija Mihova
Faculty of Computer Science and Engineering, St. Cyril and Methodius University in Skopje
{magdalena.kostoska, nevena.ackovska, mile.jovanov, marija.mihova}@finki.ukim.mk

Digitisation of Macedonian Sign Language

In Macedonia there are around 6000 deaf people and only 12 interpreters, and according to the National association of deaf and hard of hearing of Macedonia, this represents only 0.3% of the population. The official language of this community is the Macedonian sign language (MSL), which is specific as it is not standardized, as opposed to other sign languages (for example American Sign Language), and its vocabulary is very limited (around 2800 signs including the letters of the alphabet). It has a valid grammar.

Because of the low percentage the community of deaf and hard of hearing feels very isolated and stigmatized. Only one television channel (the national channel) offers once a day a Macedonian sign language (MSL) interpreted news. Moreover, there are only two schools in Macedonia that offer education to deaf children. Unlike the bigger countries that promote their national sign language, there are no e-books, videos or any other type on online or digitalized content of MSL. For that reason, when a new deaf child is born by non-deaf parents, the learning of the sign language represents a real challenge that affects the whole family. This is the reason why we created the sign tutor - to help this community and to introduce the whole family (the deaf children and the non-deaf parents) with the Macedonian sign language in an easy and entertaining way, with interesting animations and games. In this way we create a digitalized form of this specific language.

This paper will give an overview of the MSL and the general recommendation for using IT tools in sign language learning. The project created as a result of the research – the Sign tutor will be presented, along with the results and comments received after promoting this project.

Keywords: Macedonian Sign Language, Digitisation

Dunja Seiter-Šverko
National and University Library in Zagreb
dseiter-sverko@nsk.hr

E-books in Libraries: The Organisation of Digital Resources at the National and University Library in Zagreb

Considering the increased activity of Croatian publishers in the field of electronic publishing and their need to broaden their cooperation with the National and University Library in Zagreb so that it would include digital resources, it is necessary to ensure professional and organisational conditions for collecting and permanently archiving electronic legal deposit in accordance with the legal role and obligation of the Library.

Owing to this, the Library undertook to develop the model and architecture of the Croatian E-book System based on requirements related to the functionality of the national digital library system as well as the functionality related to the permanent archiving of items belonging to contemporary Croatian digital heritage.

The establishment of a fully-developed system will provide a modern and user-friendly technological environment for publishers and users which would enable permanent archiving, but also an increased use of Croatian digital resources, while a further development of the aggregator system, i.e. a collecting system that is so far unique in Croatia, will help reinforce the leading role of the National and University Library in Zagreb in science and culture.

Tomas Foltyn
National Library of Czech Republic
Tomas.Foltyn@nkp.cz

Software Solutions Aimed ToLong-term Library Collections Preservation

Valid Czech Legislation prescribes all the Czech libraries to hold their book collections permanently. However, is it possible to proclaim that this statute is the true guarantee of the book heritage preservation for the future? Answer is simple – NO! There is no precise evidence about documents, which are contained in the preservation collections of Czech Libraries, because of various approaches to these collections. National Library of Czech Republic collections management experts identified that the system for building, enrichment and management of the modern preservation collections is needed. The tool, which was developed for this purpose, is called "Virtual Deposit Library". It should allow to automate the control over the copies numbers located in the Czech libraries with the preservation obligation and increase the efficiency of offering and requesting lists of documents designated for the collections enrichment (so far sent by emails in word or excel sheets in the amount of thousands items per month). During the first implemented phase only several libraries with full legal deposit were included in the system (National library, Moravian Research Library in Brno and Research

Library in Olomouc), within next phase the system will be extended to all legal deposit collections and to other specialized libraries (e. g. National Technical Library, National Medical Library,) or other libraries with significant regional or special collections. The tool is built on the technical solutions that have been used long time in the National Library software environment as Oracle database, application framework Relief or search mechanism MS FAST. This reduces secondary costs for maintenance and technical support. An integral part of the solution is the calculation procedure for the optimal number of copies estimation needed for future preservation. This part is based on Time Weighted Preservation Index and Annual Loss Rate methods, which have been used at some US universities. It defines the connection among the number of the preserved original documents, their digital and microfilm copies or physical conditions in the relation to their preservation in the supposed timeframe. Together with Czech mathematical experts from Charles University of Prague simple tool and the methodology were created, where anybody can fill the information about the copies located in its collection and mentioned information about their status and get the results about needed amount of copies. There are also some other "by products" of the project. To know the real physical conditions of selected copies a tool for the modern collection surveys have been created. The aim is to measure the real physical status of selected volumes stored in the repositories e.g. by the pH measuring (due to paper acidity), exact size of the volume or used materials (for bindings, print, included images etc.).The tool is updated on the fly when the selected documents are deacidificated or restored. All the tools are developed in the compliance with the concept of long-term preservation and accessibility of the traditional text documents published in Czech libraries policy for 2011-2015, which was approved by Czech Ministry of Culture.

Jelena Đurović, Nenad Jeremić, Vera Đukanović

National Library of Montenegro "Đurđe Crnojević"
vera.djukanovic@cnb.me

Peter II Petrović Njegoš Digital Collection Project

Project under the title **Peter II Petrović Njegoš Digital Collection** has been developed by the National Library of Montenegro "Đurđe Crnojević" to mark the 200th anniversary of the birth of the most renowned Montenegrin poet, ruler and philosopher Peter II Petrović Njegoš.

The design and presentation of Peter II Petrović Njegoš Digital Collection refers to the creation of a digital collection of the first and selected editions of Njegoš's works; manuscripts; selected translations of Njegoš's works; selection of works on Njegoš; his correspondence, biography, posters which announced plays, screen and other various adaptations based on Njegoš's works.

Literature about Peter II Petrović Njegoš forms the major part of the collection. For over two centuries numerous authors have been focusing on Njegoš and his literary creation in attempts to shed more light on his statesman career, and his philosophical and literary works.

The bibliography of works dealing with Njegoš's life and poetry comprises over 34,000 articles, essays, monographs, out of which 700 books are written in South Slavic languages and 1,800 in foreign languages. The list of books, studies, doctoral theses, essays and articles about Njegoš keeps constantly growing.

For most of the digitized items there is a link which leads to the COBIB.CG online catalog.

The building of this digital collection started with the process of scanning and storage of scanned

pages in the form of JPG images. In addition, part of audio and video material has been converted in a format suitable for viewing over the Internet. These stages in digitization have been completed in such a way as to allow required processing of data after they have been entered, both of individual elements and of the groups of digitized data of certain type. This has been done with the aim to ensure the possibility of updating large quantities of material subsequently.

PHP and Javascript are the languages used for entering, searching, display and modification functions, whereas the database is MySQL. The authors of this collection aimed to achieve compatibility of the solution within the HTML and CSS standard formatting, in order to provide best possible viewing with the use of different systems and screen resolutions.

The portal provides searching by typing keywords, and this searching method is based on descriptive data associated with each item. Navigation through the main parts of the collection is also an option, as each main part leads to individual items of digitized material. Books and other items intended for reading are provided with the possibility of navigation for viewing and browsing through the scanned pages using standard zoom in and zoom out tools.

Audio and video material can be accessed by using special Internet software for audio and video content. This portal offers over 5,000 scanned pages, a variety of visual content, images, posters, several audio items and a feature film. It is available at http://petarpetrovic2nbcg.me

Nikolina Vukša Popović, Žarko Mijajlović, Slaviša Milisavljević

Faculty of Mathematics, University of Belgrade
nikolina@matf.bg.ac.rs, zarkom@matf.bg.ac.rs, slavisha@matf.bg.ac.rs

The Most Searched Items in eLibrary

Since 2007 we have been developing eLibrary of the Faculty of Mathematics in Belgrade as Internet oriented digital library of retro-digitalized books and various documents. In order to increase its visiting rate we made items in our repository visible to Internet search engines, especially Google. We achieved that by using Google Webmaster Tools, the free web service provided by Google to help webmasters to optimize visibility of their websites. It can produce detailed reports about Google search results for submitted items and marks number of clicks and search position for every item shown in the search result. We present the most searched items in our repository and also other search criteria by which they were found.

Keywords: Digital Repository, Search Engine, Google

Maja Nikolova

Museum of Pedagogy, Belgrade
ngomusketar@hotmail.com

The Digitization of Archives in the Educational Museum in Belgrade – Handwritten Notes

The availability and the useful of archival materials provide the great variety of information which is located

in these documents. The large number of archival materials, relating to the history of education and education in Serbia and among Serbs, are stored in the collection of documents in Educational Museum in Belgrade. Working on a long-term program of studding, classification and protection of archival materials, which are important for the development of the history of pedagogy, Educational Museum chose to digitize the Fund of handwritten notes. In this Fund there are the volumes of lectures in grammar schools, teacher training school in Belgrade and Sombor and Higher Girls' School in Belgrade. The earliest notes, titled *The Calculation Teaching*, belong to John Miodragovic, a High school student from Kragujevac in 1870. In Fund there are also the handwritten notes from the history of pedagogy, didactics, methodology, psychology and logic which were created in the end of the 19th and early 20th century. The content of this Fund has been used to produce doctoral dissertations and other studies in the field of pedagogy and, also, well-preserved documents are used for the various exhibitions in Educational Museum in Belgrade. The digitization of these archival materials, which is made n order to preserve the cultural heritage and its availability, for the future generations, provides an opportunity to confront with new important topics in the field of the history of pedagogy.

Vesna Župan
University Library 'Svetozar Marković' in Belgrade
buzupan@rcub.bg.ac.rs, zupan@unilib.bg.ac.rs

The Role of Digital Libraries in Economics and Management Results from Serbian Academic Practice

This paper concentrates on contemporary library materials which are being acquired for users in economic sciences and management. Digital academic librarianship in Serbia faces many challenges. Statistical access is used in order to illustrate the situation in the collections of Serbian academic libraries.

Open repositories particularly contribute to the promotion of working process in librarianship and informatics of academic Serbia. Investments into librarianship can make professional and scientific work much more efficient if marketing research are being realized regularly. The lack of financial means is permanently present in contemporary academic librarianship in Serbia. However this activity is being developed although slowlier than it would be indispensable.

Keywords: Serbia, digital libraries, library collections, economics, management.

Frank Boochs
University of Applied Sciences, Mainz
boochs@geoinform.fh-mainz.de

COSCH: towards a better common understanding in cultural heritage documentation

True, precise and complete documentation of artefacts is essential for conservation and preservation of our cultural heritage (CH). Access to the best possible documentation of artefacts is contributing to the enhanced understanding of material CH and helps its long-term preservation. Through the COST Action COSCH (Color and Space in Cultural Heritage) a group of cultural heritage professionals, color engineers and information scientists has been formed sharing similar goals for the documentation, curation, long-term preservation and representation of cultural heritage artifacts.

The focus is on accuracy in the digital capture and remediation of artefacts through a range of temporal, spatial and technical constraints. COSCH will provide a stimulating framework for articulating and clarifying problems, sharing solutions and skills, standardising methodologies and protocols, encouraging a common understanding, widening applications and dissemination. In addition the work on open standards for state-of-the-art documentation of CH will be supported. The usage of high-resolution optical techniques in CH will be similarly supported as the definition of good practice work.

In addition a shared vocabulary will be developed through a dialogue between engineers and end users facilitating an agreed movement forward in cultural heritage documentation. Based on such common terms a model will be developed (COSCH KR) capturing the shared concerns of professionals for a standards-based solution with an organic Linked Data model. This leads to a knowledge representation to be used by non-expert users for capture technologies, facilitating and formulating their engagement with key questions for the field.

Selma Rizvić
Faculty of Electrical Engineering Sarajevo, University of Sarajevo
srizvic@etf.unsa.ba
Daniel Pletinckx
Visual Dimension, Belgium
Sofia Pescarin
Consiglio Nazionale delle Ricerche, Italy

Keys to Rome – the next generation virtual museum event

We present the work in progress on the Next Generation Virtual Museum Event "Keys to Rome". It is the final event of the FP7 Network of Excellence "Virtual Museum Trans-national Network V-MusT.net" and it will open on 23ʳᵈ September 2014 at the same time in Rome, Amsterdam, Sarajevo and Alexandria. Apart from the thematic exhibition about the end of the Roman Empire, the event will also contain a historical overview of virtual museums, a Virtual Museum Lab displaying new technologies

for virtual cultural heritage, a demonstration of the crowd sourcing call results, where external partners have created new projects with 3D heritage content available through the V-MusT repository, a web site combining the interactive digital stories of the four locations into one story in form of a serious game that invites to visit the exhibitions and a series of workshops, seminars and demonstrations where we show how the thematic exhibition was made and where the new technologies of the VM Lab and the Crowd Sourcing Project will be demonstrated and contextualised.

Keywords: virtual museums, digital content in real museums, interactive digital storytelling, virtual cultural heritage, real-time virtual environments

Peter Miladinov, Georgi Penkov
Sofia University
pmiladinov@gmail.com

Self-Aware Mobile Museum Explorer – SAMME

SAMME is an application based on nowadays information technologies that gives museum visitors unique multimedia experience based on their will. When SAMME is loaded on a mobile device – smartphone or a tablet – different processes begin, helping the virtual guide to locate the visitor and to follow him through the exhibition. Any time the visitor points its mobile device at an object, SAMME finds it in an online database – wherefrom it extracts data about it. All kind of multimedia could be stored – audio files, video files, pictures and abstracts. The visualization is represented in augmented reality so the visitor is rather involved than distracted by the received information.

The localization of the user is determined by the devices' gyroscopes and accelerometers due to lack of accuracy of GPS navigation indoors. Different methods of localization have been tried, but the one chosen by the team is the most cost-effective for the museums.

Once the application is created it could be multiplied for different and any other kind of indoor museums. The initial space for the online portal servicing SAMME should be expanded in time, but the ease of access and work to this online resource will be unchanged. This will lead to another economy aspect of the project.

İsmail Okay
Faculty of Art and Design, Yasar University
ismail.okay@yasar.edu.tr

Using 3D Digital Technologies For Navigation Systems in University Campuses

Navigation and information graphics become very important nowadays and university campuses are also has same navigation problems. At that case to finding a solution for this problem digital platforms are started to use besides of printed graphical medias.

The main subject of that project is to find a solution for the navigation for the people who visit the campus of Yasar University with the new possibilities of digital media.

The application is started with the 3D modelling phase of the campus by using the 2D architectural drawings. After that period 3D models are tranfered to the 3D Game Engine. By adding the graphical user interfaces and computer scripts to the project the application is started to work.

The application will be used with the kiosks inside of the university campus. Especially the areas of the incompetent points of printed graphic design medias like searching someone just with the name of someone in campus, this digital application serves fast and precise answers. Additionally the searching keywords are stored in a database. With that database any mistake or error can be easily fix.

Ljubica Ćorović
Belgrade City Library
beogradika@bgb.rs
Vesna Vuksan, Adam Sofronijević
University library 'Svetozar Marković', Belgrade
vuksan@unilib.bg.ac.rs, sofronijevic@unilib.bg.ac.rs

Virtual exhibition as a medium for presenting scientific and cultural heritage to international audiences: Djordje Stanojevic – Rector who lit up Belgrade

The challenge of reaching out to international audiences and presenting scientific and cultural heritage has been present since the early days of digitization. It has increased over time since the multitude of repositories, platforms, Web 2.0 and other tools are readily available and heritage institutions around the world make ample use of them in order to present results of their digitization activities making capturing the attention of those interested in world heritage a competing challenge. In order to create a visually appealing, content rich and functional platform that is easily and effectively accessible for international audiences University library Belgrade promulgates the concept of thematic virtual exhibitions. Since its first instigation in the form of virtual exhibition about famous Serbian scientist Milutin Milankovic in 2006 this kind of presenting digitized materials proved to be very effective in reaching international audiences. By simple sharing of virtual exhibition home page link via Web 2.0 tools or by including a brief description of virtual exhibition into daily Internet workflow of potential users i.e. making it available at forums, social networks and other places that users visit on a daily basis, materials presented as a concise textual information followed by attractive design and digitized materials made their impact worldwide.

Paper presents the most recent and by many accounts the most successful virtual exhibition of University library Belgrade "Djordje Stanojevic – Rector who lit up Belgrade". Prepared as an instigating exhibition of the virtual exhibition series "They built Serbia" that will once a year for Serbia National Day – February 15th portray prominent people, professors and researchers who achieved great and unforgettable results in the history of the university and Serbian society, the exhibition presents life and achievements of a University of Belgrade professor and rector Djordje Stanojevic, a pioneer of electrification and photography and a person of an almost renaissance mind and wide range of scientific and engineering interests. The exhibition consists of short informative texts about main

areas of Stanojevic activates, digitized collection of his books, a comprehensive bibliography and annotated list of web resources on Stanojevic and was prepared by collaboration between University library Belgrade and leading experts from organizations such as Belgrade city library and Faculty of Philology of University of Belgrade.

The description of the virtual exhibition is an introduction for discussion of ways in which the exhibition was promoted, ranging from traditional Web 2.0 tools such as library Facebook page and twitter account, digital and printed mass media to more innovative methods such as LinkedIn networking and forum presentations. Also a role of traditional radio broadcasting is re-examined in Serbian national context and paper depicts much stronger influence of this somewhat forgotten media in promotion of digital heritage materials. The role of multilingual facets of the exhibition is discussed and a detailed cost benefit analysis is provided. Paper provides a strong case for collaboration and describes the process of making of the exhibition that is informative on how efficient collaboration and synergies it provides may substitute relative lack of resources.

Paper advocates the need for innovative ways to present digital heritage materials and proposes a format of the thematic virtual exhibition as viable and achievable solution for cultural institutions in Serbia and other transitional and developing countries of the region.

Keywords: Virtual exhibition, Scientific heritage, Cultural heritage, International cultural audiences, Djordje Stanojevic, University library Belgrade, Serbia

Emiliano Degl'Innocenti
Fondazione Ezio Franceschini, Italy
emiliano@fefonlus.it

TRAME – Texts and manuscript transmission of the Middle Ages in Europe

TRAME is a research infrastructure project focused on promoting interoperability among different digital resources available in the medieval digital ecosystem domain by connecting repositories of digitized images of medieval manuscripts, their codicological descriptions, their textual and philological interest, their cultural significance in the context of the European history. Currently it implements a number of features (including simple, shelfmark, advanced search modes etc.) on more than 80 selected scholarly digital resources around western medieval manuscripts, authors, and texts across EU and USA, including - digital libraries, research databases and other projects from leading institutions.

TRAME is designed to be a digital research tool for scholars doing research in medieval western culture. Its aim is to support users in answering actual research questions, rather than simply offering traditional searching and browsing features. As described it currently offers advanced meta-search tools working on a vast number of scholarly resources (DBs, Digital libraries, etc.) coming from libraries, archives and research institutes in Italy, EU and the USA, covering various disciplines among medieval studies (literary studies, paleography, codicology, philology, philosophy etc.). The main aim of the current TRAME development is to:

- implement a Semantic Knowledge Base, built using hi-quality data (coming from SISMEL/FEF and other leading international research institutes);

- growing thanks to advanced Named Entity Recognition (NER) and Extraction techniques + semantic annotation and User Generated Content (UGC);

- consolidating due to domain experts validation processes over extracted knowledge and extending with rule-based reasoning techniques, to make hidden information emerge;

- to extend the metasearch approach to virtually any relevant web resource devoted to medieval manuscripts, texts and authors, through an extended partnership program (in progress, 2014)

- authority list for medieval authors' names establishment and integration

TRAME extension for authors and texts

- to implement semantic technologies and tools to create a medieval digital knowledge space for scholarly research. Parallel development of the metasearch and the semantic approach (from data to knowledge, forthcoming).

In addition to the on-the-fly metasearch feature, the TRAME(S) evolution will implement:

- a semantic knowledge base with trusted data coming from SISMEL/FEF and other international partners

- a workflow to gradually increase the KB without needing extensive human interaction with the content holding institutions, using Named Entity Recognition (NER) processes and domain experts validation (see diagram TRAME Development towards Horizon2020 and VCMS): For each TRAME query an indipendent (a-synchronous) process will be activated in order to crawl all the relevant resources matching the user queries and extract knowledge (names, roles, facts, etc.), according to a given set of rules. The NER extraction process will create a new layer of knowledge, stored in a temporary area of the Medieval Knowledge Base, waiting for human validation (i.e.: add, edit or remove a fact) to be added to the KB.

- a set of rule-based reasoning tools, to make implicit (i.e.: not expressed) knowledge emerge from hi-quality (i.e.: validated) data

Koraljka Kuzman Šlogar
Institute of Ethnology and Folklore Research, Zagreb
koraljka@ief.hr

Ethical Code and Legal Aspects: Case of an Research Archive

Creating a modern digital repository with online publishing of archival material has facedthe Institute of Ethnology and Folklore Research(IEF) with many challenges related to the fields of ethics and legislation. Because of its responsibilities as a public institution to serve the interests of the scientific and cultural community, the IEF is obligated to provide free public access to information about archival material. But, the question is, to what extent is it really possible to open a research archive to the public?

Out of this question new legal and ethical issues arise. The documentation that is systematically included in the archive is collected through the Institute's regular scientific research activities, so

everything is clear when it comes to ownership of a recording and the author's right. Also, another issue arises here, which is specific to the research archives – the right of research participant and some ethical concerns related to interviewing in difficult circumstances, researching sensitive topics and the archiving of qualitative data. Furthermore, the Institute's archive is in possession of the documents copied from other archives too, either donated or purchased, but mostly without any written records about the transfer and copyright, since those issues were not a matter of concern at the time.

Solving these problems is theoretically possible, but it requires a large investment of time and effort. Some of the options are to try to trace the authors or their heirs and to sign contracts with them; to wait for the expiration of copyright protection or to choose the method of anonymization of records where it is feasible and practical. Obviously, the Institute stil needs to retain some control over the distribution and use of those material until the situation is resolved.At the same time it should find acceptable models for the reception, storage and use of materials entering the archive and repository in order to avoid future confusion and potential problems in these matters. It is crucial to create some ethical guidelines and to standardize the models of contracts / licenses for gaining consent to archive data at the time of fieldwork.

Tatjana Mihalić
National and University Library in Zagreb
tmihalic@nsk.hr

Sounds of the past : the musical heritage digitization project of the National and University Library in Zagreb

The oldest and an important part of Croatia's musical sound heritage is comprised within early gramophone records on 78 rpm released in the early 20th century. Some of that material, held by Music Collection of the National and University Library in Zagreb, represents priority in the protection, preservation and its accessibility due to its historic and cultural significance. With its goal to preserve and make available part of Croatian sound history, the Library launched a digitization project of historic sound recordings. The project asserted itself as the solution for preserving and making valuable part of Croatian audio heritage accessible online. The virtual collection *Sounds of the past* makes available digitized music originally published on 78 rpm shellac gramophone records obtaining high-quality metadata as well as bio-bibliographic and contextual data. As the inseparable part of the old gramophone record there can be seen original labels of records as well as what record covers and publisher's catalogues seemed like. Added value also can be seen in the accompanying materials which include texts and clippings from the leading newspapers of the time. It should be mentioned that the major part of the sound recording's collection comprise items released by the Edison Bell Penkala company, an important producer and publisher of gramophone records which was situated in Zagreb during the 1920s. In that period there were numerous recordings which provide us with insight into national music publishing and musical repertoire from the beginning of the 20th century. Research of the earliest period of sound publishing reveals the area which was going ahead with the contemporary technological development in recording and producing sound. It also establishes Croatia's affiliation with the major European musical influences and reinforces its place on the cultural map of Europe of that period.

Nabhan AL Harrasi, Hilal Almoshafri
Sultan Qaboos University, Sultanate of Oman
nabhan55@gmail.com, trust_me_555@hotmail.com

The development of a Video Digital Library:
The case of PART in Sultanate of Oman

This research intends to discuss the large-scale project of Video Digital Library (VDL) that has been recently developed by the Public Authority for Radio and TV (PART) in the Sultanate of Oman. Although the main purpose of this project is to support TV and Radio podcasting in Oman, it will also be possible to use the library for communication and scholarly work. It has been decided that the digital realm is the best solution to preserve the traditional video library and make it accessible and retrievable through local and international information networks. In addition, it will enable and facilitate sharing of library materials through collaboration with international counterpart organizations.

An action research method will be applied for the current research. Although there is no standardized model for investigating the problem situation, this study will apply the well-known and original action model developed by Lewin, which has been in use since 1946. The model is presented as a linear problem-solving process consisting of four phases: planning, acting, observing and reflecting. The processes involve research activities (identifying the problem, gathering data, analyzing and making decisions) and action activities (implementing the plan). Therefore, the first and second stages will discuss the need for VDL and process of creating the project, while the process of evaluating and monitoring the work will be presented in the third stage. Finally, the research will focus on the benefits of the project for PART and the country as a whole since, as mentioned, the project will have both communication and educational applications.

Karolina Holub, Ingeborg Rudomino
National and University Library in Zagreb
kholub@nsk.hr, irudomino@nsk.hr

Towards Web Archiving in the Region

In the year when WWW celebrates its 25thanniversary, the National and University Library in Zagreb celebrates 10 years of successful web archiving within its program Croatian Web Archive (http://haw.nsk.hr/).

The National and University Library in Zagreb recognized the significance of collecting and storing online content as part of Library's core activitiesalready in2004 and in collaboration with the University of Zagreb University Computing Centre (Srce) it collects and preserves this part of national heritage.The importance of preservingthe onlinepresent is enormous due to the characteristics of the content on the Web. The Web is constantly changing, the lifetime of a website is very short and the boundaries are unknown. Technologies change rapidly and one institution is not able to keep all that is

published on the Web.It is essential to preserve everything that has cultural and scientific value.

Due to ten-year practiceand experience the National and University Library in Zagrebtogether with the University of Zagreb University Computing Centreis thinking about broadening its work in web archiving towards the countries in the region that have not yet developed this type of activity.

Brankica Todorović
School of Economy in Užice
bdanica@neobee.net

Cultural and Historical Heritage in the Evaluation Functions of Economic Development

The cultural and historical heritage, in modern times, getting increasingly important role, which is primarily related to an opportunity to evaluate the achieved level of economic development of a particular area, region or area on the preservation and valorization of heritage.

The paper analyzed:

1) Existing methods of inclusion and the availability of data on the cultural and historical heritage;

2) Areas of research in which it is possible to use data on the cultural and historical heritage for the evaluation of economic development and

3) Ways to improve existing data sources and methods of valuing heritage.

The aim of the analysis and interpretation of the results is the importance of observing how the preservation of heritage and the form in which the data is presented and made available as it is important in conditions where the rate of economic development is not assessed on the basis of GDP growth.

Keywords: cultural and historical heritage, economic development

Katica R. (Stevanović) Hedrih
Mathematical Institute of Serbian Academy of Sciences and Arts
khedrih@eunet.rs, katicahedrih@gmail.com, khedrih@sbb.rs

120.000 examples of university books in publishing house „Naučna knjiga": Author Prof. Dr. Ing. Dipl. Math. Danilo P. Rašković (1910-1985)

This distinguished scientific figure of exquisite creative energy and inspired enthusiasm, a scholar deeply attached to the Yugoslav and Serbian scientific and cultural heritage and an exquisite pedagogist of high ethic principles is in the living memory of many generations of students whom he taught how to learn and love mechanics, as a basic scientific branch of mechanical engineering either

directly, through his lectures, or through his various and numerous textbooks and collections of problems which circulate in more than 140,000 copies. His disciples and colleagues are glad that he had the ability to transmit to them his great enthusiasm permeated with his sincere devotion for mechanics and his exquisite scientific eagerness.

Prof. Dr. Ing. Dipl. Math. Danilo P. Rašković lectured mechanics, strainght of materials and oscillation theory at the faculties of mechanical engineering in Belgrade, Niš, Kragujevac, Novi Sad and Mostar, as well as in the Faculty of Science in Belgrade, Faculty of Philosophy in Novi Sad, Faculty of Electronics in Niš and at the Military-Technical College in Belgrade.

Professor Rašković wrote a considerable number of university textbooks which ran through numerous editions. Some of them still hold records as for the number of editions and copies printed within the group they belong to. In addition, he wrote a series of textbooks in the field of mechanics for secondary technical schools, as well as a number of chapters in professional technical handbooks, mimeographed course materials and textbooks for post-secondary schools of mechanical engineering. He also wrote several textbooks for postgraduate studies.

We are of the opinion that this occasion should be used to say a few things about professor Rašković's four-year-long co-operation with the publishing house "Naučna knjiga" concerning the publication of his university textbooks, collections of problems and various other handbooks. Follows the review of university textbooks and handbooks written by Professor Danilo Rašković and published by "Naučna knjiga" in total 120.000 examples:

- MECHANICS I (STATICS) - a 18,000-copy printing of first three editions; II edition 1949, III edition 1950; subsequent editions 1960 (a 3,000-copy), 1962, 1964, 1965, 1968, 1971, 1973, 1978 (a 3,000-4,000-copy)

- MECHANICS II (KINEMATICS) - first two editions in a 13,000-copy printing. Editions: 1947, 1950, 1966.

- MECHANICS III (DYNAMICS) - first two editions in 10,000 copies. Editions: 1947, 1956, 1962, 1973.

- STRAINGHT OF MATERIALS - editions: 1955, 1961, 1962, 1965, 1967, 1971, 1973, 1977, 1980, 1984 - approximately 25,000 copies.

- OSCILLATION THEORY - editions: 1957, 1965 - 6,000 copies.

- TABLES OF STRAINGHT OF MATERIALS - (ran through 13 editions) approximately 40,000 copies.

- ESSENTIAL MATRIX CALCULUS -1971 edition, 1,500 copies.

- ELASTICITY THEORY - 1985 edition, 2,000 copies, etc.

Some of his university textbooks were published by other publishing houses such as "Zavod za izdavanje udžbenika", "Gradjevinska knjiga", "Tehnička knjiga".

Among the publications for postgraduate studies the following should be mentioned: ANALYTICAL MECHANICS and TENSOR CALCULUS, both edited by the Faculty of Mechanical Engineering in Kragujevac.

All contents of these publications are material resources existing as scientific heritage in area of mechanics in Serbia and corresponding presentation in digital form is of great scientific interest and open possibilities to disseminate these fundamental books in area on theoretical and applied mechanics to new generations of students, researchers and engineers.

Alexey O. Shigarov, Igor V. Bychkov, Gennadiy M. Ruzhnikov

Institute for System Dynamics and Control Theory of SB RAS, Irkutsk, Russia
shigarov@icc.ru, bychkov@icc.ru, rugnikov@icc.ru

From Unstructured to Structured Tabular Data Using a Rule Engine

Nowadays many researchers, e.g. W.H. Inmon [1], D.W. Embley and Y. Tijerino (http://deg.byu.edu) [2] note that issues on unstructured data integration become increasingly important. Tables from documents (e.g. plain text files, spreadsheets, or e-mail messages) are important part of unstructured data. They do not have a predefined formal data model and are intended to be interpreted by humans but not designed for high-level machine processing like SQL queries.

Automation of conversion from unstructured to structured tabular data has applied relevance for problems of data integration, information extraction, and document analysis systems. Complexity of table analysis and processing is due to a large variety of features used to present tables. Depending on presentation level of a table it is required to solve different tasks such as table detection, table layout analysis, and recovering relationships of table elements [3]. The current state of research in table analysis and processing does not allow to say that problems of structuring tabular information are completely solved. Most studies deal with problems of low-level analysis and processing of tables from document images. Meanwhile, the issues of table understanding (i.e. recovering relationships of table elements) remain less studied in case of unstructured tabular information presented in high-level formats as documents of word processors or spreadsheets.

The present work is restricted to the issues of recovering relationships of table elements. To structure tabular information we propose to use logical inference with rules for table structure analysis. The major idea of our approach consists in the following. Often, tables from a collection of documents produced by a single vendor have similar layout, formatting, and content. This provides an opportunity to define a set of formalized rules for structuring tabular information from the document collection, so that they satisfy all or nearly all its tables. Rules can be expressed as a knowledge base, while recovering logical structure of tables can be implemented as logical inference. It is expected that facts used in the process of inference may include information about spatial, graphical and natural language content of tables. Implementation of rule sets for different table forms provides processing of a wide range of tables having complex structures.

The *CELLS* system for structuring the unstructured tabular data developed by us is based on the proposed approach. It allows structuring data from tables presented in Excel spreadsheets. Production rules for the table structure analysis are expressed by the MVEL language (http://mvel.codehaus.org). They map the known information of physical structure level (positions, graphical formatting and natural language content of cells) to unknown information of logical structure level (relationships between table elements). Logical inference of the rules is implemented by the Drools Expert (http://www.jboss.org/drools) rule engine. The obtained experimental results (http://cells.icc.ru/test) demonstrate that the system can be applied to large-scale input tabular data (a wide range of tables having complex structures) from Excel spreadsheets into a database.

Our system can be applied as well in input, organization and classification of digitized data and their metadata related to scientific and cultural heritage. Particularly if it is well known that there are many

digitized entities of this kind that unstructured and are not classified and do not follow any existing standards.

References

[1] W. Inmon, A. Nesavich, Tapping into Unstructured Data: Integrating Unstructured Data and Textual Analytics into Business Intelligence, 1st Edition, Prentice Hall PTR, 2007.

[2] Y. Tijerino, D. Embley, D. Lonsdale, Y. Ding, G. Nagy, Towards ontology generation from tables // World Wide Web: Internet and Web Information Systems. 2005. Vol. 8, No. 3. pp. 261–285.

[3] Shigarov A.O. Technology for tabular information extraction from electronic documents of various formats. Ph.D. thesis, Institute of Computational Technologies of SB RAS. Novosibirsk, Russia. 2010.

Fedorov R.K., Shumilov A.S., Bychkov I.V., Ruzhnikov G.M.
Institute for System Dynamics and Control Theory of SB RAS, Irkutsk, Russia
fedorov@icc.ru, alexshumilov@yahoo.com, bychkov@icc.ru, rugnikov@icc.ru

Geoportal for Crowdsourcing of Rational Data

Nowadays Crowdsourcing is actively being developed. Speaking about successful crowd sourcing projects we can name following ones: Wikipedia, the online encyclopedia created mostly by volunteers; eBird, a project for bird observation [1]; OpenStreetMap, a free map of the world [2] , and etc. However, they do not allow implementation of a full Geographic information research cycle: input, analysis / modeling, representation. Systems, which provide data processing services, have a limited and not extensible set of methods. Therefore an original approach is offered, based on the experience of successful Crowdsourcing projects - significant problems being solved by volunteers (researchers) and coordinating activities being handled with the help of information technology. Unlike existing systems, Crowdsourcing data will be created in the relational, normalized form, oriented to the automatic analysis and processing. The service of relational data with spatial attributes editing has been developed within the geoportal of Institute for System Dynamics and Control Theory of Siberian Branch of Russian Academy of Sciences.

The user of geoportal is able to create a table with an arbitrary set of attributes and specific access rules. For each attribute the user must specify the name, the input control, specific properties of the selected input control. When the user saves the table at the web-interface, the actual table is created in the PostgreSQL database. Information about table structure (metadata) is registered and stored in the metadata catalog. Table metadata is used for managing the table and creating interface for modifying the table structure and properties. Spatial attributes are displayed on the map. Editing data can be performed in a table or on the form. All attributes can be sorted and filtered.

The advantages of the developed service are:

• multiuser work over the Internet, multiple users can enter, edit, and view data according to access rules;

• moderation of table data updates;

• different filters for data, including spatial filters for geometries;

• reliable storage, based on modern SAN systems;

• provision of the programming interface for data according to the OGC WPS standard [3]. Currently a lot of different WPS methods is being developed in order to expand the set of analysis functions.

Our system can be applied very successfully in various digitization projects and Internet portals related to scientific and cultural heritage. For example now it is used in digitization project of Siberian herbarium of vascular plants which includes about 2700 species.

References

[1] Sullivan, B.L., C.L. Wood, M.J. Iliff, R.E. Bonney, D. Fink, and S. Kelling. 2009. eBird: a citizen-based bird observation network in the biological sciences. Biological Conservation 142: 2282-2292

 [2] Frederik Ramm, Jochen Topf | OpenStreetMap: Die freie Weltkarte nutzen und mitgestalten. Lehmanns Media, 2008-02. ISBN 978-3-86541-262-1. 288 pages

[3] OpenGIS Web Processing Service (WPS) Implementation Specification, v1.0.0. Release date: June 08, 2007. – URL: http://www.opengeospatial.org/standards/wps

Irena Eiselt

National and University Library in Slovenia
irena.eiselt@nuk.uni-lj.si

Serial Publications in the National and University Library of Slovenia – Digitizing or Microfilming?

The *Serials Collection* of the National and University Library of Slovenia holds the largest and most comprehensive national collection of serial publications dating back as early as the very beginning of journalism in Slovenia (*Laibacher Zeitung* – since 1788, *Lublanske novize* – since 1797, *Kmetijske in rokodelske novice* – since 1843) to present times. The *Serials Collection* acquires serial publications in print and non-print form, provides entries, keeps newspapers and current numbers of other serial publications, provides access to users and protects and preserves the collection for future generations.

This paper will focus on access and preservation models used in the *Serials Collection*. It will shortly outline the history of microfilming of serial publications in the National and University Library of Slovenia, its advantages in the 1980s,and its disadvantages in the digital 21st century. A quantitative and qualitative analysis of the microfilmed material will be made. The relationship between microfilming and digitizing,in the way of coexistence,will be discussed as well. In addition, analysis of copies for end users of both media will be made. The paper will suggest the possibilities of improvements of the current state and propose changes of the existing access model to meet the digital demands of the current and future reader, and to satisfy the preservation demands for protecting hardcopy newspapers, too. For this purpose, a new conservation-restoration plan will be suggested. A partnership between the National and University Library and publishers, will be proposed in order to enable the ingest of all editions of published newspapers via PDF and to make them available on a page level, read-only basis in the Serials Collection reading room.

Nadežda Pejović
Faculty of Mathematics, Belgrade
nada@matf.bg.ac.rs

Slobodan Ninković
Astronomical Observatory, Belgrade
sninkovic@aob.rs

An astronomical manuscript of an unknown author

We shall present a manuscript Cours d'Astronomie et de Geodesie, (Course on Astronomy and Geodesy), Ecole Polytechnique, II+578, Paris, 1846. This handwriting belongs to a collection of 24 mathematical manuscripts which is the property of the Mathematical Institute of Serbian Academy of Science and Arts. This collection is digitized and deposited in the Virtual Library of the Faculty of Mathematics in Belgrade. The manuscript is an interesting but unfortunately unsigned hand-written book on astronomy and geodesy. A copy of this manuscript can be found in several French university libraries (Lyon and Bordeaux) and Indiana University library. The book is written in French and according to the assigned data the author is unknown, even the country of the origin is unknown. We believe that the book was written by a French astronomer and geodesist, later the Minister of Public Instruction, Hervé Auguste Etienne Léopold Alban Faye (1814-1902). Namely, he published several books in the second half of the XIX Century with similar titles and contents. Another argument in favor of this thesis is that he was first a student and later the lecturer (1848-1854) at l'Ecole Polytechnique of a course of geodesy.

Đordje Đorđević
Faculty of Civil Engineering and Architecture, University of Niš
djoka@ni.ac.rs

Srbislav Nešić, Biljana Avramović
Center for Permanent Education, Niš

Ljubica Đorđević-Vidojković
Faculty of European Legal and Political Studies, Novi Sad

Digitalization of Serbian-Romani and Romani-Serbian Dictionary

The topics of this small project is ON-LINE (WEB) interactive digitalization of Serbian-Romani and Romani-Serbian dictionary. The main goal of this realized electronic dictionary is to mitigate the difficulties in communication between Roma population and local population and government in achieving some of their rights (health, social, property, etc.), including state, juditiary, and other institutions. In addition, dictionary describes the history and heritage of Roma population, being present in Balkans for thousands of years.

This dictionary includes more than 1700 most frequently used words in daily and bureaucratic communication. WEB site with functional prototype (Beta-version) of dictionary is

www.dundjer.co.rs/recnik. This beta-version is open for free use, with a possibilty of interactive improvement by registered users. Based on an older dictionary, it supports ex-Yugoslav territory, what demands future separation (filtering) to east-Serbian (Vlah), central-Serbian, south-Serbian, Vojvodina, Bosnian, and Macedonian version. In addition to WEB application, there exists a version for cellular telephone, using similar search engine. The user could download a cellular version and simply install on own phone, supposing existence of Java Me platform. This version is limited by memory of cellular telephone. In spite of beeing experimental version, more than 40 million of romani words have been already downloaded from around the world. Uploading will be soon enabled by new program version.

Etleva Domi
National Library of Albania
etlevadomi@gmail.com

Albanian Cultural Heritage in Digital Area

Living in the new area of "Bridging the Digital Divide: making the world's cultural and scientific heritage accessible to all", the purpose of this paper is to present the mission of Albanian librarian community, - as "builder" of "virtual cultural bridges" between the past and the present, - focused mainly to the National Library of Albania.

It provides shortly background information on Technological Revolution developments in Albania and the increasing clients/users attention to digital information and/or digital content in the rich cultural environment which we are leaving.

The paper pays attention to Albanian National Library Strategy as keeper of "National Memory" and its role in the knowledge age of Internet. It aims to present its initiatives/projects in national or international level; to show the achievements in building the Digital Library (e-Albanica); its impact on the wider library community; librarians efforts by thinking/discussing/making its own resources available on-line in the entire world, in anytime and anywhere for all users, promoting Albanian richness cultural heritage in world portals and preserving "cultural and scientific treasure" even for the generations to come.

In conclusion "Albanian Cultural Heritage by a click of mouse" is a "new channel" in the universe of knowledge by broking the concept of "physical boundaries", "building bridges" and "connecting cultures across the world".

Liviu Pop
Romanian Academy, Institute of Folklore Archive
liviu.o.pop@gmail.com

Preservation of artifacts post-digitization (workflows and policies); Open Source Folklore Archives - Disseminating Small Memory Boxes

The presentation will be two folded: on one hand there will be a general presentation of The Institute "Folklore Archive" of the Romanian Academy from Cluj-Napoca and the current digitization project and on

the other hand I will present a possible solution for long term digital preservation of the content of the archive. The solution can be viewed from two organic perspectives: on of the zoo and the other one of the guerrilla gardening. The first one insists on the importance of returning into the wild what was once captured on the field of research, and the other one offers a way of doing this, by adopting the seed bombing method to the problem of disappearing immaterial cultural heritage. Thanks to the Moore's Law, it is now possible to have decent hardware for very good prices and this might allow the implementation of many small NUCs or Raspberry PIs either as small web-servers or kiosks (or both) in remote villages from Transylvania, the place where the majority of the content from the archive was recorded. Using Omeka software or other open-source digital archives solutions, the digitized content may become available to the inhabitants of the villages. Thus the crystallized folklore, which has a fundamental open source structure, might become, thanks to open source technologies, fluid again.

Cezar Popescu
Ialomița County Museum
cezar.popescu@gmail.com

Costică Acsinte Collection

Costică Acsinte (1897–1984) was a Romanian war photographer active in WWI that, after discharge in 1920, opened a commercial photographic studio in town of Slobozia, in South–Eastern part of Romania, where he took more than 5.000 pictures during 1930 and 1960 when he retired. His legacy, now at the Ialomita County Museum, consists of around 5.000 glass plates negatives, around 250–500 film sheets negative and an unknown number of prints. Costică Acsinte Collection is a digitization project launched in 2013 by me, Cezar Popescu, founded entirely from private sources. The following presentation lists the most important steps and decisions made during digitization phase.

IMPRINT