Digital Heritage
Proceedings of the 14th International Conference on Virtual Systems and Multimedia
Project Papers

20–25 October 2008
Limassol, Cyprus

M. Ioannides, A. Addison, A. Georgopoulos, L. Kalisperis (Editors)
Paper Review Chair
Andreas Lanitis, CY

Workshop Chair
Denis Pitzalis, FR

Local Organizing Committee
Yiorgos Chrysanthou
Christis Z. Chrysochomou
Ioannis Eliades
Diofantos Hadjimitsis

International Scientific Committee
Abdelaziz Abid, FR
Alonzo Addison, USA
Orhan Altan, TR
Angelos Andrits, GR
Alfredo Andia, USA
David Arnold, UK
Alessandro Artusi, IT
Manos Baltasvias, CH
Juan A. Barcelo, ES
Richard Beacham, UK
Anna Bentkowska-Kafel, UK
J-Angelo Beraldin, CA
Niels Ole Børn, DK
Massimo Bertocini, IT
Nicoletta Di Blas, IT
Jan Boehm, DE
Paul Bourke, AU
Rosella Cafl, IT
Panagiotis Charalambous, CY
Stavros Christodoulakis, GR
Yiorgos Chrysanthou, CY
Christis Z. Chrysochomou, CY
Paolo Cignoni, IT
Sabine Coquillard, FR
Andrea D’Andrea, IT
Uzi Dahari, IL
Adel Danish, EG
Rob Davies, UK
Andy Day, UK
Martin Doerr, GR
Michael Doneus, AT
Pierre Drap, FR
Sabry El-Hakim, CA
Ioannis Eliades, CY
Dieter W. Fellner, AT
Maurizio Forte, IT
Bernard Frischer, USA
Sakis Gaitatzis, CY
Andreas Hadjiprokopis, GR
Luc Van Gool, CH
Stephen M. Griffin, USA
Pierre Grussenmeyer, FR
Norbert Haala, DE
Diofantos Hadjimitsis, CY
Klaus Hanke, AT
Klaus Hanke, AT
Sven Havemann, AT
Sorin Hermon, IT
Jeremy Hungg, UK
Marinos Ioannides, CY
Babis Ioannidis, GR
Charalampos Ioannidis, GR
Yiannis Ioannidis, GR
Wassim Jabi, USA
Loukas Kalisperis, CY/USA
Sarah Kenderdine, AU
Timo Kunkel, UK
Marios Kyriakou, CY
Eleni Kyza, CY
Andrew Laghos, CY
Christos Lambrias, CY
Demetrios Michaelides
Stratos Stylianidis
Georgios Stylianou
Kyriakos Themistokleous
Marina Tryfonioudou

Conference Chair
Marinos Ioannides, CY

Co-Chairs of the International Scientific Committee (ISC)
Andreas Georgopoulos, GR, Loukas Kalisperis, CY/USA, Alonzo Addison, USA

Paper Review Chair
Andreas Lanitis, CY

Workshop Chair
Denis Pitzalis, FR
The official carrier of the joint event

CYPRUS AIRWAYS
Acknowledgements and Disclaimer

The VSMM 2008 joint conference has been partly supported by the VSMM Society, the Cyprus Government, the Cyprus Institute, The Cyprus University of Technology and the University of Cyprus.

The 38th CIPA International Workshop has been supported by CIPA, ISPRS and ICOMOS.

The 2nd EuroMed Conference has been supported by UNESCO-Cyprus Committee and the Cyprus Government.

However, the content of this publication reflects only the authors’ views and the European Commission, Cyprus Government, VSMM Society, CIPA, ISPRS, ICOMOS, the Cyprus Institute, The Cyprus University of Technology and the University of Cyprus are not liable for any use that may be made of the information contained in this proceeding.
Foreword

These conference proceedings contain a selection of papers that focus on multi-disciplinary research involving both Cultural Heritage (CH) Informatics and also the use of technology for initial data-capture and digitization, information data-processing, reconstruction, modelling, visualization, documentation and archiving, as well as visualisation of results and dissemination to the scientific and cultural-heritage communities and to the public. The contributions in these proceedings will definitely assist all experts involved in Cultural Digital Heritage in restoring, renovating, protecting, documenting, archiving, and monitoring history and prehistory, to secure this information for years to come. It is clear that a worldwide collaboration in this area will help make the past accessible to the present and the future.

Cultural Heritage is being transformed by the nature of digital representation of culture in which production, documentation, and distribution of an artefact are one and the same. Understanding and defining digital cultural heritage has implications for documentation practices and the experience of cultural institutions.

Digital devices provide unique access to archives and cultural exhibits, enhancing the capacity of museums and collections to encourage community building and civic engagement. Collection databases once used solely by museum professionals are now being made available locally and globally through the Web. Increasingly, access to cultural heritage is digital and experienced through electronic images and facsimiles. Digital tools and information and communication technologies are merging as the basis for preserving cultural heritage. Digital 3D modeling provides precise and complete documentation of cultural heritage objects and sites and should be used in conjunction with traditional techniques. Of great interest to the scientific community in the last few years, especially in the areas of architecture and preservation, are 3-D modeling, visualization and animation of cultural-heritage monuments and sites. The cooperation between photogrammetry and computer graphics has led to the development of new tools and techniques that are particularly useful for the documentation and archiving of cultural heritage in a digital format. These new tools and techniques include not only photogrammetry, but also 3-D reconstruction, visualization, animation and virtual reality. Technical achievements in modeling, rendering, and animation have made possible the creation of virtual environments, providing a convincing visual experience of cultural heritage structures and sites.

The island of Cyprus is a particularly appropriate venue for a conference on Virtual Systems and Multimedia dedicated to CH because of the long and rich pre-history and history of the island. The historical and archaeological context of Cyprus is the physical and ideal setting of this conference. The past story of Cyprus is the history of the interaction of the cultures and peoples of the lands surrounding the Mediterranean Sea, which was the central means of communication, transport, trade and cultural exchange between diverse peoples. Its history is important to understanding the origin and development of the Mesopotamian, Egyptian, Persian, Phoenician, Jewish, Greek, Roman, Arab and Ottoman cultures and, hence, is important to understanding the development of Western civilization as we understand and experience it today.

The roots of cultures and civilizations are embodied in their architectural structures and archaeological sites, and this cultural heritage should be preserved for future generations. The importance of preservation can be seen in the efforts of international organizations to document important structures and sites. UNESCO and ICOMOS have called for all national and international organizations that are responsible for manmade monuments to document cultural-heritage objects and sites with methods that include traditional and newer, innovative technologies. The integration of these technologies offers great promise and the use of digital technology in particular has rapidly changed documentation techniques.

The importance of Digital Cultural Heritage is evident by the participation and cooperation of a large number of people and organizations including the following:
- The 14th International Conference on Virtual Systems and Multimedia VSMM 2008, dedicated on Digital Heritage (http://www.vsmm.net/)
- The 38th CIPA International Workshop dedicated on e-Documentation and Standardization in Cultural Heritage (http://cipa.icomos.org)
- The 2nd Euro-Med Conference on IT in Cultural Heritage.

We extend our thanks to all those, whose labour, financial support, and encouragement made this joint event possible. The International Program Committee, whose members represent a cross-section of Archaeology, Computer Graphics and Design, Architecture, Surveying, History and Engineering worked tenaciously and finished their work on time.
Especially Mr. Nikolas Valerkos, who designed and managed the webpage and Dr. Andreas Lanitis who supervised the web-based submission system and guided the effort that published these proceedings. We would like also to express our gratitude to our co-organizers The Cyprus Institute, the Department of Antiquities in Cyprus and the Technological University of Cyprus. Finally, our institutional sponsors, the Ministry of Education and Culture, the University of Cyprus; and our official carrier, Cyprus Airways who provided money and ‘gifts of kind’ that made the conference possible.

Our Keynote Speakers, Javier Hernandez-Ros, European Commission, John Van Oudenaren, World Digital Library, Library of Congress, Massimo Negri, Europeana and European Museum Forum; Prof. Donna J. Cox, University of Illinois at Urbana-Champaign; Vassilios Tsingas, Elliniki Photogrammetriki Ltd; Kareem M. Darwish and Ahmed El-Shimi, Cairo Microsoft Innovation Center; are not only experts in their fields but also visionaries for the future of IT in CH. They promote the e-documentation of the past in such a way for its preservation for the generations to come.

Most of all we would like to thank the Cyprus Government, the European Commission, UNESCO WHC, ISPRS, ICOMOS, VSMM-Society and CIPA, that entrusted us with the task of organizing and undertaking this unique event and wish all participants an interesting and fruitful experience.

Marinos, Alonzo, Andreas, Loukas
Limassol, Cyprus 2008