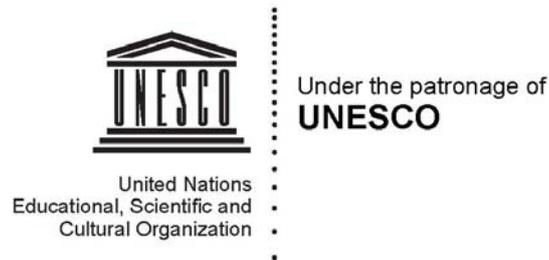**Radoslav Pavlov**   **Peter Stanchev**

Editors

Digital Presentation and Preservation of Cultural and Scientific Heritage

International Conference

Burgas, Bulgaria

September 7–9, 2017

Proceedings

Volume VII

Proceedings of the Seventh International Conference *Digital Presentation and Preservation of Cultural and Scientific Heritage – DiPP2017*, **Burgas, Bulgaria, September 7–9, 2017 (Volume VII)**

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Seventh International Conference
Digital Presentation and Preservation of
Cultural and Scientific Heritage
DiPP2017

Burgas, Bulgaria
September 7–9, 2017

Conference Objective

The Seventh International Conference on *Digital Presentation and Preservation of Cultural and Scientific Heritage—DiPP2017* aims at presenting innovative results, research projects and applications in the field of digitisation, documentation, archiving, representation and preservation of global and national tangible and intangible cultural and scientific heritage. The focus is on providing open access to digitised cultural heritage and setting up sustainable policies for its continuous digital preservation and conservation. The priority area is the digital presentation and preservation of cultural and historical objects under conditions of risk, including those from the Burgas region. The forum will demonstrate innovative technologies and proto-types which result from established practices and achievements in the field. Representatives from a number of public and specialised libraries, museums, galleries, archives, centres, and national as well as foreign research institutions and universities will be invited to participate and exchange experiences, ideas, knowledge and best practices of the field.

The principal organiser of the conference is the *Institute of Mathematics and Informatics, Bulgarian Academy of Sciences*. Co-organisers are Regional Academic Centre—Burgas, Bulgarian Academy of Sciences, Regional Historical Museum—Burgas, Burgas Free University, and Index Ltd. The event is supported by the *National Scientific Fund (Contract № ДПМНФ 01/27 3 July 2017)* and is under the patronage of *UNESCO* and the *Burgas District Administration*.

Accompanying Events

— Workshop and national information day *Open Access to Scientific Publications, Data and Data Science*, organised by the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences;
— National information day *Innovation Ecosystems of Digital Cultural Assets*, organised by the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, to present current research results of the project No. DN02/06/15.12.2016 *Concepts and Models for Innovation Ecosystems of Digital Cultural Assets (2016–2018)*, funded by the National Science Fund.
— National information day *Serious Games as Contemporary Tools for New Educational Applications*, organised by the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, to present scholarly and scholarly-practical outcomes

of the *Serious Education Games as Contemporary Tools for New Educational Applications* project, Contract DSD-2/05.04.2017 between the Bulgarian Academy of Sciences and the Institute of Mathematics and Informatics, activity *Introduction of Contemporary Methods in Educating and Fostering Young Talent* (PMC №347).

— Exhibition *Between God and People*, which presents photographic archives of unique bells from all over Bulgaria. The exhibition is prepared by a team of the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, under the BELL and BELLKNOW projects.

Stavros Christodoulakis, TUC-MUSIC Laboratory, Electronic and Computer Engineering Department, Technical University of Crete, Greece

Qin Fei, University of Chinese Academic of Sciences, Chinese Academic of Sciences, China

Valeria Fol, University of Library Studies and Information Technologies, Bulgaria

Veselina Zhecheva, Burgas Free University, Bulgaria

Vito Cappellini, Faculty of Engineering, Florence University, Italy

Local Organizing Committee

Milen Baltov, Burgas Free University, Bulgaria

Yanislav Zhelev, Burgas Free University, Bulgaria

Radovesta Stewart, Regional Historical Museum, Burgas, Bulgaria

Preface

The main aim of the Seventh International Conference *Digital Presentation and Preservation of Cultural and Scientific Heritage (DiPP2017)* is to bring together as many interested institutions as possible working on digitising, recording, documenting, archiving, presenting, protecting and managing cultural and scientific heritage, so that they can share their advanced thoughts, know-how and experience. Public and specialised libraries, museums, galleries, archives, community centres, research institutions and universities are expected to share and acquire knowledge, skills, and expertise at the event.

Four types of papers are presented—invited papers, full papers, short papers, and project papers. The first three types discuss current scientific results, trends and achievements in the field of digital preservation and presentation of cultural and scientific heritage. The project papers present developments in progress, part of them experimental, made by memory institutions during their institutional projects.

- *Invited papers*

The paper by A. Kontarinis, C. Marinica, D. Vodislav, K. Zeitouni, A. Krebs, and D. Kotzinos presents the benefits, the challenges, and a direction for studying museum visitor movements through context-aware indoor trajectory modelling, mining and analysis.

D. Paneva-Marinova, M. Goynov, and D. Luchev's paper presents the monographic work *Multimedia Digital Library: Constructive Block in Ecosystems for Digital Cultural Assets. Basic Functionality and Services*. Its focus is on the search of innovations especially in areas and subareas relevant to digital library data management and processing—innovative and creative tools for approaching cultural assets, applications and services for better access and exploiting of the rich and diverse digital cultural heritage in a sustainable way, intelligent curation, creative use/re-use and remix, reinterpretation, study, understanding, analysis, personalisation, adaptation, semantics, etc.

The paper by B. Bontchev and R. Panayotova presents an educational 3D maze video game dedicated to the development of carpet fabrication in Bulgaria from the 17th century to modern days. Explained are the maze game design process, the educational tasks embedded into the maze, and a practical experiment conducted with the generated game. The initial results obtained from these experiments are very positive and encouraging with regard of the playability of such educational mazes and, as well, concerning their easy and straightforward generation by educators, who are not IT professionals.

The paper by S. Baykoucheva describes a large-scale information literacy programme implemented at the University of Maryland College Park, USA, which has

trained more than 5,000 undergraduate and graduate students on using new digital technologies to find, filter, manage, share, and communicate scientific information.

G. Senka's paper presents a study into who engages with culture subject studies online and via mobile, looking at available products, marketing patterns, customer behaviour, attitudes, barriers and future trends.

The paper by O. V. Kirillova sets out to characterize the Scopus database as a whole, along with its categories and inclusion criteria. Bulgarian Scopus publications and titles are analysed, with the information about 48 Bulgarian journals reviewed for inclusion and included in Scopus given.

E. Pavlovska's paper gives an overview of the Digital Object Identifier (DOI), which appeared in the late 1990s and allows users to immediately find on the Internet the digital object they are interested in. The article presents some new opportunities which DOI opens not only to scientific journals, but also to authors.

- *Full papers*

The paper of F. Zhao and S. C. Loy discusses a practical method devised by Amber Digital Solutions, China, in maintaining a high level of accuracy of the final optimized model for national archival purposes that requires the highest quality.

The paper by R.-M. Ion, V. Gurgu, I. A. Bucurica, S. Teodorescu, M.-L. Ion, D. Postolache and I. Darida deals with 3D scanning techniques and instruments to survey the complex stuccoes from the architectural building Nanu-Muscel in Bucharest.

The paper by D. Luchev, D. Paneva-Marinova, R. Pavlov, L. Pavlova, Z. L. Márkus, G. Kaposi, T. Szkaliczki and M. Veres presents an application of panorama pictures for presenting cultural heritage sites in an attractive way. It introduces the latest developments related to the integration of the panorama picture viewer on multiple platforms and specific implementations of presentations of panorama pictures.

A. Gönczi, Z. L. Márkus, G. Kaposi, T. Szkaliczki and M. Veres's paper describes a guided smartphone walk (Attila József Literary Walk) and its latest supplements, based in district 9 of Budapest. The thematic guided walk developed two years ago covers the scenes of the poet Attila József's childhood. Several interactive games related to the poet's life are presented.

The paper by G. Georgieva-Tsaneva, G. Bogdanova and N. Subev examines the interactivity, categories and levels of interactivity and its various forms in the digital environment. The issue of the characteristics of interactive learning communication has been investigated. The study outlines the specifics of ensuring the integration and interactive representation of cultural heritage artefacts in the North+ region.

R. Stewart, M. Zheleva-Monova and Y. Zhelev's paper discusses problems and the need of adequate training for museum specialists in the processes of digitalization of tangible and intangible cultural heritage. The paradigm of Massive open online courses as one innovative and flexible solution for continuing vocational education and training is proposed. Presented are the results of a large scale investigation conducted in the framework of BizMOOC project regarding the use of MOOCs for corporate training in European organisations (incl. cultural institutions such as museums, libraries, archives etc.)

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M.Tramonti's paper presents some possible scenarios on how digital tools can be introduced and used to make a learning setting more effective.

The paper by S. Kovacheva and L. Dimitrova describes an interactive software environment for learning as an accessible tool to supplement the learning content. The environment, under development, is in line with the State Educational Standards (SES) of educational content for the cycle Social Sciences and Civic Education.

The paper by E. Zaharieva-Stoyanova and S. Bozov overviews the problems related to the development of crochet software. It presents an extension of PKF-XML-based language for digital representation of crochet patterns. The purpose is to develop a uniform and platform independent description of simple graphic primitives corresponding to different types of stitches.

M. Stoyanova and L. Pavlova's paper is dedicated to digitisation of archaeometric and conservation-restoration praxis and deals with the possibilities that the latest neuroinformatic methods offer for more efficient and fast interrogation, understanding and classification of multi-modal spectral records of paintings on various supports.

- *Short papers*

The paper by A. Herschung and M. Kleinmanns describes a software tool that helps to organise and evaluate unstructured file collections.

The paper by G. Bogdanova, T. Todorov and S. Kancheva presents a research study to trace and passport the Russian bells in Bulgaria on the way of the Russian troops from the Danube to Shipka. Several methods for the creation and indexing of digital resources of various objects in the field of cultural heritage are presented.

In their paper, A. Nikolova and V. Georgiev propose a method for monitoring and evaluating the development and early education of children under the age of six by using historical and cultural heritage objects.

- *Project papers*

D. Ilieva and G. Vaptzarova's paper presents a research project for digital preservation of F. Kanitz's artistic works and literary heritage.

M. Dimova's paper presents a project for increasing and customizing visitors' experiences in a digital cultural content management system using story telling methods.

S. Slavova-Petkova's paper describes a project for contextual use of digital cultural resources for educational application using a serious games paradigm.

The paper by N. Noev, M. Goynov, V. Sapundjiev and I. Valev presents work on the project of developing the models and concepts of serious educational games through related multimedia resources of military and historical heritage.

D. Ivanova's paper presents the project *Women in the History of Academic Science in Bulgaria* of the BAS Scientific Archive, supported and funded by UNESCO.

The report by M. M. Nisheva-Pavlova, P. L. Stanchev and P. I. Pavlov presents work in progress directed to the creation of a semantic digital repository of scholarly resources in the area of bioinformatics.

The paper by A. Krandeva and A. Mitov describes Multimedia Web Portal of the Bulgarian National Radio (BNR) archive. The Web Portal provides efficient services of modern information technologies in radio archiving.

The Proceedings also include short descriptions of the three information days organised in the frame of DiPP2017.

Burgas, Bulgaria   Radoslav Pavlov   Peter Stanchev
7 September 2017   Editors

The Director-General

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Republic of Bulgaria

Ref.:   DG/11/16/8255

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Dear Professor Stanchev,

I wish to thank you for your letter of 16 February 2016, by which you request UNESCO's support for the seventh international conference on Digital Presentation and Preservation of Cultural and Scientific Heritage that is to take place in Burgas from 7 to 9 September 2017.

UNESCO wishes to congratulate the organizers of this event, which is geared toward promoting the unrestricted dissemination of scientific knowledge. I am confident that it will stimulate discussion on a range of issues related to Open Access to scientific information, and that it will complement UNESCO's work in this area.

In light of the above, I am pleased to grant UNESCO's patronage to this event, and to authorize the use of the Organization's logo, in accordance with the enclosed General Conditions.

I wish you every success for this event and look forward to receiving a report on its outcomes in due course.

Respectfully,

Yours sincerely,

Irina Bokova

Enc.