Biannual Conference

Programme
EuroMed 2018

#EuroMed 2018

European - Mediterranean Conference 2018

Springer Nature Proceedings Cover Pages

Digital Heritage: Progress in Cultural Heritage Documentation, Preservation and Protection

United Nations Educational, Scientific and Cultural Organization

UNESCO Chair on Digital Cultural Heritage at the Cyprus University of Technology

European Research Area
EU ERA Chair on Digital Cultural Heritage

Cyprus University of Technology

Nicosia, Cyprus
Oct 29th - Nov 3rd
www.euromed2018.eu

#EuroMed 2018

WALL PAINTINGS OF THE CHURCH OF THE MONASTERY OF CHRISTOS ANTIFONITIS

The first one of the two wall paintings (end of the 15th century) of the Last Judgement from the north wall of the Church of the Monastery of Christos Antifonitis, Kalograia, after it had been forcefully removed, following the 1974 Turkish invasion and occupation.

The image on the right is illustrating (end of the 15th century) the Virgin Mary, *Orans* between the Archangels Michael and Gabriel from the Church of the Monastery of Christos Antifonitis, Kalograia (on the apse's conch) after it had been destroyed, following the 1974 Turkish invasion and occupation.

Dr. Marina Solomidou - Ieronymidou,
Director,
Deparment of Antiquities
1 Museum Avenue,
P.O Box 22024,
Nicosia 1516
Cyprus
TEL.: 00357-22865888, 22865873
FAX: 22303148
antiquitiesdept@da.mcw.gov.cy
www.mcw.gov.cy/da

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VENUES

- MAIN CONFERENCE VENUE

  FILIOXENIA CONFERENCE CENTER
  17 Thrakis Str., CY-1311 Nicosia, CYPRUS
  Show map
  Tel: +35722395000, Fax: +35722335653
  Monday, Tuesday, Wednesday, Friday, Saturday: 09.00 – 18.30 p.m.
  Thursday: 08.30 – 18.30 p.m.

- CONFERENCE REGISTRATION DESK

  Filoxenia Conference Center
  Every day: 08.30-18.30 p.m.

- COFFEE BREAK VENUE

  Filoxenia Conference Center
  Every day: 10.30-11.00 a.m. and 15.30-16.00 p.m.

- LUNCH VENUE

  Filoxenia Conference Center
  Pentadaktylos Restaurant
  Every day: 13.00 -14.00 p.m.

- SOCIAL DINNER VENUE

  Tuesday 30/10/2018, 19.30 p.m.
  HILTON – CYPRUS (AKAMAS HALL)

CONFERENCE VENUE – LAYOUT

Zenon Kitievs (ZK)

FILOXENIA e-TOUR:
http://www.fcc.com.cy/venue

Source: http://www.fcc.com.cy/resource/gallery/category/1-meetings

BUS TRANSFER FROM/ TO FILOXENIA CONFERENCE VENUE

Please download the "Cyprus Bus" application by Motion.

The "Cyprus Bus" application by Motion is the official application of Ministry of Transport, Communications and Works of Cyprus. It provides all the information related to the bus timetables in Cyprus.

Google Play

App Store

USEFUL LINKS

Please scan the QR code to find details about the following:

OFFICIAL WEBPAGE OF THE TWO AIRPORTS IN CYPRUS

BUS TRANSFER FROM THE AIRPORTS TO THE DIFFERENT CITIES IN CYPRUS
(Bus Timetable from/to Larnaca | Kapnos Airport Shuttle Bus | Paphos Buses)

DOWNLOAD MAPS OF CYPRUS TOWNS (Nicosia | Limassol | Larnaca | Paphos | Famagusta)

OFFICIAL WEBPAGES of: Cyprus Government | Ministry of Foreign Affairs | Press and Information Office | Cyprus Tourism Organisation | Aspects of Cyprus | Nicosia Municipality | Larnaca Municipality | Limassol Municipality | Paphos Municipality

SOCIAL DINNER VENUE

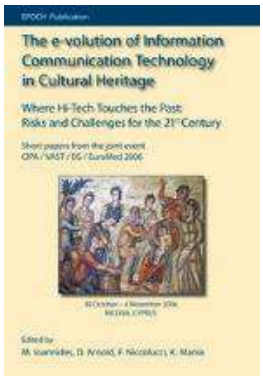
HILTON – CYPRUS

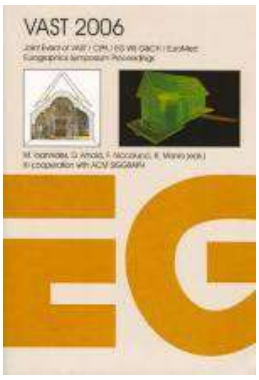
(AKAMAS Hall – 30/10/2018 -19:30)

Address: 98 Arch. Makarios III Avenue, Nicosia 1077

PUBLICATIONS

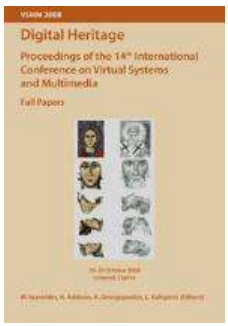
Proceedings of CIPA/VAST/EG/EuroMed 2006: 37th CIPA international workshop dedicated on e-documentation and standardisation in cultural heritage.

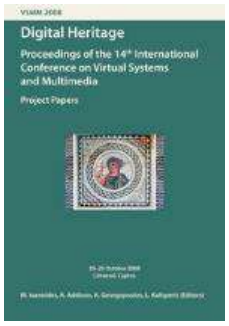


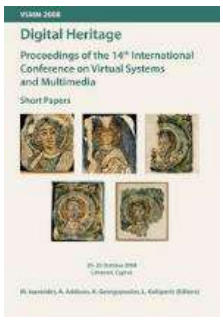


Editors: Ioannides, M., Arnold, David, Niccolucci, F. and Mania, K.

We present here 32 full papers, selected from 66 submissions which focus on interdisciplinary and multi-disciplinary research concerning both cutting edge Cultural Heritage Informatics and use of technology for the representation, documentation, archiving and communication of CH knowledge.







Digital Heritage

Proceeding of the 14th International Conference on Virtual Systems and Multimedia

Editors: M. Ioannides, A. Addison, A. Georgopoulos, L. Kalisperis (Eds)

This volume contains the Project Papers presented at VSMM 2008, the 14th International Conference on Virtual Systems and Multimedia which took place on the 20 to 25 October 2008 in Limassol, Cyprus. The conference title was "Digital Heritage: Our Hi-tech-STORY for the Future, Technologies to Document, Preserve, Communicate and Prevent the Destruction of our Fragile Cultural Heritage".

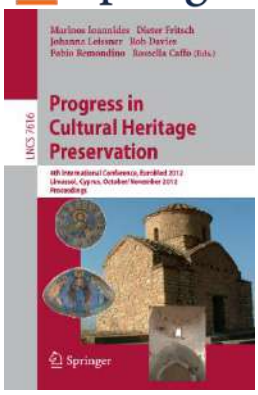
Digital Heritage

Third International Euro-Mediterranean Conference, EuroMed 2010, Lemessos, Cyprus, November 8-13, 2010. Proceedings

Editors: Ioannides, M., Fellner, D., Georgopoulos, A., Hadjimitsis, D. (Eds.)

This volume comprises the proceedings of the Third International Euro-Mediterranean Conference (EuroMed 2010) on the historical island of Cyprus. The focal point of this conference was digital heritage, which all of us involved in the documentation of cultural heritage continually strive to implement.

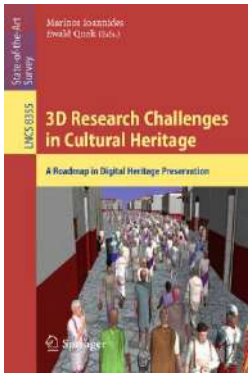
Springer



Progress in Cultural Heritage Preservation
4th International Conference, EuroMed 2012, Lemessos, Cyprus, October 29 -- November 3, 2012, Proceedings
Editors: ***Ioannides****, M.,* ***Fritsch****, D.,* ***Leissner****, J.,* ***Davies****, R.,* ***Remondino****, F.,* ***Caffo****, R. (Eds.)*

This book constitutes the refereed proceedings of the 4th International Conference on Progress in Cultural Heritage Preservation, EuroMed 2012, held in Lemesos, Cyprus, in October/November 2012. The 95 revised full papers were carefully reviewed and selected from 392 submissions.

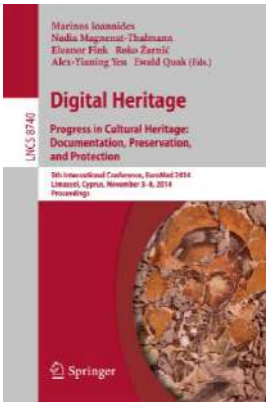
Springer



3D Research Challenges in Cultural Heritage
A Roadmap in Digital Heritage Preservation
Editors: Ioannides, Marinos, Quak, Ewald (Eds.)

This book contains selected contributions from some of the most renowned researchers in the field of Digital Heritage and 3D representation of the Past, based in large part on invited presentations from the workshop “Computational Geometry and Ontologies for Cultural Heritage 3D Digital Libraries.

Springer

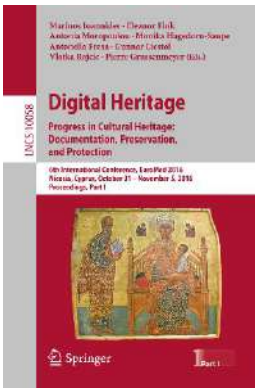


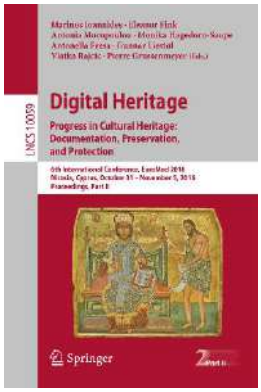
Digital Heritage
Progress in Cultural Heritage. Documentation, Preservation, and Protection 5th International Conference, EuroMed 2014, Limassol, Cyprus, November 3-8, 2014, Proceedings

Editors: Ioannides, M., Magnenat Thalmann, N., Fink, E., Zarnic, R., Yen, A.-Y., Quak, E. (Eds.)

This book constitutes the refereed proceedings of the 5th International Conference on Digital Heritage, EuroMed 2014, held in Limassol, Cyprus, in November 2014. The 84 full and 51 short papers presented were carefully reviewed and selected from 438 submissions.

Springer





Digital Heritage Progress in Cultural Heritage: Documentation, Preservation, and Protection

6th International Conference, EuroMed 2016, Nicosia, Cyprus, October 31 – November 5, 2016, Proceedings, Part I & II

Ioannides, M., Fink, E., Moropoulou, A., Hagedorn-Saupe, M., Fresa, A., Liestøl, G., Rajcic, V., Grussenmeyer, P. (Eds.)

This two-volume set constitutes the refereed proceedings of the 6th International Conference on Digital Heritage, EuroMed 2016, held in Nicosia, Cyprus, in October/November 2016. The 29 full papers, 44 project papers, and 32 short papers presented were carefully reviewed and selected from 502 submissions.

Springer

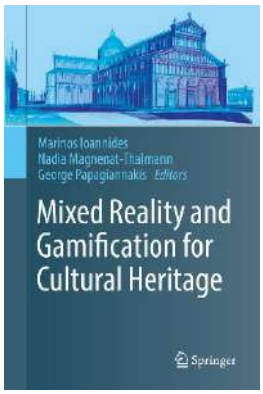
3D Research Challenges in Cultural Heritage II

How to Manage Data and Knowledge Related to Interpretative Digital 3D Reconstructions of Cultural Heritage

Münster, S., Pfarr-Harfst, M., Kuroczyński, P., Ioannides, M. (Eds.)

This book reflects a current state of the art and future perspectives of Digital Heritage focusing on not interpretative reconstruction and including as well as bridging practical and theoretical perspectives, strategies and approaches. Comprehensive key challenges are related to knowledge transfer and management as well as data handling within an interpretative digital reconstruction of Cultural Heritage including aspects of digital object creation, sustainability, accessibility, documentation, presentation, preservation and more general scientific compatibility.

Springer

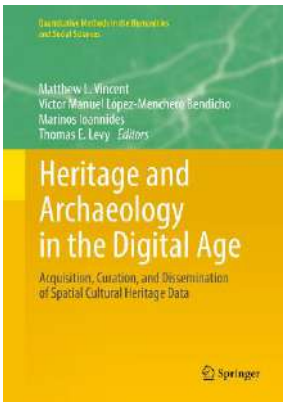


Mixed Reality and Gamification for Cultural Heritage

Ioannides, M., Magnenat-Thalmann, N., Papagiannakis, G. (Eds.)

This book offers an essential introduction to the theories, development and applications of enabling technologies for mixed reality and gamified interaction in the context of cultural heritage and creative industries. Following a pedagogical model developed by the focus group of the first EU Marie S. Curie Fellowship Initial Training Network on Digital Cultural Heritage, it presents both enabling technologies and their applications to tangible and intangible cultural heritage.

Springer



Heritage and Archaeology in the Digital Age

Acquisition, Curation, and Dissemination of Spatial Cultural Heritage Data

Editors: Vincent, M.L., López-Menchero Bendicho, V.M., Ioannides, M., Levy, Th.E. (Eds.)

Examines and outlines best practices in computational research's applications in cultural heritage, demonstrating where the field is and where it is going. Guides readers through three fundamental stages of interaction with heritage data, demonstrating best practices for acquisition, curation and dissemination Chapters bring together experts from North America and Europe, as they present both transdisciplinary and transnational perspectives on heritage and technology

Springer

Advances in Digital Cultural Heritage

International Workshop, Funchal, Madeira, Portugal, June 28, 2017, Revised Selected Papers

Editors: Ioannides, M., Martins, J., Žarnić, R., Lim, V. (Eds.)

This book constitutes the papers of the International Workshop on Analysis in Digital Cultural Heritage 2017, held in Funchal, Madeira, Portugal, in June 2017.

The 16 full and 19 poster papers were carefully reviewed and selected from 93 submissions.

Springer

Digital Cultural Heritage

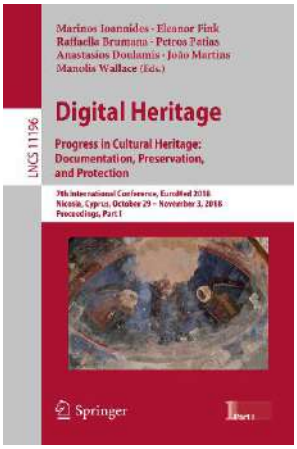
Final Conference of the Marie Skłodowska-Curie Initial Training Network for Digital Cultural Heritage, ITN-DCH 2017, Olimje, Slovenia, May 23–25, 2017, Revised Selected Papers

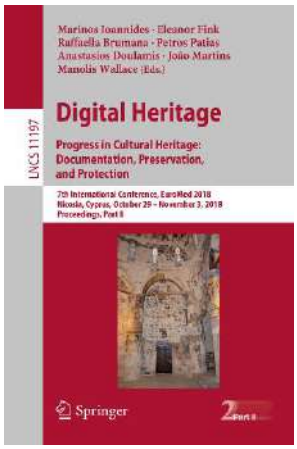
Editors: Ioannides, Marinos (Ed.)

Features the state of the art in digital cultural heritage research presents interdisciplinary and multi-disciplinary research. Focuses on e-documentation and e-preservation of cultural heritage.

Springer

Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection





7th International Conference, EuroMed 2018, Nicosia, Cyprus, October 29–November 3, 2018, Proceedings, Part I & Part II

Editors: Ioannides, M., Fink, E., Brumana, R., Patias, P., Doulamis, A., Martins, J., Wallace, M. (Eds.)

This two-volume set LNCS 11196 and LNCS 11197 constitutes the refereed proceedings of the 7th International Conference on Digital Heritage, EuroMed 2018, held in Nicosia, Cyprus, in October/November 2018.

The 21 full papers, 47 project papers, and 29 short papers presented were carefully reviewed and selected from 537 submissions.

COMMITTEE

Conference Chairs

Marinos Ioannides, Cyprus
Eleanor Fink, USA
Rafaela Brumana, Italy
Petros Patias, Greece
João Martins, Portugal
Manolis Wallace, Greece
Anastasios Doulamis, Greece

Local Organizing Committee

Athanasiou, Vasilios
Davies, Robert
Georgiou, Simos
Gkanetsos, Theodoros
Hadjidemetriou, George
Katiri, Maria
Leventis, Charalambos
Nobilakis, Elias
Pissarides, Chrysanthos
Polycarpou, Christiana
Skriapas, Kostantinos
Themistocleous, Kyriacos

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Banzi, Fabrizio	IT	Kuo, Chiao-Ling	TW
Barazzetti, Luigi	IT	Liarokapis, Fotis	CZ
Bebis, George	US	Livanos, George	GR
Bertini, Marco	IT	Maietti, Federica	IT
Bimpas, Matthaios	GR	Makantasis, Kostantinos	CY
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Bueno, Gumersindo	ES	Merchan, Pilar	ES
Cantini, Lorenzo	IT	Migliori, Luisa	IT
Caridakis, George	GR	Oreni, Daniela	IT
Cheng, Ying-Mei	TW	Pereira, Pedro	PT
Chmelik, Jiri	CZ	Poulopoulos, Vasilis	GR
Condoleo, Paola	IT	Previtali, Mattia	IT
Conzalez, Jorbi	ES	Protopapadakis, Eftychios	GR
Della Torre, Stefano	IT	Stamnas, Tasos	GR
Diakoumakos, Iason	GR	Stathaki, Tania	UK
Doulamis, Nikolaos	GR	Tassopoulou, Maria	GR
Georgiadis, Charalambos	GR	Tavares, Alice	PT
Georgoula, Olga	GR	Tian-Yuan Shih, Peter	TW
Giannoulis, George	ES	Tsafarakis, Stelios	GR
Guiseppe Landi, Angelo	IT	Tsioukas, Vasilios	GR
Granic, Andrina	HR	Tucci, Grazia	IT
Grimoldi, Alberto	IT	Vassilakis, Costas	GR
Jo, Sang-sun	KR	Von Mannen, Sebastian	DE
Kaimaris, Dimitrios	GR	Voulodimos, Athanasios	GR
Karanikolas, Nikos	GR	Yen, Alex Ya-Ning	TW
Kerle, Norman	NL	Zervakis, Michalis	GR
Kosmopoulos, Dimitrios	GR	Zuppiroli, Marco	IT

CONFERENCE EXCURSION

The Last Divided Capital in Europe:

Walk through the history of 12,000 years

Dress code: Casually dressed, comfortable shoes

Date: Wednesday 31st October 2018, 09.30 a.m. - 12.30 p.m.

(Registration needed until October the 29th)

Cyprus Museum: The first archaeological Museum of Lefkosia was housed in a building on Victoria St. in old Lefkosia, in the occupied part of the town. It was founded in 1888 as a privately run institution to protect the finds that started to come to light during the first legal excavations undertaken during the British rule of the island.

The first law concerning archaeology was voted in 1905 and was the first essential step towards the establishment of archaeology in Cyprus. A committee, chaired by the British governor, undertook the direction of the museum. The continuously growing number of finds from systematic excavations which were mainly undertaken by foreign missions, such as the Swedish Archaeological School mission directed by professor Einar Gjerstad, forced the museum's committee to look for new premises for the exhibition and the storage of the finds.

The Leventis Municipal Museum of Nicosia: The Leventis Municipal Museum of Lefkosia (Nicosia) is the capital's only museum that presents the social and historical development of the city, from the Chalcolithic Age until today. Founded in 1984, the museum is named after its donor, the Anastasios G. Leventis Foundation, which bought and restored the museum's building, which is housed in a complex of traditional buildings. The museum is administered by Lefkosia Municipality.

The Bank of Cyprus Cultural Foundation: Since its establishment in 1984, the Bank of Cyprus Cultural Foundation has developed a wealth of activities, in keeping with the objectives originally delineated for the Cultural Foundation by the Bank of Cyprus. The Foundation's main strategic aims are to encourage the research and study of Cypriot civilisation in the fields of archaeology, history, art and literature as well as to preserve and disseminate the cultural and natural heritage of Cyprus, with a particular emphasis on the international promotion of the island's centuries-long Greek civilisation.

KEYNOTE SPEAKERS

Dr Ronald de Bruin, Director of the COST Association

Dr Ronald de Bruin was appointed Director of the COST Association on 1 June 2016. Before joining the Association, Ronald was Director of the European Institute of Innovation and Technology (EIT) and Head of Department of the European Network and Information Security Agency (ENISA). For almost eight years, he played a key role in and managing and setting up these European Union agencies from scratch. Prior to this, he was Deputy Director of a public-private partnership platform for the Information Society in the Netherlands for over three years. His main responsibilities included drafting the annual work programs including public-private partnership projects, managing the implementation of national multi-stakeholder projects, and coordinating EU-funded projects. For almost three years, he worked for a global .COM company with top-100 clients. During his one-year stay as manager at KPMG, he worked on developing e-security services for the growing e-commerce market. He started his career as Policy Advisor for the Dutch national government, where, for three years, he was responsible for developing a national policy on e-security services, and scenarios for introducing digital TV. He is Ambassador to Brussels for the Greenleaf Center for Servant Leadership Europe and Founding Director of the Greenleaf Center in Brussels.

Dr De Bruin has also authored several books on servant-leadership, digital television, online consumer trust and computer security. He holds a Ph.D.in Law and Computer Science, an M.Sc. in Technology Management and a B.Sc. in Electronic Engineering.

PRESENTATION TITLE: COST Strategic Outlook.

Dr. Robert Sanderson

Dr. Robert Sanderson is the Semantic Architect for the J Paul Getty Trust, with responsibility for the design and direction of cultural heritage data information systems spanning the Museum, Research Institute, Conservation Institute and Foundation. His main goal is to find the right balance between ease of publication and consumption of data, and the precision of the data's semantics. He is one of the driving forces behind https://linked.art/, a community of memory organizations focused on using Linked Open Data to describe cultural heritage objects in a usable, useful way. He is chair of the JSON-LD work in the W3C and proposed chair for the W3C Art & Culture community group, is a specification editor and community leader in the IIIF community (http://iiif.io/), and on the advisory boards of many projects in the cultural sector including the American Art Collaborative and Annotating All Knowledge projects. In his previous position as Standards Advocate at Stanford University, he was involved in the BibFrame ontology with the Library of Congress and many semantic digital library projects. He has also been a Research Scientist at Los Alamos National Laboratory, and a lecturer in Computer Science at the University of Liverpool.

PRESENTATION TITLE: Usability over Completeness, Community over Committee.

Craig Knoblock, USC Information Sciences Institute

Craig Knoblock is a Research Professor of both Computer Science and Spatial Sciences at the University of Southern California (USC), Director of the Artificial Intelligence Division at the Information Sciences Institute, Research Director of the Center on Knowledge Graphs, and Associate Director of the Informatics Program at USC. He received his Bachelor of Science degree from Syracuse University and his Master's and Ph.D. from Carnegie Mellon University in computer science. His research focuses on techniques for describing, acquiring, and exploiting the semantics of data. He has published more than 300 journal articles, book chapters, and conference papers on these topics. Dr. Knoblock is a Fellow of the Association for the Advancement of Artificial Intelligence (AAAI), a Fellow of the Association of Computing Machinery (ACM), past President and Trustee of the International Joint Conference on Artificial Intelligence (IJCAI), and winner of the 2014 Robert S. Engelmore Award.

PRESENTATION TITLE: Mining Data from the Deep and Dark Web to Combat the Illicit Art Trade.

Mrs. Diane Zorich, Director of the Smithsonian's Digitization Program Office (DPO)

As Director of the Smithsonian's Digitization Program Office (DPO), Diane Zorich leads an expert team in digitizing Smithsonian collections to maximize their impact for the public. She oversees mass digitization, 3D digitization, and digitization assessment activities that develop and improve digitization processes across the Institution. Through partnerships and collaborations, she and her team ensure that digitized Smithsonian collections can be used with existing and emerging technologies to enable creativity, learning, insight, and innovation. Prior to joining the Smithsonian, Diane worked as a cultural heritage consultant specializing in the digitization and delivery of cultural heritage online. She also served as data manager for the Association of Systematics Collections in Washington, D.C., and documentation manager at the Peabody Museum of Archaeology and Ethnology at Harvard University. She is past president and board member of the Museum Computer Network, and has published extensively on digitization, digital humanities centers, GLAM collaboration, museum information policy, and intellectual property policy in the cultural heritage sector.

PRESENTATION TITLE: Superheroes, Spacesuits, and Sculpture: Digitizing Smithsonian Collections at Scale for Greater Impact and Engagement.

Dr. Kyriakos Efstathiou, Professor of Mechanical Engineering at the Aristotle University of Thessaloniki

Dr. Kyriakos Efstathiou is Professor of Mechanical Engineering at the Aristotle University of Thessaloniki and Director of the Laboratory for Machine tools and Manufacturing Engineering of the Department of Mechanical Engineering of the Aristoteles University Thessaloniki. He received his Diploma of Mechanical Engineering from the University of Stuttgart and Ph. D. from the Aristotle University of Thessaloniki in Mechanical Engineering. His research focuses on rapid prototyping, reverse engineering, X-ray and neutron tomography, Machine tools, manufacturing technology, CNC technology, CAD/CAM systems, CIM systems and on archaeological object's investigation and reproduction of accurate copies, He has investigated and manufactured exact copies of archaeological findings, such as the Antikythera Mechanism, the vaginal speculum of Dion etc. and has organized related exhibitions. He was invited to give lectures in all over the world and was invited to present his researches in telecasts. He has published more than 200 journal articles, books and conference papers on these topics. He was coordinator or member of the research group in more than 30 research projects. He has organized many international and national scientific conferences. Dr. Efstathiou is member of the Greece Permanent Commission for the History of Mechanism and Machine Science of the IFToMM (International Federation for the Promotion of Mechanism and Machine Science).

PRESENTATION TITLE: The Antikythera Mechanism – it is all about the knowledge and the story.

Dr. Charalambos Chaitas, Executive Director Culture, Arts and Education, Qiddiya IC, Kingdom of Saudi Arabia

Charalampos Chaitas is currently an Executive Director for Culture, Arts and Education for Qiddiya, a 2030 vision new city in the south west of Riyadh, Saudi Arabia initiated by Public Investment Fund (PIF). His main role is to develop landmark facilities, create dedicated schools and training programs and promote world-class events and participation that will result in extraordinary experiences, capture and stimulate demand for arts & culture, and foster the organic growth of local talent and programs. Prior to joining Qiddiya he was the Director for the Operational Management Consultancy of the Grand Egyptian Museum. He is also the Treasurer of the ICOM's International Committee of Architecture and Museum Techniques (ICAMT) 2013-2019. His career includes collaborations in museums and cultural centers in European countries and countries of the Middle East. Very often he gives lectures in universities and facilitates specialized workshops for students and young professionals.

PRESENTATION TITLE: Cultural spring in the Arab World.

Joan Cobb, Principal IT Project Manager at J. Paul Getty Trust

Joan Cobb is a Principal IT Project Manager with the Getty Digital division of the J. Paul Getty Trust. Since joining the Getty in 1990, she has, in addition to other projects, played a primary role in the design and development of the custom software needed to support the growth and usage of the Getty Vocabularies as well as leading the project to publish the Art & Architecture Thesaurus® (AAT), the Getty Thesaurus of Geographic Names® TGN), and the Union List of Artist Names® (ULAN), as Linked Open Data. Joan currently is dividing her time between the moving of the Getty Conservation Institute's AATA Online to the Arches open-source platform and helping internal and external resources link their data with and contribute to the Getty Vocabularies. Joan came to the Getty with a varied background in programming and design experiences ranging from academic and medical research to energy management and hazardous chemical tracking. She began her career in software after more than a decade as a teacher and master teacher with the public school system and government/industry sponsored programs.

The J. Paul Getty Trust - http://www.getty.edu/
Getty Vocabularies - http://www.getty.edu/research/tools/vocabularies/index.html
AATA Online - http://aata.getty.edu/Home
Arches - https://www.archesproject.org

PRESENTATION TITLE: Using the Getty Vocabularies to Connect Resources in a Linked and Open World.

Harry Verwayen, Executive Director of EU Digital Library Europeana

Harry Verwayen- Executive Director Europeana Foundation, the operator of the Europeana platform. Across Europe, museums, galleries and archives digitize their collections. Europeana supports these organisations in their digital transformation by making these collections available as widely as possible so that people can find and use them. For work, for learning or just for fun. Our work is guided by creative collaboration, supportive teamwork and the idea that sharing and reusing cultural content can positively transform the world. Prior to this Harry worked at the Amsterdam based think tank Knowledgeland where he was responsible for business model innovation in the cultural heritage sector. Harry holds a MA in History from Leiden University and has worked over ten years in the Academic Publishing Industry. Mediocre tennis player, reasonable cook, aspiring photographer.

Case studies: 1)'The Problem of the Yellow Milkmaid, a Business Model Perspective on Open Metadata', Verwayen, Arnoldus, Kaufman 2011, **2)** 'Workers Underground', an impact assessment of Europeana 1914-1918

Articles: 1) Playbook impact assessment for Museums, Libraries and Artchives, 2017**, 2)**'Business Model Innovation Cultural Heritage, 'published in 'Business Planning for Digital Libraries', Collier editor http://upers.kuleuven.be/en/titel/9789058678379Leuven University press 2010, ISBN 9789058678379**, 3)**'A business-model perspective on end-users and open metadata', published in 'User Studies for Digital Library Development', Milena Dobreva editor, facet publishing 2011**, 4)**Business Model Innovation Cultural Heritage, Kennisland/DEN 2009 https://www.kl.nl/wp-content/uploads/2014/04/businessmodel_innovatie_cultureel_erfgoed_dec09.pdf

PRESENTATION TITLE: Europeana in the age of Digital Transformation.

Prof. Koen van Balen, KUL, UNESCO Chair on preventive conservation, monitoring and maintenance of monuments and sites

Koenraad Van Balen graduated as an Engineer Architect at the KU Leuven (Belgium) in 1979; he obtained a post-graduate degree in architectural conservation in 1984 and he obtained a Ph.D in Engineering in 1991 at the KU Leuven. He is a full-professor at the KU Leuven in the ivil Engineering department. Van Balen carries out research and teaches on binders, masonry and sustainable construction methods. He is the director of the Raymond Lemaire International Centre for Conservation (RLICC) at the University of Leuven. He is the holder of the UNESCO Chair on preventive conservation, monitoring and maintenance of monuments and sites since 2008. He is a member of ICOMOS and was the first secretary-general of the International Scientific Committee on the Analysis, Repair of Structures of the Architectural Heritage (ISCARSAH). He has long been member of the general assembly of Monumentenwacht Vlaanderen. He is or has been an advisor to, amongst others, the Council of Europe, the European Commission, and the Getty Foundation. In 2002-2003, he was a visiting scholar at the Getty Conservation Institute in Los Angeles. He supervises research carried out at the Raymond Lemaire International Centre for Conservation related to various aspects of investigation, valuing and managing (World) Heritage. Amongst others he coordinated the research carried out by the RLICC on Heritage Counts for Europe in collaboration with Europa Nostra. He is member of the Scientific Committee of the European wide research coordination initiative "Joint Program Initiative: Cultural Heritage (JPI-CH)".

Deputy Commander Alberto Deregibus

He was born in Turin (Italy) on the July 14th, 1959. In 1982 he was appointed Second Lieutenant of Carabinieri Corps.1982-1983 Squad Commander for the Security of Ciampino (Rome) Airport; 1984 Squad Commander for the Security of high security prison of Voghera (Pavia); 1984-1985 Commander of Operational Unit and Car Patrol Service of Varese; 1987-1990 Commander of 1st Section of Operational Command of Carabinieri for the Protection of Artistic Heritage; 1990-1998 Commander of Archaeological Unit of Operational Command of Carabinieri for the Protection of Artistic Heritage; 1998-2002 Commander of Territorial Company of Tuscania (Viterbo); 2002-2004 Commander of Data Processing Unit of Carabinieri Command for the Protection of Cultural Heritage; 2004-2008 Commander of Operations Section of Carabinieri Command for the Protection of Cultural Heritage. 2008-2012 Chief of Comand Office of Carabinieri Command for the Protection of Cultural Heritage 2012-2014 Expert in UNESCO, Paris - Cultural Heritage Protection Treaties Section 2014-2015 Responsible of human resources of the Carabinieri's Specialized Departments; 21. 9.2015 Deputy Commander of Carabinieri Command for the Protection of Cultural heritage.

PRESENTATION TITLE: The Carabinieri Command for the Protection of Cultural Heritage and the Italian Task Force"Unite4Heritage".

Mrs. Nada R. Hosking, Director, Programs & Partnerships, Global Heritage Fund

Nada Hosking is currently the Director of Programs and Partnerships at Global Heritage Fund (GHF), where she has been leading strategy, activities, and fundraising for projects and programs since 2015. In her current role, Nada works to connect multiple stakeholders on large-scale international initiatives and programs.Nada plays a central role in the development of a technology platform for the better management, protection, and recovery of cultural heritage. The program, AMAL in Heritage, is an initiative by GHF and other international heritage institutions, and aims to address heritage sites endangered by conflict and natural disasters. Nada's role is to oversee the process of creating a mobile and web application to rapidly assess impacts and collect data in the immediate aftermath of a disaster, preserving crucial information for future repair and reconstruction of damaged heritage areas, buildings, and artifacts. Nada holds a degree in Anthropology and History of Art from the University of California, Berkeley, where her research focused on the use of new technologies to create digital records of archaeological sites and the archaeological process in order to deal with the destructive nature of excavations.

PRESENTATION TITLE: Connecting Initiatives Towards an Inclusive Framework for Heritage Documentation

Eleanor E. Fink, Founder and manager American Art Collaborative Linked Open Data Initiative

Eleanor E. Fink is the founder and manager of American Art Collaborative Linked Open Data Initiative, a consortium of fourteen museums interested in erasing data silos to provide seamless access on the subject of American art across museum collections. She has held senior positions at the Smithsonian Institution, J. Paul Getty Trust, and World Bank. She is one of the founding directors of the Getty Center in Los Angeles, for which she initially formed and headed the Getty Vocabulary Program and later became director of the Getty Information Institute (GII). As director of GII, she oversaw the Getty's flagship scholarly art history research databases existing at the time, including the Census of Antique Art and Architecture Known in the Renaissance, and Bibliography of the History of Art and the Getty Provenance Index. She positioned GII around the concept of universal access to images and art information and promoted national and international collaboration among institutions. The National Initiative for a Networked Cultural Heritage, Getty vocabularies, Categories for the Description of Works of Art, and Object ID are some of the products of her leadership. Eleanor serves on the advisory committees of the Department of Art and Archaeology at Princeton University, New Jersey; the EU's Virtual Multimodal Museum project, and Marie Curie Research Program on the Initial Training Network for Digital Cultural Heritage, Limassol, Cyprus. She is a former director of the Museum Computer Network and a former president of the Visual Resources Association.

PRESENTATION TITLE: Creating a Digital Cultural Heritage Ecosystem: Connecting the dots with Linked Open Data.

Oriana Grasso, European Commission

Policy officer at DG GROW, Copernicus Unit I2, in charge of horizontal issues and cultural heritage, since November 2014. Anthropologist and sinologist by education, worked in the communication and European advocacy fields from 1980. Policy adviser in the European Parliament for Copernicus and other space, energy, research and environment programmes from 2004 to 2014. Policy officer in the Forward studies Unit of STOA (Scientific and technical options assessment) from July to October 2014.

PRESENTATION TITLE: Copernicus System in Cultural Heritage

Constanze Fuhrmann, Researcher at Fraunhofer IGD, Competence Center Cultural Heritage Digitization

Constanze Fuhrmann is a digital humanities specialist who works as a researcher with the Competence Centre for Cultural Heritage Digitization at the Fraunhofer Institute for Computer Graphics Research. In the course of digital preservation of cultural heritage objects, she and her team develop innovative technologies for capturing, annotating and virtually reproducing artefacts in 3D. One example being CultLab3D, the leading modular system for high-resolution 3D scanning.

Working at the intersection of arts and digital technologies, Constanze steers international cultural heritage projects with some of the world's most respected institutions. She has in-depth professional experience in heritage preservation and cultural policy, as well as in programme and project management. She is a trained conservator and holds a Master's degree in Art history, Cultural Studies and History from Technical University and Humboldt-University Berlin, Germany, in addition to a Master of Science in Sustainable Heritage from University College London. Constanze is a board member of the German Association for the Protection of Cultural Assets and is actively involved in the Research Alliance Cultural Heritage. She is also a member of various organisations such as International Image Interoperability Framework IIIF, Museums Association, ICOM, ICOMOS and Blue Shield.

PRESENTATION TITLE: 3D Digitisation in the cultural heritage field – Trends & Challenges.

Thomas R. Kline, Partner at Cultural Heritage Partners

Thomas R. Kline advises clients on a wide variety of art, museum, and cultural heritage matters, including issues of ownership, theft, authenticity, breach of contract, insurance, and related disputes. Since 1989 he has practiced in litigation, arbitration, and dispute resolution, and he has represented governments, museums, churches, foundations, and families in recovering stolen art and cultural property. He also represents American museums and collectors responding to claims.

Many of Tom's cases have involved art objects that were looted in wartime from Cyprus, Germany, and elsewhere. He was awarded the Medal of Cyprus Technical University for protecting the cultural heritage of Cyprus and the Officer's Cross of the Order of Merit of the Federal Republic of Germany (Das Verdienstkreuz des Verdienstordens).

Tom is experienced in matters concerning art claimed to have been taken by the Nazis during World War II in the systematic looting of art owned by Jews and others. A nationally-recognized authority on Holocaust-related art claims, Tom has appeared before the Presidential Advisory Commission on Holocaust Assets in the United States, and he has helped clients resolve Holocaust-related claims both in and outside of court. Tom also advises clients on modern thefts from archaeological sites and on the illegal removal, export, and import of cultural artifacts.

Tom writes and speaks on art, museum and cultural property issues and serves on the Advisory Board of the German/English publication Kunst und Recht. For fifteen years, he has taught a course in museums and cultural heritage at the George Washington University Museum Studies Program.

PRESENTATION TITLE: Protecting Cultural Heritage: the Importance of Documentation in Recovering Looted or Stolen Cultural Property through Legal Proceedings and Standards for New Technologies

Graham Bell, Board Member of Europa Nostra, UK National Co-ordinator for 2018 European Year of Cultural Heritage, Director of North England Civic Trust

Graham is the UK national co-ordinator for 2018 European Year of Cultural Heritage and has been consulted on European Commission policy initiatives including Voices of Culture and Europeana's strategic planning of digital cultural heritage. He is a regular contributor across Europe in international conferences and was a partner in an Erasmus+ project on cultural heritage management. As Director of NECT and a Hungarian foundation he is a 'principled practitioner', applying his expertise as architect, manager and educator to activities that yield public benefit. He is a board member of Europa Nostra, leading expert missions with the European Investment Bank Institute for the 7 Most Endangered programme. He champions traditional skills on the executive of the European Federation for Architectural Heritage Skills (FEMP) and is a longstanding specialist adviser to the UK National Trust. He was a founder member of Future for Religious Heritage and now advises the Foundation for Jewish Heritage.

PRESENTATION TITLE: Can you see what I see?

Thomas Krauss, Researcher at DLR, Remote Sensing Institute

Thomas Krauss is head of the team for 3D modeling at the Remote Sensing Institute (IMF) of the German Aerospace Center (DLR) in Oberpfaffenhofen. He and his team developed fully automatic processing chains for extraction of high quality digital surface models from optical satellite stereo imagery. Using the now available very high resolution spaceborne sensors allows the reconstruction and 3D modeling of urban areas and also cultural heritage monuments with accuracies of 1 m and better from all over the world. One of the projects he is involved is ATHENA2020 using Earth observation and satellite imagery for the preservation of world cultural heritage sites.

Thomas Krauss studied physics at the Technical University of Munich.

PRESENTATION TITLE: 3D from space for mapping and modeling of cultural heritage sites

Mrs France Desmarais, Deputy Executive Director & Scientific Director ALIPH - International alliance for the protection of heritage in conflict areas

France Desmarais is Deputy Executive Director and Scientific Director of the newly created International Alliance for Protection of Heritage in Conflict Areas (ALIPH). France is a recognized global expert on museums and cultural heritage protection. She contributed to drafting the UNESCO recommendation on museums and wrote a report for UNESCO on the protection of cultural heritage in conflict and occupation. Prior to joining ALIPH, she worked as the International Council of Museums' (ICOM) Director of Programmes and Partnerships. For eight years she led the institution's work in favour of the protection of cultural heritage in danger, most notably leading ICOM's global fight against illicit traffic in cultural goods, which includes the well-known Red Lists of Cultural Objects at Risk. She served as an active Executive Board member of the Blue Shield (which can be described as the cultural equivalent of the Red Cross), and as Permanent Secretary of the ICOM Disaster Risk Management Committee. In 2017, France was named, in her personal capacity, on both ALIPH's Scientific Committee and on the Advisory Group of the Cultural Protection Fund of the British Council. France has lived and worked in Central Africa, in the Middle East, lecturing at Lebanese University, as well as in Canada where she was Head of Strategic Initiatives at the McCord Museum.

Prof. Vasco Fassina, Chairman CEN TC 346 - Conservation of Cultural Heritage

Vasco Fassina graduated as a Chemist at the University of Padua (Italy) in 1971. Since 1975 he served the Italian Ministry of Cultural Heritage as expert in chemistry where he was appointed as director, coordinator and scientific supervisor of the Scientific Laboratory of the Venice Superintendence. During 40 years of activity he planned and coordinated diagnostic studies dealing with the conservation of built heritage, wall paintings and movable cultural heritage objects at local and national level. Long experience in teaching/training activities as well as in the direction and coordination of training courses on cultural heritage at national and international level. He was involved for 25 years as teacher and coordinator of the biennial International Stone Conservation Course of UNESCO-ICCROM held in Venice. Teaching activities at International level as Visiting Professor: in the Sino-Italy cooperation Project "Training in the Restoration and Conservation of the Chinese Cultural Heritage" through the support of the Chinese Institute of Cultural Property (CNICP) of Beijing, in 2004 and 2007, in the International Course of University School of Monument Conservation in Rhodos, Crete, Ravello, for the Faculty of Architecture in Rosario (Argentina) and Salvador de Bahia (Brazil). In 2001 he was a Guest Scholar in the Conservation Programme at Getty Conservation Institute in Los Angeles and he was involved in the Advisory board for the conservation project of the Washington Square Arch in New York. From 2006 to 2010 he was appointed as Italian national delegate in the management Committee of COST (European Cooperation in Science and Technology)-Chair WG3 in COST D42. In 2007-2008 he was appointed by the General Direction for Cooperation and Development of the Italian Foreign Affairs Ministry to evaluate the feasibility study for the establishment of Longmen Stone Relics Conservation Center and of Dazu Stone Monuments Conservation Center respectively located in the Middle and in the South West of China. From 2008 to 2012 he was appointed as President of the 12th International Congress on Deterioration and Conservation of Stone (New York, 2012). Since 2004 and ongoing he has been serving as Chairman of CEN/TC 346 the European Technical Committee for the standardisation in the field of conservation of Cultural Heritage. Since 2012 and ongoing he has been serving as Chairman of the National Commission UNI-Cultural Heritage. In the last 15 years he has been teaching chemistry applied to conservation and diagnostics techniques for investigation and conservation at Italian Universities and Academy of Fine Arts in Milano, Bologna, Napoli, Verona in the national training programme to graduate conservator/restorer professionals. He was editor and co-editor of several books and Symposia Proceedings dealing with the conservation of built heritage and wall paintings. He is author of more than 300 publications on deterioration of mural paintings, historical monuments, outdoor sculptures and on environmental survey published on Italian and International Scientific Journals, Congresses and Symposia.30 years of invited lecture at International Conferences and Workshops on the role of air pollution in the stone and marble decay processes as well as to speak on the problems of conservation of mural paintings and outdoor sculptures. Actually is teaching in the Academy of Fine Arts of Brescia and Naples in training programme to graduate conservators/restorers and is Chairing the European TC 346, Conservation of Cultural Heritage.

PRESENTATION TITLE: CEN TC 346 Conservation of Cultural Heritage – pas activity and future challenges

Michael Klein, CEO @ 7Reasons Media GmbH

Michael Klein has been active as CEO of 7 Reasons in the fields of virtual archaeology and digital cultural heritage for over two decades with a special interest to disseminate scientific knowledge to a broader audience.
The media agency 7reasons is specialized in producing multimedia content for print and films, interactive applications as well as mobile applications and a broad range of other digital productions. While covering a wide field in terms of techniques applied and services offered, the company has specialised thematically in dealing with projects connected to cultural heritage and within this range especially historical, archaeological and museological research, reconstruction and education issues.

7reasons objective is not only to produce the final media in terms of a well-researched and scientifically backed animation, interactive application or representative short film, but also to aid scientific personnel during research with new methods and possibilities offered by computerized tools and simulations.

PRESENTATION TITLE: Projecting the Past to the Future

Daniel Blersch, Z&F VR/Media Design

DANIEL BLERSCH, dott.arch. (University of Florence) is application engineer for 3D laser scanning technology, workflows and market development at Zoller + Fröhlich GmbH and joins the development team since 2011. He has expertise in process development for digital heritage and TLS-based AEC documentation, as well as in R&D coordination.

PRESENTATION TITLE: Optimized 3D laserscanner system for Heritage asset Documentation

Clémence Prudot d'Avigny, Head of Development at Iconem Fund for Endangered Heritage

Head of Development - Iconem Fund for Endangered Heritage Research and development of new projects, funds and partnership / Follow-up on the donation and donors / Exhibitions coordination (head of project of various major exhibitions) / Communication and marketing development / Mission organisation and logistic (Libya, Yemen, Cambodia, Iran, Tunisia, etc) / Adminitrative, financial and legal follow-up / Organisation and animation of conferences, fairs, events and parties / Reports to boards members and scientific council / Organisation and animation of boards and scientific council meetings / Liaison between boards members, organisation partners, donors and the president / Follow-up and management of on-field staff and commercials agents.

PRESENTATION TITLE: 3D Heritage encyclopedia: preserving and disseminating knowledge through web platform

Prof. Raffaella Brumana, Geomatics (Advanced Surveying Techniques -BIMWebGIS) - Politecnico di Milano, Dept. ABC

Gymnasium and Classic High School. Master Degree in Architecture at the Politecnico di Milano with honours (1989). Ph.D. in Geodetic and Topographic Sciences. Since 07/01/2016 Full Professor (Geomatics), Politecnico di Milano, Department of Architecture, Built Environment and Construction Engineering (dABC). Scientific Responsible of the GIcarus lab (4D BIM-GIS-SDI), Geospatial Information@Content modeling: Architectural heritage&built environment&EUrbanAtl@s Data Surveying (http://www.gicarus.polimi.it). EU 7FP and H2020 funded research projects. Traineeship Supervisor and Thesis Supervisor ERASMUS: NTUA (Athens, GR, Laboratory of Photogrammetry), Kul Leuven, CUT (Cyprus, Department of Remote Sensing) and others. Surveying, modelling and HBIM contracts and national researches (i.e. Royal Villa of Monza, Milan, Basilica di San Marco, Venice, Basilica di Collemaggio L'Aquila, Basilica di S.Ambrogio, Milan). Main research activities: Surveying and modelling of Architectural Heritage and Built Environment, Geoinformation data processing and management for the Societal Benefit Areas: 4D HBIM (Historical Building Information Model&management, Object Recognition-Reconstruction (ORR), multiscale data acquisition (SCANtoBIM, Laser scanner Lidar and Photogrammetry, multi-spectral RGB, Thermal Infrared and NIR images, UAV and satelite data). WEB GIS, BIM-GIS OpenData, BigData Hub, Virtual Hub APP implementation accessing and discovering Geographic Open Data, SDI, Scenario Simulation, Geoclustering for Building District Urban Environmental Energy Efficiency Data management. Internship programmes. 2016-2020 Polimi Scientific responsible and Executive Committee Member of Partnered Research Training Initiative 'New Paradigm / New Tools', Canada SSHRC (Social Sciences and Humanities Research Council, Canadian Government, Partnership Grants - Partnered Research Training Initiative Program). 2011-2016 ARCHDOC Architectural Heritage Documentation for Conservation, Kahosl University College Sint Lieven and RLICC (Unesco Chair on Preventive conservation and monitoring of monuments and Sites-KUL Leuven), Be, Teaching staff/ LLP Erasmus). 2013 and 2014, FORMAT-OE 2 years, 2013 and 2014, Funded ERASMUS IP, University of Leicester, UK, FORmation of Multi-disciplinary Approaches to Training in Earth Observation. 2009-2017 Member of the Scientific Board of the POLIMI School of DABC Doctoral Studies and 2001-2009 Department DIIAR. She teaches Innovative Surveying Techniques and Surveying&Modelling at the M.Sc.Arch and Ms.Building Engineering/Architecture at the SCHOOL OF ARCHITECTURE URBAN PLANNING CONSTRUCTION ENGINEERING (AUIC), 9th Int. QSUniversity Ranking; and at the Post-Graduate School in Architectural and Landscape heritage. Chair of GEORES2019, 2nd International Conference of Geomatics and Restoration,Milan 8-10 May 2019 (ISPRS and CIPA-ICOMOS event). She has authored more than 150 peer review scientific publications.

-2012-14, member of the E2BA STEERING COMMITTEE, 2015-16 SCIENTIFIC COUNCIL E2BA (Energy Efficient Building Association, 2017-on course PB ECTP EEB PPP Private Public Partnership).

-2006-09, International Scientific Board of UNESCO-OPEN FORUM Mesopotam Saranda (Albania), SR of the surveying campaign (2006-09 with Univ.Ca' Foscari, Koc University, Istanbul).

-ICOMOS Member (International Council on Monuments and Sites).

PRESENTATION TITLE: Holistic HBIM: Toward co-working multi actors millennial panEU 'pedia'

EU PROJECTS & CHAIRS

▪ UNESCO Chair on Digital Cultural Heritage

https://digitalheritagelab.eu/

United Nations Educational, Scientific and Cultural Organization
UNESCO Chair on Digital Cultural Heritage at the Cyprus University of Technology

The main objectives of the newly established UNESCO Chair on Digital Cultural Heritage at the Department of Electrical Engineering, Computer Engineering and Informatics at the Cyprus University of Technology over the next years are to:

• Carry out a wide-reaching program of awareness raising and knowledge-sharing programs on the role of Digital Cultural Heritage (DCH) in the Eastern Mediterranean region and beyond, utilizing conferences and events, web and social media channels, academic exchanges and all possible media publicity vehicles.

• Introduce model DCH curricula ('Cultural Informatics') at vocational, undergraduate and postgraduate levels and extend course availability, teaching and study facilities to students internationally through state-of-the-art e-Learning.

• Define, extend and carry out a program of research in digital heritage which will further UNESCO's cultural heritage agenda in the region and to impact its key objectives.

• Extend to communities across the region usable and affordable systems for telling the stories of their own heritage and expressing their identity online, in a context of inter-communal cooperation.

▪ EU ERA CHAIR on Digital Cultural Heritage - MNEMOSYNE

https://digitalheritagelab.eu/

European Research Area
EU ERA Chair on Digital Cultural Heritage

While the Cypriot economy gradually recovers, in order to maintain and expand its leading role in DCH research, DHRLab needs further investment. The ERA Chairs grant is an ideal opportunity to ensure this by means of a well-designed and iterative process of strengthening its research capacity and restructuring of its role. Mnemosyne will proceed from the appointment of an outstanding scientist and research manager as ERA Chair holder in 2019 who will attract, direct and maintain high quality human resources and negotiate and implement the necessary structural changes to achieve excellence on a sustainable basis. The project will be carried out over a period of 5 years. Following recruitment of the ERA Chair Research Team, a three-phase research programme focused on holistic documentation of the DCH lifecycle in support of existing and potential user needs will be carried out and extensively evaluated, with strong attention paid to exploitation. Communication activities will be strategically planned and refined from the outset of the work and will last throughout the project duration. Mnemosyne will create a holistic framework for DCH by carrying out the wide range of collaborative and multidisciplinary research needed within an overall construct of advanced documentation.

- INCLUSIVE CULTURAL HERITAGE IN EUROPE THROUGH 3D SEMANTIC MODELLING

http://www.inception-project.eu/

Realizing innovation in 3D modelling of cultural heritage through an inclusive approach for time-dynamic 3D reconstruction of artefacts, buildings, sites and social environments, INCEPTION enriches the European identity through the understanding of how European cultural heritage continuously evolves over long periods of time. INCEPTION methods and tools will result in 3D models that are easily accessible for all user groups and interoperable for use by different hardware and software. Towards that end, the development of an open-standard Semantic Web platform for Building Information Models in Cultural Heritage field to be further implemented in user-friendly Augmented Reality (VR and AR) operable on mobile devices constitutes project's primary objective. A special session of the INCEPTION project is planned for the starting day of EuroMed2016 (31st October), in which project's partners, aim, objectives as well as its current progress will be presented to conference's participants, while consortium's meeting will be held from 1st to 3rd of November. In the afternoon following the official closure of the meeting, the clustering between INCEPTION project and COST will be promoted. INCEPTION project has received funding from the EU's H2020 Reflective Framework Programme for research and innovation under GA nº 665220.

- **ViRTUAL MULTIMODAL MUSEUM**

https://www.vi-mm.eu/

ViMM was proposed in the Horizon 2020 Call Cult Coop8 for virtual museums and social platform on European digital heritage, memory, identity and cultural interaction. ViMM will develop and maintain a sustainable platform engaging a large number of key actors, stakeholders and communities of practices on how to improve the collaboration and comprehension among the entire community concerned with Virtual Museums (VM), in order to build up a common roadmap for future activities and explore how these new encounters can be evaluated to understand and define the models involved. The platform will be open to all practitioners and stakeholders wishing to contribute to decision making processes, agree on objectives and priorities, share experiences, policies and practices and will bring together public and private stakeholders in partnership. VM are necessary to support the accessibility, conservation, use and re-use of Cultural Heritage. The main focus of many VM at present is often profiled to technological novelties or down-sampled to existing linked web based collections or may even be just an extension of the museums website. In order to distinguish between key issues and to allow sufficient granularity and clarity of discussion, the work will be divided between 5 broad Thematic Areas – the *'6 Ds': Definitions – Directions – Documentation – Dimensions – Demand – Discovery.* Each Thematic Area will be the responsibility of a Lead Partner who is a major actor on the European scene. Inevitable overlaps emerging between the Areas will be addressed through Action-wide coordination activities.

- Interreg V-A (Greece – Cyprus) DigiArc: Preservation and promotion of medieval cultural heritage of Aegean and Cyprus area.

  https://digitalheritagelab.eu/

The challenge that the partnership needs to encounter recommends an implementation of a colossal project for the preservation and promotion medieval age monuments which their significant value determines the cultural and generally the natural environment of the area. The implementation will happen using cutting-edge technology (terrestrial and aerial digital capture) that will document the monument and their natural environment with excellent precision, while a significant challenge is the possibility of digital reconstitution part of them with digital rehabilitation techniques and according to bibliographic documentation, where it's needed. The project focuses into medieval fortification works and castles in the area of Rhodes and Cyprus islands.

- MARIE SKŁODOWSKA-CURIE ACTIONS (ITN) – CHANGE: Cultural Heritage Analysis for New Generations.

  https://digitalheritagelab.eu/

The CHANGE project will train a new generation of early stage researchers towards a common goal, namely the assessment of changes of tangible cultural heritage (CH) objects and their monitoring in the atmosphere and/or during their conservation treatment using multimodal imaging techniques in complement to more traditional analytical techniques. Their research will consist in an optimised capturing of data and their analysis, visualisation and management to ensure a better documentation and long-term preservation of our common EU CH. This work will be carried out within an interdisciplinary environment involving 5 CH and 4 Information & Communication Technologies (ICT) beneficiary institutions as well as 9 CH, ICT and industrial partners from 8 EU countries.

▪ EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY - i2MHB ACTION (INNOVATION IN INTELLIGENT MANAGEMENT OF HERITAGE BUILDINGS)

http://www.cost.eu/, http://td1406.eu/

COST (European Cooperation in Science and Technology) is a pan-European intergovernmental framework. Its mission is to enable break-through scientific and technological developments leading to new concepts and products and thereby contribute to strengthening Europe's research and innovation capacities. i2MHB Action will create a pan-European open network, to promote synergies between Heritage Science's specialists, industrial stakeholders and research/education players, to achieve a unified common understanding and operation in the Heritage Buildings' (HB) domain, integrating multidisciplinary expertise, technology and know-how through a novel and independent global framework. HBs are undoubtedly an area where the multidisciplinary approach is essential, grounded on three major knowledge areas (pillars): 1) scientific wisdom, 2) systems and data, 3) social engagement. The i2HBM Action is structured in 5 Working Groups (WG): WG1: Common framework, WG2: Interoperability roadmap for HBs' sustainability, WG3: Integration of HBs into their surroundings, WG4: Social dimension of HBs, WG5: Coordination and deployment. The project's outcomes will provide an inflection point in the HBs' field, enabling global common practices usage and triggering global scale innovation and seamless operation, considering culture, place, technology and field of knowledge.

▪ DIGITAL RESEARCH INFRASTRUCTURE FOR THE ARTS AND HUMANITIES - CYPRUS

http://www.dariah-cy.eu/

DARIAH Cyprus is the Cypriot Digital Research Infrastructure for the Arts and Humanities, which aligns its activities with those of the central European Digital Research Infrastructure for the Arts and Humanities DARIAH-EU (www.dariah.eu), to which Cyprus is a member state. DARIAH-EU is one of the 12 largest research infrastructures of the European Research Infrastructure Consortia (ERIC) which aims to promote and support Arts and Humanities sector on a research level. As member of this European research network, Digital Heritage Research Laboratory, dedicated to the research on the specific areas of digitization, archiving and promotion of tangible and intangible Cultural Heritage, as well as to the modelling of knowledge, actively contributes to the infrastructure of DARIAH-EU, and highlights Arts and Humanities through Culture.

- PHOTOCONSORTIUM

www.photoconsortium.net

International association spin-off of Europeana Photography project, a thematic aggregator about early photography that digitized and made accessible online nearly half a million historic photographs. Within the legacy of Europeana Photography, Photoconsortium is also the curator of the travelling exhibition All Our Yesterdays.

- CARARE ASCOSIATION

www.carare.eu

CARARE aims to advance professional practice and foster appreciation of the digital archaeological and architectural heritage through the promotion for public benefit of digitisation, connection. Enhancement, and use of digital content nationally and internationally. It supports the creation, connection, enhancement and use of digital archaeological and architectural heritage resources, for work, research, learning and for enjoyment

- MICHAEL CULTURE ASSOCIATION

http://www.michael-culture.eu/

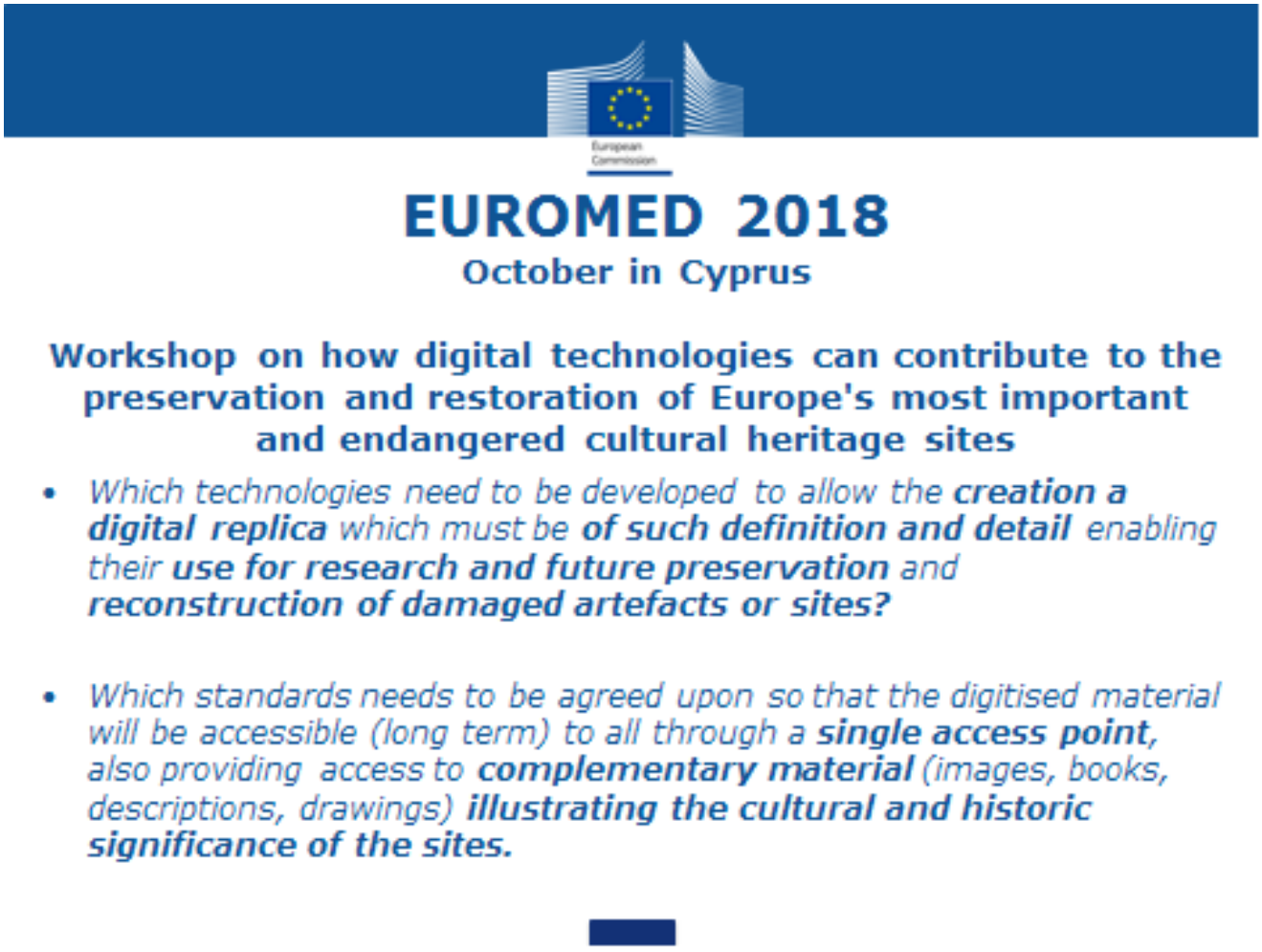
Michael Culture Association constitutes a non-profit organization that supports European and national cultural policies by gathering a strong network of more than 100 public and private organizations from all over Europe.

- CROSS CULT

https://www.crosscult.eu/

Michael Culture Association constitutes a non-profit organization that supports European and national cultural policies by gathering a strong network of more than 100 public and private organizations from all over Europe.

WORKSHOPS


EUROMED 2018
October in Cyprus
Workshop on how digital technologies can contribute to the preservation and restoration of Europe's most important and endangered cultural heritage sites
Which technologies need to be developed to allow the creation a digital replica which must be of such definition and detail enabling their use for research and future preservation and reconstruction of damaged artefacts or sites?
Which standards needs to be agreed upon so that the digitised material will be accessible (long term) to all through a single access point, also providing access to complementary material (images, books, descriptions, drawings) illustrating the cultural and historic significance of the sites.

Monday 29/10/2018	
09:00 – 09:30	***Opening Ceremony*** **Marinos Ioannides, Albert Gauthier, Adelina-Cornelia DINU**
09:30 – 10:30	**WORKSHOP** **The EU Parliament & EU Commission Workshop in cooperation with Europeana, UNESCO Chair on Digital Cultural Heritage & EU ERA Chair on Digital Cultural Heritage** *"How digital technologies can contribute to the preservation and restoration of Europe's most important and endangered cultural heritage sites?"*
10:30 - 11:00	Coffee Break
11:00 – 13:00	**WORKSHOP** **The EU Parliament & EU Commission Workshop in cooperation with Europeana, UNESCO Chair on Digital Cultural Heritage & EU ERA Chair on Digital Cultural Heritage**
13:00 - 14:00	Lunch Break
14:00 - 15:30	**WORKSHOP** **The EU Parliament & EU Commission Workshop in cooperation with Europeana, UNESCO Chair on Digital Cultural Heritage & EU ERA Chair on Digital Cultural Heritage**
15:30 - 16:00	Coffee Break
16:00 – 18:30	**WORKSHOP** **The EU Parliament & EU Commission Workshop in cooperation with Europeana, UNESCO Chair on Digital Cultural Heritage & EU ERA Chair on Digital Cultural Heritage**
18:30	**FREE**

<table>
<tr><th colspan="3">Tuesday 30/10/2018</th></tr>
<tr><td>09:00 – 10:30</td><td colspan="2">WORKSHOP

The EU Parliament & EU Commission Workshop in cooperation with Europeana, UNESCO Chair on Digital Cultural Heritage & EU ERA Chair on Digital Cultural Heritage

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<tr><td rowspan="2">16:00 – 18:30</td><td colspan="2">Parallel Sessions</td></tr>
<tr><td>WORKSHOP

The EU Parliament & EU Commission Workshop in cooperation with Europeana, UNESCO Chair on Digital Cultural Heritage & EU ERA Chair on Digital Cultural Heritage</td><td>WORKSHOP
H2020 ATHENA: Remote Sensing and archaeology: future and expectations</td></tr>
<tr><td>19:00</td><td colspan="2">Social Dinner</td></tr>
</table>

EUROPEAN COMMISSION AND EUROPEAN PARLIAMENT WORKSHOP

HOW DIGITAL TECHNOLOGIES CAN CONTRIBUTE TO THE PRESERVATION AND RESTORATION OF EUROPE'S MOST IMPORTANT ENDANGERED CULTURAL HERITAGE SITES

	MONDAY 29/10/2018	TUESDAY 30/10/2018
	Workshop	
9:00-9:30	**Opening Ceremony** **Marinos Ioannides, Albert Gauthier, Adelina-Cornelia DINU**	Ronald de Bruin, Director of COST Association ***EU COST in Cultural Heritage***
9:30-10:00	Prof. Kyriakos Efstathiou, Aristotle University of Thessaloniki ***The Antikythera Mechanism - It is all about the knowledge and the Story***	Clémence Prudot d'Avigny, ICONEM ***3D Heritage Encyclopedia : preserving and disseminating knowledge through web platform***
10:00-10:30	Mrs Diane Zorich, Smisthonian Institution ***Superheroes, Spacesuits and Sculpure: Digitizing Smithonian Collections at Scale for Greater Impact and Engagement***	Dr. Charalambos Chaitas, Qiddiya IC, Kingdom of Saudi Arabia ***Cultural Spring in the Arab World***
10:30-11:00	Coffee Break	
11:00-11:30	Constanze Fuhrmann, Fraunhofer Institute ***3D Digitisation in the Cultural Heritage field - Trends and Challenges***	Joan Cobb, The Getty ***Using the Getty Vocabularies to connect resources in a linked and open world***
11:30-12:00	Daniel Blersch, Z&F GmbH ***Optimized 3D laserscanner system for Heritage asset Documentation***	Thomas Krauss, DLR Remote Sensing Institute ***3D from space for mapping and modeling of cultural heritage sites***
12:00-12:30	Eleanor Fink, American Art Collaborative ***Creating a Digital Cultural Heritage Ecosystem: Connecting the dots with Linked Open Data***	Oriana Grasso European Commission DG Research&Innovation ***Copernicus System in Cultural Heritage***
12:30-13:00	Dr. Robert Sanderson, *The Getty* ***Usability over Completeness, Community over Committee***	Michael Klein, 7Reasons Media GmbH ***Projecting the Past to the Future***
13:00-14:00	Lunch	

14:00-14:30	Deputy Commander Alberto Deregibus, Unite4Heritage ***The Carabinieri Command for the Protection of Cultural Heritage and the Italian Task Force "Unite4Heritage"***	Mrs Nada R. Hosking, Global Heritage Fund, NGO ***Connecting Initiatives Towards an Inclusive Framework for Heritage Documentation***
14:30-15:00	Prof. Craig Knoblock, USC Information Sciences Institute ***Mining Data from the Dark Web to Combat the Illicit Art Trade***	Mrs France Desmarais, ALIPH - International Alliance for the Protection of Heritage in Conflict Areas
15:30-16:00	Coffee Break	
16:00-16:30	Graham Bell Europa Nostra ***Cultural horizons: can you see what I see?***	Prof. Vasco Fassina, CEN ***CEN TC 346 Conservation of Cultural Heritage past activity and future challenges***
16:30-17:00	Thomas R. Kline, Cultural Heritage Partners ***Protecting Cultural Heritage: the Importance of Documentation in Recovering Looted or Stolen Cultural Property through Legal Proceedings and Standards for New Technologies***	Dicussion/Final Conclusions Chairlady: Adelina-Cornelia DINU European Commission DG Connect
17:00-17:30	Prof. Raffaella Brumana Politecnico di Milano ***Holistic HBIM: Toward co-working multi actors millennial panEU 'pedia'.***	
17:30-18:00	Panel discussion Chairlady: Adelina-Cornelia DINU European Commission DG Connect	FREE
18:00	FREE	Social Dinner

Wednesday 31/10/2018		
09:00 – 10:30	**Parallel Sessions** **H2020 – COST Information Day** Organized by CY Research Promotion Foundation	**EXCURSION** The last divided capital in Europe: Walk through the history of 12,000 years
10:30 – 11:00	Coffee Break	
11:00 – 13:00	**MSCA - Opputunities for Networking & Career Development** Organized by CY Research Promotion Foundation	**EXCURSION** The last divided capital in Europe: Walk through the history of 12,000 years
13:00 – 14:00	Lunch Break at Conference Center	
14:00 – 15:30	**H2020 - COST WORKSHOP** *How to overcome the fragmentation in Cultural Heritage research and funding in the context of Horizon Europe?*	**Workshop** **EUROPEANA Transcribathon CYPRUS**
15:30 – 16:00	Coffee Break	
16:00 – 18:30	**H2020 - COST WORKSHOP**	**Workshop** **EUROPEANA Transcribathon CYPRUS**
18:30	**FREE**	

Research Promotion Foundation

cost EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

31ST October 2018

H2020 COST INFORMATION DAY

Promoting and Spreading Excellence

AGENDA

8:30 –9:00	**Registration and Coffee**
9:00 – 9:05	**Welcome** ***Dr. Vasilios Tsakalos***, Director General, Research Promotion Foundation
9:05 – 9:25	**Keynote Speech "Promoting and Spreading Excellence: Perspectives from COST"** ***Dr. Ronald de Bruin***, Director of COST Association
9:25 – 10:00	**What is COST and How does it Work?** Basic Principles and Mission, COST Actions, The Networking Instrument, COST Policies: Inclusiveness, Gender and Early Career Investigators ***Dr Ioanna Stavridou***, Science Officer, COST Association
10:00 – 10:30	**Joining Ongoing Actions** The National Procedure to Join a running Action ***Ms Constantina Makri,*** Science Officer and 2nd COST National Coordinator, Research Promotion Foundation
10:30 – 11:00	**Coffee Break**
11:00 -11:30	**Hints and Tips - How to Create a New COST Action** Procedure, Structure of Proposals, Evaluation and Submission ***Dr Ioanna Stavridou***, Science Officer, COST Association
11:30-12:00	**Successful Coordination of Actions from Cyprus** ***Dr. Julius Georgiou***, University Of Cyprus, Chair of the COST Action IC1401 ***Dr. Despo Fatta-Kassinos,*** University Of Cyprus, Chair of the COST Action ES1403
12:00-12:20	**Marie Skłodowska-Curie Actions: Opportunities for Networking and Career Development** ***Ms Georgia Kleanthous,*** MSCA National Contact Point, Research Promotion Foundation
12:20 – 13:00	**Questions & Answers / Closing**

Workshop 2 - Registration is mandatory for all, free participation (31 / 10 / 2018) 14:00 - 18:00:

This special workshop is fully sponsored by the EU Horizon 2020 - European Cooperation in Science & Technology (COST) programme (H2020 COST WORKSHOP)

TITLE: How to overcome the fragmentation in Cultural Heritage research and funding in the context of Horizon Europe?

COST (European Cooperation in Science and Technology) is an EU-funded programme that enables researchers to set up their interdisciplinary research networks in Europe and beyond. It is a unique means for them to jointly develop their own ideas and new initiatives across all fields in science and technology. COST has been contributing to closing the gap between science, policy makers and society throughout Europe and beyond.

In the COST-dedicated workshop, participants from COST Actions will debate on the following topics:

- *Fight against fragmentation of activities and dispersion of resources*.

Given the high interdisciplinary nature of the domain, the need for a better structured dialogue and a common understanding between communities is clearly a main priority. The difficult collaboration between scientists in Humanities and IT specialists is an opportunity and not an enemy and requires the main actors in the field to develop a new culture of sharing, to re-design their skills and profiles and to open up to co-creation.

- *Linking research with needs of society and citizens*: Culture is more and more seen as the new cement for redefining European identity and integration. Investigating cultural heritage and promoting discoveries in combination with new technologies, contribute to a better understanding of our common past in order to valorise, conserve, protect and preserve the European heritage.

The dissemination of knowledge to the general public is another critical challenge, including how citizens can be actively involved in promoting, contributing and exploiting cultural heritage around them. This topic becomes therefore innovative by connecting research for the benefit of the broad society: protect and preserve cultural heritage for future generations.

Find out more about COST here

Participating Actions:

- CA17131 - The Soil Science & Archaeo-Geophysics Alliance: going beyond prospection
- CA15201 - Archaeological practices and knowledge work in the digital environment
- TD1406 - Innovation in Intelligent Management of Heritage Buildings
- IS1310 - Reassembling the Republic of Letters, 1500-1800 A digital framework for multi-lateral collaboration on Europe`s intellectual history
- TD1201 - Colour and Space in Cultural Heritage

EU - H2020 COST ACTIONS' ABSTRACTS

CA17131 (26/10/2018-25/10-2018) THE SOIL SCIENCE & ARCHAEO-GEOPHYSICS ALLIANCE: GOING BEYOND PROSPECTION

DR CARMEN CUENCA-GARCIA

Archaeo-geophysics currently stands as a powerful discipline in European archaeological research to discover, study and record subsurface archaeological sites. Its importance lies in its capacity to reveal hidden archaeological assets in a non-destructive, rapid and detailed manner in comparison with traditional and more invasive archaeological methods such as excavation or test-trenching. Less-invasive and cost-effective field procedures, such as those provided by geophysical means, are increasingly becoming a top priority to mitigate the destructive effects on our cultural heritage from intensified land use, climate change and the current conflict panorama. By using geophysical techniques, archaeological remains can be detected remotely, from the ground surface, sea surface or from the air. These techniques measure and map spatial variations of a range of physical properties of the subsoil which may be representative (the proxies) of the subsurface archaeology. In the last decade, a major technological development in archaeo-geophysics has been the introduction of multi-sensor and motorised instrumentation. This has revolutionised archaeological prospection by allowing extremely fast and high-resolution surveys to explore large areas.

Whilst the discipline of archaeo-geophysics is going through an exciting phase of technological development, a major problem concerning researchers and practitioners is that our ability to interpret the full suite of information extractable from geophysical datasets has not kept pace with developments in technology and is still very limited. This deficiency prevents geophysical survey moving beyond basic prospection and becoming a significant tool for answering nuanced questions about archaeology and the landscapes it is part of. The reason for this limitation is that there is still much to learn about the relationships between soil properties and geophysical measurements. Since the publications of Clark (1990), Scollar et al. (1990), Fassbinder & Stanjek (1993) or Weston (2001 & 2002), back in the early stages of the application of geophysics to archaeology, most of the progress achieved in this topic has come from some significant but very fragmented studies. Also, much of the work has focused on understanding of soil magnetic properties whilst other soil properties that contribute to geophysical contrast have been considered to a lesser extent.

Bridging this gap requires fine-tuned and multidisciplinary teams, experimental approaches, testing field and analytical methods and solutions for multivariate data integration and analysis. The lack of continuity in the development of this topic should be understood, partly, because of the scarcity in funding that has been devoted to Humanities in Europe during the last decade and the consequent research priorities followed by many institutions. These have been more interested in being at the foreground of technological development rather than competing with more time-consuming and resource-demanding projects devoted to in-depth understanding and interpretation of proxy data. Besides, there has been little scholarly discussion devoted to distilling the outcomes and structuring the achievements of the projects that have been completed in this topic into validated and shared "lessons learned". Overcoming these challenges is a prerequisite for maximising the cost-effectiveness of geophysical methods, harvesting the expected benefits

of large-scale investments in instrumentation and allowing a broader uptake of geophysical methods in the cultural heritage sector.

Our principal reason to apply for a COST Action was to build a multi-disciplinary international network in order to bring together geophysicists, archaeologists, soil scientists and a wide range of experts in other sub-disciplines in geoscience to make a major push forward in our capability to interpret geophysical data for archaeological purposes. Our prospects are that after four years of intensive collaborative work, SAGA will have created a framework for emerging field procedures and enhanced data-interpretation solutions. SAGA will have facilitated a broader understanding and use of integrated geophysical methods in cultural resource management routines in countries where these methods were not previously common. In countries that already integrate geophysical prospection in cultural heritage management, SAGA will have educated practitioners and curators in the cutting edge of our improved understanding following the integration and synthesis of concepts, methods and knowledge from adjacent disciplines.

CA15201 (06/10/2016-05/10/2020) ARCHAEOLOGICAL PRACTICES AND KNOWLEDGE WORK IN THE DIGITAL ENVIRONMENT

PROF. ISTO HUVILA

From the perspective of the COST Action Archaeological Practices and Knowledge Work in the Digital Environment (ARKWORK), there is a lot of relevant on-going work in different European countries for increasing the understanding of digital and digitalising archaeological and archaeology-related work and knowledge production. Two years of activities within the Action has confirmed some of the earlier assumptions and observations of the proposers but at the same time, underlined the significance of other factors that were not considered to be as problematic as they appear to be. The focus of the Action on practices has at the same time confirmed the importance and difficulty of conducting research on what people do and how to leverage on that understanding to inform practitioners. One of the most important take-away so far has been by far the significance of reaching a common understanding on what research is about – both for successful scholarly and scientific collaboration, communication and dissemination of results and societal impact of the work. The presentation will discuss briefly key insights into the 'articulation work' carried out in COST-ARKWORK to reach a common understanding of the research field and its linkages to the archaeological practice, and its implications for overcoming fragmentation of research and practice in archaeology and material cultural heritage in Europe.

TD1406 (0605/2015-05/05/2019) INNOVATION IN INTELLIGENT MANAGEMENT OF HERITAGE BUILDINGS PROF. JOAO MARTINS

Europe is one of the World's regions presenting the areas (pillars): scientific wisdom, systems & data and social engagement.

A multidisciplinary interoperable approach is of national heritage of every country and culture. They usually consist of multiple facets and materials often altering dramatically throughout their life span due to changes imposed by society, their environment and usage. It is through the conservation and restoration of these buildings, and the collections therein, that the cultural identity of our past can be preserved and transferred into our future.

The aforementioned three pillars should be the bases for a "rooftop" interoperability layer. It is mandatory to identify what is homogenous, heterogeneous and synergetic amongst the three pillars, highlighting interdependencies and gaps while identifying best approaches in order to progress towards this common interoperable framework.

In this context, COST Action TD1406 (Innovation in Intelligent Management of Heritage Buildings) was extremely relevant and timeless, gathering under the "rooftop" layer of interoperability the basic three pillars of HBs, bringing together that sparse knowledge and confined operations on HBs to develop a common framework providing an integrated multidisciplinary expertise, technology and know-how through a novel and independent global framework.

IS1310 (28/04/2014-27/04/2018) REASSEMBLING THE REPUBLIC OF LETTERS, 1500-1800 A DIGITAL FRAMEWORK FOR MULTI-LATERAL COLLABORATION ON EUROPE`S INTELLECTUAL HISTORY

PROF. HOWARD HOTSON

Europe urgently needs a reinforced sense of transnational identity. Such an identity can only be fashioned from shared cultural histories, shared accomplishments, and shared values. But how can we piece together the scattered fragments of such histories and traditions into a coherent mosaic capable of reshaping our collective self-understanding? COST Action IS 1310 addressed these general questions by focusing on one of Europe's most important transnational integrative communities during the formative centuries of the Renaissance, the scientific revolution and the Enlightenment: namely, 'the republic of letters'.

In their more idealistic moments, leading European scholars, philosophers and scientists in this period saw themselves as living the most meaningful parts of their lives in a new kind of imagined community which they called the respublica litteraria or république des letters. This was an open society, formed by multilateral scholarly communication in script and print as well as face-to-face contact; a non-traditional society in which bonds and duties were created not by blood, law, custom, or power relations but by mutual services to the cause of learning; a meritocratic society in which status was determined neither by birth nor by wealth but by learning and insight; a transnational and tolerant community, existing above and beyond the narrower bounds of ethnicity, nationality, profession, and even religious confession; a society held together above all by the excitement generated by the intellectual discoveries and breakthroughs of the period. This ideal is remarkably relevant to Europe's idealised self-image today. So why has it disappeared so completely from Europe's collective self-understanding?

Part of the problem is that the postal communication which helped bind this community together scattered the archive of materials needed to understand it. Letters only achieve their communicative function by being dispersed; and scholars attempting to reconstruct this community have subsequently had to comb the archives and libraries of Europe looking for stray letters to or from specific individuals. The republic of letters therefore poses, in extreme form, the challenge of reassembling fragmented cultural heritage.

To reassemble the material scattered by the communications revolutions of the early modern period, we need to harness the digital communications revolution of our own day. Working out how best to do so was the objection of COST Action IS1310. The goal was to envisage open-access, open-source, transnational digital infrastructure capable of facilitating the radically multilateral collaboration needed to reassemble this scattered documentation and to support a new generation of scholarly methods and research questions. The means to that end was four years of structured discussions undertaken in a community which grew to include nearly

100 members and 100 affiliates, from 33 different countries, drawn from many different disciplines, including archivists, librarians, scholars from many fields, and experts in visualization, communication, intellectual property, and many different kinds of digital technology.

Four of the Action's six working groups scrutinized the standards needed to describe all the different dimensions of early modern learned correspondence: places and dates, people and networks, texts and topics, documents and collections. A fifth group described the tools and systems needed to assemble, reconcile, analyse, and model unprecedented quantities of epistolary data within a new kind of distributed infrastructure. A sixth working group sought to envisage the kinds of scholarship which might emerge from geographically disparate teams of scholars working within such infrastructure with unprecedented quantities of data in news ways. The fruits of these discussions are being drawn together by the chair and vice-chair into a collaboratively written book, entitled Reassembling the Republic of Letters in the Digital Age: Standards, Systems, Scholarship (Göttingen University Press). Once this conceptual framework is in place, the next big task will be to raise the funding necessary to build the infrastructure we need. Once standards, systems and new working relationship have been developed for reassembling material on this aspect of Europe's transnational cultural heritage, the objective will be to expand and adapt them to serve cognate areas as well.

TD1201 (07/11/2012-06/11/2016) COLOUR AND SPACE IN CULTURAL HERITAGE (COSCH)

PROF. FRANK BOOCHS

The COST Action TD1201: Colour and Space in Cultural Heritage (www.COSCH.info) contributed to the conservation and preservation of cultural heritage (CH) by enhancing the shared understanding, between experts from various disciplines, of the spectral and spatial recording of physical CH objects. Optimal recording, adapted to the needs of a CH application, should involve experts from multiple disciplines and industries. Such an interdisciplinary approach is necessary "in order to protect, preserve, analyse, understand, model, virtually reproduce, document and publish important CH in Europe and beyond" [CO12, p. 3]. In order to fulfil this goal, experts from 28 European countries entered into a multidisciplinary dialogue trying to establish a common understanding of spatial and spectral recording techniques best suited for particular CH applications. The dialogue addressed the characterization of spatial and spectral recording techniques; the use of algorithms and processing chains; and requirements of analysis, restoration or visualization of cultural heritage surfaces and objects. The implementation of available techniques has been tested through six COSCH case studies. A range of spectral and spatial techniques have been applied to selected cultural heritage objects, addressing cultural heritage research questions. The case studies demonstrate the possibilities offered by spatial and spectral recording techniques and highlight the challenges involved. The processing of acquired data and the possibilities for using these data to analyse and visualize CH objects and their surfaces have been considered.It was possible, through an intensive discussion, to propose a novel structured view of recording techniques that takes into consideration the user's questions. A basic foundation for a semantic representation of these interrelations has been developed. The resulting COSCH^{KR} (knowledge representation) shows the potential of semantic technologies for a conceptual approach to this multidisciplinary research field.

Four years of work made visible which huge variety of CH objects, research questions, goals, scientific disciplines, personal views, financial margins, national frameworks and traditional strategies exist and may result in more or less different views of a problem and possible strategies to solve it. As consequence of this heterogeneity it is quite logic to face problems with a fragmentation of the field leading to redundancy in activities and missing awareness of already existing achievements. As COSCH showed it is possible to improve the situation through the development of mutual understanding, to make processes transparent, to transform experiences into a structured semantics, which have to be made accessible and visible to everybody acting in the field.

Thursday 1/11/2018		
	Parallel Sessions	
09:00 - 10:30	**Workshop** **Investing in the future of our Digital Cultural Heritage: The EU Horizon 2020 CSA ViMM Roadmap**	**Workshop** **EUROPEANA Transcribathon CYPRUS**
10:30 - 11:00	Coffee Break	
11:00 - 13:00	**Workshop** **Investing in the future of our Digital Cultural Heritage: The EU Horizon 2020 CSA ViMM Roadmap**	**Workshop** **EUROPEANA Transcribathon CYPRUS**
13:00 - 14:00	Lunch Break	
14:00 - 15:30	**Workshop** **EU Horizon 2020 Research & Innovation INCEPTION Project**	**Workshop** **EUROPEANA Transcribathon CYPRUS**
15:30 - 16:00	Coffee Break	
16:00 - 18:30	**Workshop** **EU Horizon 2020 Research & Innovation INCEPTION Project**	**Workshop** **EUROPEANA Transcribathon CYPRUS**
18:30	**FREE**	

Friday 2/11/2018		
	Parallel Sessions	
09:00 - 10:30	**Workshop** **EU Horizon 2020 Research & Innovation INCEPTION Project**	**Workshop** **EUROPEANA Transcribathon CYPRUS**
10:30 - 11:00	Coffee Break	
11:00 - 13:00	**Workshop** **EU Horizon 2020 Research & Innovation INCEPTION Project**	**Workshop** **EUROPEANA Transcribathon CYPRUS**
13:00 - 14:00	Lunch Break	
14:00 - 15:30	**Workshop** **EU Horizon 2020 Research & Innovation INCEPTION Project**	**Workshop** **EUROPEANA Transcribathon CYPRUS**
15:30 - 16:00	Coffee Break	
16:00 - 18:30	**Workshop** **EUROPEANA Transcribathon CYPRUS**	
18:30	**FREE**	

Saturday 3/11/2018	
09:00 - 10:30	**Workshop** **Cultural Informatics research and applications: State of the art and open challenges**
10:30 - 11:00	Coffee Break
11:00 - 13:00	**Workshop** **Cultural Informatics research and applications: State of the art and open challenges**
13:00 - 14:00	Lunch Break
14:00 - 15:30	**Workshop** **Cultural Informatics research and applications: State of the art and open challenges**
15:30 - 16:00	Coffee Break
16:00 - 18:30	**Workshop** **Cultural Informatics research and applications: State of the art and open challenges**
18:30	**FREE**

PAPER SESSIONS

Tuesday 30th October 2018

TIME	PLENARIES AND SESSIONS
08:30 - 18:30	REGISTRATIONS
11:00 - 13:00	EuroMed 2018 - FULL PAPERS 3D Digitisation, Reconstruction, Modelling and HBIM Innovative Technologies in Digital Cultural Heritage
13:00 - 14:00	Lunch
14:00 - 15:30	EuroMed 2018 - FULL PAPERS Innovative Technologies in Digital Cultural Heritage
15:30 - 16:00	Coffee Break
16:00 – 18:30	EuroMed 2018 - FULL PAPERS Innovative Technologies in Digital Cultural Heritage
19:00	Social Dinner

Tuesday 30th October 2018 | 11:00-13:00

3D Digitisation, Reconstruction, Modelling and HBIM

- **Visualization of the Past-to-Recent Changes in Cultural Heritage based on 3D Digitization** (Full Paper)

Naoki Mori et al.

Abstract:

3D digitization techniques, such as laser scanning and/or SfM (Structure from Motion), are often used for recording and documenting the archaeological heritages at many sites recently. As-is situations can be easily captured by those techniques for archiving the present geometrical information. Since excavation, different research teams might have conducted investigations and/or restoration work in different periods to date. Throughout the repeated re-excavation and backfill, there may be the places where some aspect dramatically changes. The photo records taken in the past investigations sometimes look very different from the present appearance and the differences are also difficult to describe and to record objectively. This paper proposes a methodology to support the collation of past photo data and current presence by image-processing. Estimating the 3D position and the orientation of the camera which took the photo in the past, by using correspondences between the pixels on the past photo and the reconstructed 3D shape of the current scene. By making corresponding pairs of the identical feature points between the past photo and the current 3D scene, solving PnP problem gives a good estimate of the camera viewpoint in the past. By rendering CG of the current 3D scene from the estimated viewpoint of the past camera, the CG and the past photo image can be aligned and overlaid precisely on the same view. This overlaid image allows to check the temporal changes of the object with pixel-unit precision and to help the maintenance work for inspection and repair. This paper applies to the actual site of Barbar temple at the Kingdom of Bahrain and shows the quantitative evaluation capability.

- **Treatise of digital reconstruction and restauration of porcelain lace (**Full Paper**)**

Lien Acke et al.

Abstract:

Lace porcelain is a fragile type of ceramics that is used to be in fashion in 19th century Dresden artworks. It is known to break easily while manual repair is nearly impossible. Instead, we considered digital scanning, reconstruction, and 3D printing of the damaged areas towards new digital restauration methodologies. One reference case was used throughout testing the enabling technologies, and the combination of micro CT and polyjet 3D printing proved to be most useful. However, defining a proper workflow are specifically digital modeling of porcelain lace requires complex modelling strategies, especially to make it fit for 3D printing.

- **Towards the definition of workflows for automation in HBIM generation (**Full Paper**)**

Mattia Previtali et al.

Abstract:

In the last years creation of as-built Building Information Modelling (BIM), and Historic Building Information Modelling (HBIM) in particular, has become a widely researched topic. In particular, the so-called "Scan-to-BIM" procedure has received a lot of attention. This is mainly given by the fact that nowadays, terrestrial laser scanning (TLS), either static and mobile, and 3D photogrammetry are quite popular techniques to acquire building geometry raw data. However, turning a set of scans into a BIM model is still a labor-intensive and manual work. This paper presents two workflows for increasing the automation in HBIM generation. The presented approaches differ in the level of automation achieved and in the level of maturity. Indeed, while the first one presents a higher level of automation it is designed only to work in the case straight geometrical features are dominant in the scene (i.e., Manhattan world assumption holds). In addition, it is currently implemented in Matlab. On the other hand, the second one is closer to semi-automated modelling since some manual operations are still needed. However, it is implemented as a Revit Plug-in and for this reason it is more user-friendly.

- **Direct numerical analysis of historical structures represented by point clouds (**Full Paper**)**

László Kudela et al.

Abstract:

An important field in cultural heritage preservation is the study of the mechanical behaviour of historical structures. As there are no computer models available for these objects, the corresponding simulation models are usually derived from point clouds that are recorded by means of digital shape measurement techniques. This contribution demonstrates a method that allows for the direct numerical analysis of structures represented by point clouds. In contrast to standard measurement-to-analysis techniques, the method does not require the recovery of a geometric model or the generation of a boundary conforming finite element mesh. This allows for significant simplifications in the complete analysis procedure. We demonstrate by a numerical example how the method can be used to compute mechanical stresses in a historical building.

Innovative Technologies in Digital Cultural Heritage

- **The Use of CT Scans and 3D Modeling as a Powerful Tool to Assist Fossil Vertebrate Taxonomy (**Full Paper**)**

George Theodorou et al.

Abstract:

3D scans and 3D modeling are used to assist the taxonomy of a new unique fossil specimen of an elephant maxilla with molars heavily eroded by coastal sea waves, encrusted in extremely hard sediment, making the preparation and measurements with classical digital calipers impossible. The elephant fossil has been collected north of Poros on the coast at SE Kephallenia in consolidated fan- conglomerates and sands. The elephant maxilla is the first significant elephant fossil from Kephallenia and all the Ionian Islands. According to its dimensions and characteristics it is attributed to a new endemic island species, *Elephas cephallonicus* that lived isolated from the mainland 104.2 ±18.5 ka ago. The existence of an island endemic specimen at this period in Kephallenia is in full accordance with the palaeogeographic evolution of the Ionian Islands, which is strongly indicated by the natural climatic changes during the last hundred thousand years. The *Elephas cephallonicus* became extinct possibly during the last ice age.

- **i-Wall: A Low-Cost Interactive Wall for Enhancing Visitor Experience and Promoting Industrial Heritage in Museums (**Full Paper**)**

Christina Gkiti et al.

Abstract:

Interactive walls have been employed in many museums with the aim to enhance the visitor experience. These are usually large in size and expensive, while their typical use is to present generic content about the museum. As a result, they may not be easily set-up at multiple locations inside a museum and serve the purpose of presenting narratives about particular exhibits. This paper presents i-Wall, an affordable interactive wall system built from off-the-shelf components and technologies. i-Wall has been designed for the Syros Industrial Museum (Greece) and presents a narrative about a particular exhibit, the Enfield E8000, which is the first electric car that reached small-scale production (in 1973). i-Wall provides information to visitors about the concept, the design, the problems, the creators and the socio-political context related to the exhibit, in an interactive way. It also allows visitors to appreciate the interior of the car as well as its functions via augmented reality (AR) technology. The design of i-Wall combines interactive storytelling, animations, projection mapping, conductive paint, touchboard and AR.

Tuesday 30th October 2018 | 14:00 - 15:30

Innovative Technologies in Digital Cultural Heritage

- **Historical buildings affected by failures. The case of the Basilica di Collemaggio in L'Aquila (**Full Paper**)**

Lorenzo Cantini

Abstract:

Since the deep damages occurred to the European architectural heritage after the Second World War, the conservation theory had to face with a complex issue: the partial or totally missing cultural heritage. Among the application of different solutions, the use of reconstruction of destroyed buildings became a recurrent proposal, adopted in many occasions, from Warsaw Castle to Mostar Bridge. In addition, the buildings hit by earthquakes represent a limit conditions for the application of the common procedures coming from the conservation approach. The recent intervention on the Basilica di Collemaggio, a building deeply damaged after the 2009 L'Aquila earthquake, showed an interesting development of the design choices, based on a multidisciplinary approach to the preservation issue. This restoration work collects the difficulties belonging to the theoretical background met in previous experiences, like the discussion on the early 2000 reconstruction of the Frauenkirche in Dresden or the Cathedral of Noto. Moreover, respect to other cases here presented, the set of interventions characterizing Collemaggio were defined according to multi-criteria analyses supported by the different levels of details provided by the digital model of the religious complex.

- **UGESCO - A hybrid platform for geo-temporal enrichment of digital photo collections based on computational and crowdsourced metadata generation (**Full Paper**)**

Steven Verstockt et al.

Abstract:

The majority of digital photo collections at museums, archives and libraries are facing (meta)data problems that impact their interpretation, exploration and exploitation. In most cases, links between collection items are only supported at the highest level, which limits the item's searchability and makes it difficult to generate scientific added value out of it or to use the collections in new end-user focused applications. The geo-temporal metadata enrichment tools that are proposed in this paper tackle these issues by extending and linking the existing collection items and by facilitating their spatio-temporal mapping for interactive querying. To further optimize the quality of the temporal and spatial annotations that are retrieved by our automatic enrichment tools, we also propose some crowdsourced microtasks to validate and improve the generated metadata. This crowdsourced input on its turn can be used to further optimize (and retrain) the automatic enrichments. Finally, in order to facilitate the querying of the data, new geo-temporal mapping services are investigated. These services facilitate cross-collection studies in time and space and ease the scientific interpretation of the collection items in a broader sense.

- **Using Biographical Texts as Linked Data for Prosopographical Research and Applications (**Full Paper**)**

Minna Tamper et al.

Abstract:

This paper argues that representing texts as semantic Linked Data provides a useful basis for analysing their contents in Digital Humanities research and for Cultural Heritage application development. The idea is to transform Cultural Heritage texts into a knowledge graph and a Linked Data service that can be used flexibly in different applications via a SPARQL endpoint. The argument is discussed and evaluated in the context of biographical and prosopographical research and a case study where over 13 000 life stories form biographical collections of Biographical Centre of the Finnish Literature Society were transformed into RDF, enriched by data linking, and published in a SPARQL endpoint. Tools for biography and prosopography, data clustering, network analysis, and linguistic analysis were created with promising first results.

- **Maintaining a Linked Data Cloud and Data Service for Second World War History (**Full Paper**)**

Mikko Koho et al.

Abstract:

One of the great promises of Linked Data is to provide a shared data infrastructure into which new data can be imported and aligned with, forming a sustainable, ever growing Linked Data Cloud (LDC). This paper studies and evaluates this idea in the context of the WarSampo LDC that provides a data infrastructure for Second World War related ontologies and data in Finland, including several mutually linked graphs, totaling ca 12 million triples. Two data integration case studies are presented, where the original WarSampo LDC and the related semantic portal were first extended by a dataset of hundreds of war cemeteries and thousands of photographs of them, and then by another dataset of over 4450 Finnish prisoners of war. As a conclusion, lessons learned are explicated, based on hands-on experience in maintaining the WarSampo LDC in a production environment.

Tuesday 30th October 2018 | 16:00 - 18:30

Innovative Technologies in Digital Cultural Heritage

- **Design of an Interactive Experience Journey in a Renovated Industrial Heritage Site (**Full Paper**)**

Maria Gaitanou et al.

Abstract:

In this paper we present the design of an interactive experience journey at an ex-industrial textile factory. The aim is to enhance the visitors' experience by engaging them in the work processes and flows that were taking place in the actual industrial environment and introduce them to the role of the artifacts and tools involved in real life work scenarios. The development is of the form of a room escaping experience developed on the basis of riddle solving. We used a number of technologies related to interactive systems design such as near field communication, physical computing, sensors, actuators and tangible artifacts.

- **Simulation of an Archaeological Disaster: Reassembling a Fragmented Amphora using the Thickness Profile Method (**Full Paper**)**

Michail I. Stamatopoulos et al.

Abstract:

In this paper, we simulate the incredible story of the *Francois Vase,* on a remarkable ancient amphora depicting Achilles and Briseis exhibited in the provincial museum *Sigismondo Castromediano* in Lecce, Italy. A high precision handmade replica of the original red-figure style masterpiece, 50 cm tall, from the collection of the museum in Lecce was built, fully decorated in our laboratory and then intentionally destroyed simulating the archaeological disaster of the *Francois Vase*. The handmade amphora (i.e. replica) was broken in 507 fragments, out of which 148 sherds (or *ostraca*) were offered for digital restoration through the Thickness Profile method on an on-going project.

- **The Orion Pottery Repository – A Publicly Available 3D Objects' Benchmark Database with Texture Information (**Full Paper**)**

Andreas Stergioulas *et al.*

Abstract:

Performance evaluation is one of the main research topics in information retrieval. Evaluation metrics in combination with benchmark datasets (groundtruth) are used to quantify various performance aspects of a retrieval algorithm. In this paper, we present the Orion Pottery Repository, a publicly available and domain specific benchmark database. It is based on open source technologies and contains a total of 160 textured 3D digital replicas of ancient Greek pottery. The dataset offered through the repository can be used for performance evaluation experiments of 3D data retrieval algorithms. Orion's content has been classified according to a pottery shape categorization defined by an in-house developed thesaurus. The repository provides mechanisms that allow a wide range of metadata handling that are based on the CARARE metadata schema which among others it offers the ability to include information related to digitization procedures and their properties.

- **Automatic Identification of Relations in Quebec Heritage Data (**Full Paper**)**

François Ferry et al.

Abstract:

Heritage data is often represented in unstructured format, especially textual data. In this paper, our objective is to extract in- stances of predefined relations between persons and real estates from historical notices in French. Using several vector-based representations and supervised learning algorithms, we build classifiers able to achieve an F-measure between 75% to 85% for relation detection. Our results show that performances are highly dependent on the type of relation, and also on the specific evaluation metrics. Our best results are obtained using a TF-IDF vector representation with a support vector machine classifier or Word2Vec vectors combined with a multilayer perceptron classifier.

- **Understanding Historical Cityscapes from Aerial Imagery through Machine Learning (**Full Paper**)**

Evangelos Maltezos et al.

Abstract:

Understanding cityscapes using remote sensing data has been an active research field for more than two decades. Meanwhile, machine learning provides generalization capabilities compared to hierarchical and rule-based methods. This paper evaluates several machine learning algorithms in order to fuse shadow detection and shadow compensation methods for building detection using high resolution aerial imagery. Three complex and real-life urban study areas were used as test datasets with various: i) kinds of buildings structures of special architecture, ii) pixel resolutions and, iii) types of data. Objective evaluation metrics have been used for assessing the compared algorithms such recall, precision and F1-score as well as rates of completeness, correctness and quality. For both approaches, i.e., shadow detection and building detection, the computational complexity of each machine learning algorithm was examined. The results indicate that deep learning schemes, such a Convolutional Neural Network (CNN), provides the best classification performance in terms of shadow detection and building detection.

- **Origin determination of Mediterranean marbles by Laser Induced Fluorescence (**Full Paper**)**

Valeria Spizzichino et al.

Abstract:

LIF measurements have been carried out on marble samples coming from the most famous quarries of the Mediterranean area. Thanks to multivariate techniques and clustering methods the most significative spectral features linked to geographical provenance have found and tested. The propaedeutic work previously carried out on the reference samples has al-lowed for the developing of a fast data processing method of LIF data able to pro-vide, in quasi real time, digital images of the artworks where Italian and Greek marbles are marked differently. Starting from the obtained results, a LIF scanning prototypal system has been used to scan two masterpieces from Roman period interesting for real restoration and archaeological issues: the sculptured group, called Ares Ludovisi (collection of Palazzo Altemps) and the so-called "Two-orant's sarcophagus", housed in the Museum of the Catacombs of San Sebastiano in Rome.

- **Personalized Heritage Museum Guide for Married Immigrant Women (**Full Paper**)**

Hyeweon Kim et al.

Abstract:

This paper presents a novel heritage museum guide framework that provides personalized digital heritage contents to help understand the culture of immigration country. Particularly, this framework focuses on helping married immigrant women in a situation of social exclusion to easily understand a different culture heritage easily by providing similar digital heritage contents of her home country. To develop this guide framework, the following core steps are integrated: i) collect data, such as logs, Facebook feeds, and frequency of app usage from a users' smartphone, ii) build users preference profiles through the analysis of collected data, iii) display similar digital heritage contents of their home country via a head-mounted mixed reality display. From the proposed framework, we expect that the framework will make it easier to understand unfamiliar cultural heritage to married immigrant women who is having difficulty adapting to immigration. Furthermore, her children also can utilize these contents to understand and learn their mother's culture, which can create an empathy between the mother and her children.

- **Personality analysis of social media influencers as a tool for cultural institutions (**Full Paper**)**

Vassilis Poulopoulos et al.

Abstract:

Nowadays, more and more cultural venues tend to utilize social media as a main tool for marketing, spreading their messages, engaging public and raising public awareness towards culture. It comes to a point where the massive of content in social media makes it a tedious procedure to contact the appropriate audience, the people that would really be stimulated by cultural information. In this notion, we assume that establishing conversations of high impact can possibly guide the cultural venues to audiences that can benefit more. These conversations usually include the so called influencers, users whose opinion can affect many people on social media; the latter usually referred to as followers. In this research paper we examine the characteristics of the influencers that can affect the procedures of a cultural venue on social media. The research is done within the scope of "CrossCult" EU funded project.

- **Study of effectiveness of treatment by nanolime of the altered calcarenite stones of the archeological site of Volubilis (Morocco) (**Full Paper**)**

Dalal Badreddine et al.

Abstract:

Volubilis is the major archaeological site of North Africa, built in the 3rd century B.C. Unfortunately, the city, classified as a UNESCO world heritage, is affected by several forms of degradation that threaten its sustainability and durability. The main stone of the site, the calcarenite stone, shows many deterioration patterns (sanding, scaling and alveolization) that require immediate interventions of consolidation. In this paper, we subjected stone samples to artificial aging to simulate actual alteration. Then, degraded samples have been treated with commercial nanolime (CaloSil). Nanolime treatment proved to be efficient to recover most of the damage resulting from artificial aging, but also generated a change in color. Using a less concentrated nanolime could limit the aesthetic impact of the treatment.

Thursday 1st November 2018

TIME	PLENARIES AND SESSIONS
08:30 - 18:30	REGISTRATIONS
09:00 - 10:30	EuroMed 2018 - PROJECT PAPERS 3D Digitisation, Reconstruction, Modelling and HBIM
10:30 - 11:00	Coffee Break
11:00 - 13:00	EuroMed 2018 - PROJECT PAPERS 3D Digitisation, Reconstruction, Modelling and HBIM
13:00 - 14:00	Lunch
14:00 - 15:30	EuroMed 2018 - PROJECT PAPERS Digital Cultural Heritage – Smart Technologies
15:30 - 16:00	Coffee Break
16:00 – 18:30	EuroMed 2018 - PROJECT PAPERS The New Era of Museums & Exhibitions Digital Cultural Heritage Infrastructure

Thursday 1st November 2018 | 09:00 - 10:30

3D Digitization, Reconstruction, Modelling & HBIM

- **Research and communication of urban history in 4D using historical photographs – a status report of the research group UrbanHistory4D (**Project Paper**)**

Ferdinand Maiwald et al.

Abstract:

This contribution shows the work of the junior research group UrbanHistory4D within one year. It explains the different technical and educational approaches when working with media repositories composed of diverse historical data. The group covers technical aspects like photogrammetry, information sciences and Augmented Reality (AR) as well as humanistic topics like history of art, user case and educational studies. In detail, different photogrammetric techniques, various image repositories, a user case study and possibilities of knowledge transfer are evaluated. The main focus in the first year was the development of two prototype applications – a 4D browser interface and an AR application supported by the different fields of studies. These applications are still refined considering the results of the varying research topics. As an out- come the contribution presents a part of the project organization which plays an important role when working in such interdisciplinary groups.

- **3-D Survey and Structural Modelling: the Case of the San Giovanni Baptistery in Florence (**Project Paper**)**

Grazia Tucci et al.

Abstract:

In 2013 the preliminary interdisciplinary studies for the maintenance of the facades of the Baptistery of Florence included a complete survey of the building. Like in the case of the previous most recent surveys, its geometry was studied with the most up-to-date technologies available. The 3-D model, integrated with the contributions by the other research groups, allowed new hypotheses on its construction and, in particular, a more accurate tuning of the structural models.

- **3D Documentation and Visualization of the Forum Romanum: The DHARMA Forum Project (**Project Paper**)**

Prof. Dr. Krupali Krusche

Abstract:

Documenting large scale sites like the Roman Forum, in Rome, Italy can become a mammoth task. While there is a set methodology for traditional documentation of large sites, as the one developed by Giacomo Boni in the early 1900's, there is very little standardization in the field of digital documentation and cataloguing or making the digital data user friendly for various purposes of conservation of large site. This paper presents the methodology and techniques used by the University of Notre Dame School of Architecture DHARMA team to digitally document for the first time the Forum Romanum, Rome, Italy between 2010 till 2015. The complexity of site, terrain, and the data to be collected, were supported through three major segments that can be useful for any on-site documentation project. These include 1) Pre-site, 2) On-site and 3) Post-site methods. Employing a comprehensive approach—including 3-D laser scanning, hand measuring, photogrammmetry, and Gigapan technology—the team thoroughly documented the current state of this World Heritage site. Laser scanning was central to this effort, and the details of its implementation contributed to time and terrain effective methods are discussed in this paper. The team working on this project included architects, archeologists, computer engineers and students from various disciplines. The team's post-site production efforts resulted, most notably, in a highly-accurate point cloud model that can be manipulated for various educational and scholarly uses. These were further transformed to create user friendly outputs including 2D drawings and 3D visuals comprising a 3D app. As many scholars from different disciplines get involved in the field of digital documentation, it becomes increasingly important to create a methodology of operation that can be described as best practices in the field for large scale sites of great historical value. This study takes the knowledge known in our field over centuries and combines the results of latest technologies to get us the best of both worlds.

- **The Reconstruction of Urartu Buildings of Altıntepe in Virtual Environment: The Temple Altıntepe Virtualization Example (**Project Paper**)**

Serap Kuşu

Abstract:

In Altıntepe region of Erzincan, Turkey, a temple complex, religious buildings, Apadana, city walls, a drainage system, and many more functionally unidentified architectural remains were unearthed during the excavations which took place between 1960 and 2014. One of the most remarkable of these buildings is the temple complex. The temple, only the foundation of which has survived today, was virtually reconstructed in 2013, in the light of the archaeological data. The reconstruction was based on the imagery of the temple with towers, found on Urartian stone and bronze plates. The visualization process of the temple consisted of a number of different stages. In the first stage, the buildings in the Urartu citadel, and the latest data on the architectural plans and the debates of these were evaluated. Previous trials of 3D reconstruction of the buildings contributed greatly to our project. The details on the reliefs of Urartian, Assyrian, and other contemporary cultures, and the publications on these were evaluated and utilized. In the second stage, the obtained data was transferred to virtual environment. The temple was 3D-modeled with the help of the software 3D Max, AutoCAD and V-Ray. Then the model was textured and rendered, and the reconstruction was finalized. As a result, the architectural data obtained from the Urartian and Assyrian reliefs, and the archaeological data obtained from the field were combined, which led to a better understanding of the Urartian temple architecture. Besides, this project yielded technical data and suggestions about the reconstruction of the existing remains. In the end, the visualization of the virtual city is posted public in YouTube "Urartu Kentleri Canlanıyor".

- **A new enhancement filtering approach for the automatic vector conversion of the UAV photogrammetry output (**Project Paper**)**

Maria Alicandro et al.

Abstract:

In the last decades the photogrammetry has undergone interesting innovation, both in terms of data processing and acquisition mode, to allow obtaining detailed 3D models useful for complete survey and important support for the management and recovery of cultural heritage and buildings. However, despite recent developments, the main photogrammetry outputs are raster data (ortophoto and DEM) and point clouds characterized by high informative content, but they are not typically extracted automatically. Automated feature detection is yet manual, time-consuming procedure and an active area of research. The raster to vector conversion is not direct, but transformations must be performed on the input data to convert the pixel values into features. Always, segmentations are preceded by filter technique to remove noise and to improve the conversion phase. However, remote sensing data and especially UAV photogrammetry output are the most complex to treat because of their heterogeneity (presence of different objects and shapes), the nature of sensor used and the different scale. In this work we experiment new enhancement filter to improve the automatic extraction of vector information for a UAV photogrammetry results of the facing walls of eminent church, symbol of the city of L'Aquila, the" Basilica of Santa Maria di Collemaggio".

- **The Spatial Form of Traditional Taiwanese Townhouses: A Case Study of Dihua Street in Taipei City (**Project Paper**)**

Tung-Ming Lee

Abstract:

In this study, a survey was conducted on traditional townhouses in historic districts in Taiwan. To investigate the development process of townhouse architecture, this study used the townhouses in the historic district of Dihua Street in Taipei as research samples and conducted on-site mapping surveys and interviews. To determine the overall conservation environment of historic districts, this study conducted on-site surveys in Taipei City's Dihua Street, Taipei County's Sanxia Old Street, and Taoyuan County's Daxi Old Street. Data collected during on-site surveys were analyzed and compared, and these results served as a crucial reference for this study.

Thursday 1st November 2018 | 11:00-13:00

3D Digitization, Reconstruction, Modelling & HBIM

- **A digital workflow for Built Heritage: from SCAN-to-BIM process to the VR-tour of the Basilica of Sant'Ambrogio in Milan (**Project Paper**)**

Banfi Fabrizio et al.

Abstract:

The latest information technology developments have enabled the creation of novel virtual experiences favouring an increasingly higher level of information connected to the 3D reconstruction. Building Information Modelling (BIM), 3D cloud services and virtual / augmented reality (AR-VR) projects are the most applied methods to transmit the wealth of built heritage from both the geometrical and informative points of view. In this paper, we present a holistic workflow to integrate the most applied digital techniques with the aim of creating the highest quality-immersive solutions starting from an accurate 3D survey. Thanks to a new SCAN-to-BIM method that transfer the morphological and typological characteristics of the surveyed building to a shared cloud system, it will be possible to support specialists in the documentation and preservation of historical uniqueness of the basilica of Sant'Ambrogio in Milan (Italy) with a new level of information sharing. Finally, a new digital experience based on next-generation technologies has been offered to the cultural tourism. Thanks to the development of a virtual tour that embeds different multimedia data (360° photos, photos, virtual notebook, description, video, audio etc), it has been possible to create a digital history for one of the greatest examples of the historic Italian architecture.

- **BIM Modelling of Ancient Buildings (**Project Paper**)**

A. Scianna et al.

Abstract:

In the last years, new procedures on design and management of constructions, based on 3D standardised models of building elements, have been proposed. It's the case of Building Information Modelling (BIM) applications, that, differently from CAD ones, allow to work with libraries of 3D parametrical objects (smart objects) describing geometric, structural and material properties of building elements. This methodology is based on the Industry Foundation Classes (IFC) model that represents a global standard for the building data exchange. Initially used for the design of new architectures, BIM methodology has been even more considered also for the management and the conservation of historical buildings, thanks to the possibilities of implementation of semantic information of 3D objects, guaranteed by the connection with the external database. At the same time, the lack of regular surfaces and standardised objects are relevant problems that nowadays strongly limit the use of BIM for Cultural Heritage (CH). Anyway, in recent times, the study of parameterised objects has opened new perspectives for BIM applications on historical buildings (HBIM). The present work shows the last achievements on this topic, focusing the problems derived from the application of BIM methodology to CH. In fact, the irregular shape of ancient architectural components, the wide variety of architectural languages that characterise historical buildings, the presence, sometimes, of different stratifications, are clear examples of the difficulties of implementing HBIM methodology for CH.

- **Accessing and understanding Cultural Heritage through users experience within the INCEPTION project (**Project Paper**)**

Federica Maietti et al.

Abstract:

The interdisciplinary EU funded project INCEPTION – Inclusive Cultural Heritage in Europe through 3D semantic modelling, coordinated by the Department of Architecture of the University of Ferrara, is focused on bringing together innovative 3D modelling and ICT applications and professionals involved in different fields of Cultural Heritage. The aim is to increase knowledge, enhancement and dissemination through 3D digital models in order to promote the inclusiveness and accessibility of European assets. In this direction, a Stakeholder Panel with different skills in the field of Cultural Heritage has been involved leading the research toward effective strategies to increase use and reuse of digital models. These strategies are aimed at maximizing the impact of using digital data for cultural heritage applications involving a wide range of non-expert and expert users, starting from specific requirements for processing, managing, delivering cultural heritage information to a broad audience. A co-design workshop has been organized involving Stakeholders in order to investigate on their requirements and expectations, to obtain information that could be useful for the User Centered process of definition of INCEPTION's main outcomes and functionalities.

- **Digital Interpretation and Presentation for Monuments – Take Kinmen Area Heritage built by ARCHES as an example (**Project Paper**)**

Wun-Bin Yang et al.

Abstract:

Conserving and preserving the national heritage reflects important cultural stewardship and the application of ARCHES provides for robust international interoperability of this heritage. In recent years, Taiwan has promoted protection and management of historic architecture and cultural heritage, through completion of a series of databases and inquiry platforms for the cultural heritage. However, there remains a significant digital divide between domestic integrated digital data exchange performance and international standards. Hence, Taiwan is focusing on integrating multi-source digital data and database exchange services with complete ontologies and taxonomies in conjunction with the latest global developments. This study constructs ontological metadata for registration and designation of historical architecture. The ontology, based on the CIDOC CRM, is used to import the contents of the current national cultural heritage database in Taiwan to build the ontology model of registration and designation of historical architecture; and the results are displayed through the network platform. The results indicate that new interpretative data models can improve mutual exchange of information and attain the purpose of heritage educational promotion. The metadata structure is built by using the ontology model according to international standards. It provides a positive structure for conveying Taiwan cultural heritage throughout the world.

- **HBIM in Cultural Heritage Conservation: Component Library for Woodwork in Historic Buildings in Taiwan (**Project Paper**)**

Y. M. Cheng et al.

Abstract:

The aim of this study is to propose an application framework of HBIM for historic buildings in Taiwan with a focus on defining the components of historic buildings, component attributes, and the relationship between the components and restoration data. The information is then imported into a database and presented in a visualized model. Issues explored include definition of components and the process of generating component library for historic buildings with an emphasis on traditional woodwork. The case study is on Huangxi Academy. To generate the component library, regulations must be established to define structural components of historic buildings and the component types must be categorized. The structure of Huangxi Academy is divided into 5 areas with individual elements and the components are classified into one of the three categories, family component with parameters, family component without parameters, and custom component. In addition, for create basic visual effects for each component with data pertaining to renovation, the LOD 300 model is suggested for this project.

- **Panoramic image application for cultural heritage (**Project Paper**)**

Maarten Bassier et al.

Abstract:

Advancements in remote sensing and communication technology caused a surge in new methods to capture and share information about tangible heritage. The documentation of these monuments is vital to the conservation process. However, current workflows generate an immense amount of information and often fail to properly relay the con- text of the scene. Additionally, the distribution of information between different stakeholders is paramount in preventive conservation. The goal of this research is to provide heritage experts with the tools to better capture and communicate information about heritage sites. More specifically, an image recording workflow is presented to rapidly acquire a series of panoramic images of the scene and present them accordingly. An online web application is created based on an existing viewer that al- lows even unskilled users to access the data and intuitively visit the site. The proposed application can be used to distribute information to stake- holders and supports decision makers to constitute a suitable treatment if necessary. Furthermore, the panoramic viewer and accompanying map can be used as a backbone to link to other data such as 3D models, orthographic images and so on

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- **Cultural Heritage Digitization and Copyright Issues (**Project Paper**)**

Chroni Athina

Abstract:

In recent years, it has become common knowledge that culture is the main component for people's creative communication as well as for the elimination of social differences and political contradictions, the encounter for people of different racial, ethnic, religious hues in a common place, leading thus to the achievement of world peace. Furthermore, the field of culture under proper management, can contribute substantially to improving the economic conditions of different countries, considering the multiple fields of production and dissemination potential of diverse cultural products which, combined with the explosive and rapid growth of telecommunications and the internet, create a considerable number of new jobs. As a result: the growing interest in this sector. However, the legal framework in which the digitization and management of cultural heritage should develop is not always clear enough or, even when it is clear, it is overturned by modern trends, which, for the sake of technology, become massive. It is therefore important to know basic relevant notions and principles for navigating and acting in a politically correct way in the vast and diverse universe of civilization: the present study constitutes an attempt both to specify the notions of cultural heritage and copyright, as well as to detect the possibilities and limitations of digitization and management of cultural heritage as defined by the current legal framework. The aim is the succinct quote of the afore-mentioned, in order that this project will serve as a concise manual easily understood and useful mainly to people not specialized in law.

- **The first attend for a holistic HBIM documentation of UNESCO WHL monument: The Case Study of Asinou Church in Cyprus (**Project Paper**)**

Kyriacos Themistocleous et al.

Abstract:

The study examines the documentation of the Asinou Monument within the auspices of the H2020-SC6-R&I-INCEPTION project. The project focuses on the use of innovative 3D modelling of cultural heritage through an inclusive approach for 3D reconstruction of monuments, as well as the built and social environments over time. The project will enrich European identity by examining how European cultural heritage evolves over time. Therefore, data acquisition techniques and 3D reconstruction and modelling methodologies for data processing were examined using the Asinou Church as a case study. Asinou Church is a 11th century church located in the Troodos Mountains of Cyprus, which is a UNESCO World Heritage Site. This unique monument contains some of the finest Byzantine wall paintings in Cyprus which date between the 11th to the 17th century. Their outstanding historical value is very exceptional and makes their documentation a great challenge for the present ICT technologies. Different multimodal techniques, such as photogrammetry, laser scanning, image processing, video and audio were used for the data acquisition of all detailed features of the tangible building and the intangible story (liturgy). Following, the information was processed to create a 3D model in order to document the church using Building Information Modeling (BIM). The church was digitally reconstructed in a 3D BIM model, where it was then processed to produce a Heritage Building Information Model (H-BIM) in order to create a prototype for a holistic documentation and further study.

Thursday 1st November 2018 | 14:00 - 15:30

Digital Cultural Heritage – Smart Technologies

- **Smart Tourism Routes Based on Real Time Data and Evolutionary Algorithms (**Project Paper**)**

Mário Amorim et al.

Abstract:

Tourism is an industry that has been growing rapidly in the last few years and it is expected that it will continue to grow. Due to the evolution of technology, mobile applications are being increasingly used in all kinds of industries, being one of them tourism. Presently there are already a few mobile applications used to increase the experience of the user when visiting a place, but these mobile applications lack some important features. This paper describes the development of a mobile application with integrated routing algorithms used to increase the experience of the tourists when visiting the city of Avila, Spain. The tourist will have at their disposal real time information about all the monuments available for visit, a full set of predefined circuits with different visit times and degrees of difficulty and also the possibility to create an optimized or personalized circuit combining the user preferences such as visiting time and number of monuments to visit.

- **Art Nouveau Danube Digital Repository (**Project Paper**)**

Franc J.Zakrajšek et al.

Abstract:

The paper presents the development and the implementation of the Art Nouveau digital repository as a part of Art Nouveau Danube project. The digital repository functions as a common content point of Art Nouveau heritage in Danube region and is connected with other cultural portals. The repository supports the research, preparation of studies and other project activities. On the other side, the repository is accessible to general public for tourism and education. It contains information on movable, immovable and intangible Art Nouveau heritage from whole Danube region in different forms (3D objects, videos, texts, photos, descriptions). Metadata sources are re-use and enrichment of Europeana metadata and new digitalization and documentation of Art Nouveau heritage in this region.

- **A Consortium Blockchain System for Verifying Digital Contents on Traditional Costumes (**Project Paper**)**

Eun-jin Kim et al.

Abstract:

Many countries and organizations have an archive database for the digital preservation of cultural heritage. As recording cultural heritage data becomes more common, the importance of a reliable database is emphasized. However, if the verification of the produced digital heritage content is not correct, continuous errors are yielded in their applications and cultural heritage is misinterpreted. In this paper, we propose a consortium blockchain system for verifying digital cultural heritage contents. Blockchains, which have been applied to various fields recently, are a distributed data storage technology proposed by Satoshi Nakamoto. Blockchains are attracting attention as a technique for creating and storing reliable records owing to its property that it cannot be arbitrarily changed. We propose a verification system that is organized by three expert groups for assessment: researchers, curators, and artisans. The three expert groups review the digital heritage content and finally approve the content via a consensus process. To this end, the approved digital content is created as a block and stored in a blockchain record. We expect that the proposed consortium blockchain system will obtain efficiency and reliability in the screening process by leaving a reliable record of the digital content.

- **eDIRICA: Digitizing Cultural Heritage for Learning, Creativity, and Inclusiveness (**Project Paper**)**

Olufemi Samson Adetunji et al.

Abstract:

The integration of information and communication tools to the management of cultural heritage (CH) promotes culture-based creativity, historical learning and awareness, cultural diversity and social cohesion. However, various developing countries are facing challenges due to inadequate infrastructure to support the integration. In Nigeria, for instance, heritage sites are mainly protected for tourism purposes with little focus on the educational purposes and the broader impacts of CH within the community. This paper, therefore, describes the planning stage for the development of eDIRICA, a Web-app tool that incorporates learning, peoples' engagement and creativity to create a new paradigm for the management of cultural heritage in Nigeria. The rationale is to document heritage sites and convert the information into knowledge through the creation of interactive learning modules, collaborative activities and events. Primary information were collected through questionnaire survey of randomly selected school students and teachers. Semi-structured interviews were also conducted for heritage managers of three CHs. The study finds that heritage education is not included in school curriculum, inadequate trained teachers and collaboration between heritage managers and school administrators. Also, young people are interested in engaging and learning about cultural heritage through digital platforms in view to contribute to the development of their communities.

- **THREADS: A digital storytelling multi-stage installation on industrial heritage (**Project Paper**)**

Eriana Panopoulou et al.

Abstract:

Storytelling enables us to connect through narratives that create reflections on our experiences. When storytelling concerns cultural heritage, it brings forth tangible and intangible assets that characterize activities and events of the past, which may sensitize visitors of a cultural site. In this paper, we present our cultural storytelling project THREADS, a four-station installation that narrates a story of a worker in a textile factory. The system comprises: (a) a welcome station (an animation on public display) that explains the main story and challenges to visitors, (b) the fabric design station (multi-touch display) where the visitor can create a simple fabric for production, (c) the punched cards station (Arduino mechanism), where the visitor codes their initials to binary form and receives a punched card, (d) the Jacquard production station (gesture-based interface with Leap Motion and Unity), where the visitor uses the card to repair a mechanical loom. THREADS has been installed in an abandoned building of a textile industry, which operated between 1914-1986, and it is now renewed and open to visitors. A preliminary empirical evaluation of THREADS revealed that it is not the variety of technologies that engages users, but a storyline flow that retains their attention and interest.

- **Documentation Strategy for Intangible Cultural Heritage (ICH) in Cultural Heritage Institutions: Mak Yong Performing Art Collection (**Project Paper**)**

Mazlina Pati Khan et al.

Abstract:

United Nations Educational, Scientific, and Cultural Organization (UNESCO) has recognized Mak Yong's Theater Performing Art as a Masterpiece of Oral and Intangible Cultural Heritage (ICH) of Humanity by September 2005. Unfortunately, Mak Yong was declared as an irrelevant form of performing art due to the prohibition in the year 1991 since the Islamic Party of Malaysia (PAS) that took control of the state. It is viewed as being non-compliant to Islamic teachings. Various efforts have been undertaken to protect cultural heritage by collecting and documenting especially in the manifestation of intangible cultural value in order to consolidate and nurture appreciation of the cultural heritage within society. Thus, this study explores the documentation strategy approach obtainable in cultural heritage institutions on preserving and safeguarding ICH collections. A novel qualitative methodological approach was used by employing a case study design; semi-structured interviews were conducted to examine the aperture on the implementation of documenting ICH collection in the National Archives, National Museum, and the National Library of Malaysia.

Thursday 1st November 2018 | 16:00 – 18:30

The New Era of Museums & Exhibitions

- **Metadata Standards for Virtual Museums (**Project Paper**)**

Stella Sylaiou et al.

Abstract:

The raison d'être of museums are their collections. Museums' main purpose is to collect, preserve exhibit and interpret the objects of artistic, cultural, historical, or scientific significance for the higher reasons of education, study and enjoyment. Museum objects are information carriers. In the Information and Communication Technologies era information about museum objects is documented, organized and communicated with the help of information systems in virtual museums. Considering the working definition of the ViMM project, a virtual museum (VM) can be considered a digital entity that, considering the museum's specificities, enhances, complements, or augments the museum through interactivity, personalization, user experience and richness of content. The virtual museums' context is organized with the help of metadata, the data about the data. This paper presents the main metadata standards used by virtual museums and the qualitative results of an extensive survey conducted in the framework of the ViMM project for identifying the strengths and weaknesses of the main used metadata standards.

- **Coroplastic Studies through 3D Technology: The Case of Terracotta Figurines from Plakomenos, Greece (**Project Paper**)**

Dimitra Sarri et al.

Abstract:

This paper focuses on the ongoing research of terracotta figurines using a 3d modeling method, laser scanning. The aim is to explore the contribution of 3d technology to the study and dissemination of this particular group of archaeological material. This is a pilot project and it concerns a small selection of figurines from the site of Plakomenos, in Corinthia, Greece. The site was excavated in 2003, by the Archaeological Ephoreia of Corinthia, and brought to light a large number of finds that belong to the archaic period (7th -6th centuries BCE). Here, we provide a summary of current efforts to digitize the collection using 3D technology and develop a digital database/library to enhance research, dissemination and preservation of this significant collection.

- **Tell the Story of Ancient Thracians through Serious Game (**Project Paper**)**

Desislava Paneva-Marinova et al.

Abstract:

The technological revolution gives innovative learning tools to the teachers and the possibility to deploy new learning approaches for deeper understanding and better demonstration of the learning content. These tools aim to engage the learners in more active participation during the perceiving of knowledge. This paper presents a new learning approach for studying the ancient Bulgarian history and civilization by realize a storytelling in a serious game. The paper makes an overview of "serious games" and their power to seek creative and logical thought, problem-solving, as well as develop a variety of skills and competencies to the learner. It also includes a short presentation of the "digital storytelling" learning method, which successfully helps instructors to motivate students learning, stimulate curiosity, and to make them interested. Finally, the paper provides details for the proposed approach and its design, mainly with respect to target learning aims, expected outcomes and plans for future improvements.

- **New Cross/Augmented Reality Experiences For the Virtual Museums of the future (**Project Paper**)**

Geronikolakis Efstratios et al.

Abstract:

Mixed Reality (MR) applications and technologies have become quite popular nowadays. They are used in many areas (e.g. Games, Entertainment, Education, etc.). But what about Cultural Heritage? Cultural Heritage is an area that presents a great variety of opportunities for MR applications. These opportunities include storytelling (a way for visitors to learn and retain more information about the exhibitions that they explore), gamified presence (an incentivizing tool to keep them attentive during their visit) and many more. This paper discusses the creation of Cross/Augmented Reality applications for the Industrial Museum and Cultural Center in the region of Thessaloniki, and presents some early results. The region of Central Macedonia has a rich history and its Cultural Heritage is extremely significant. The local importance of Cultural Heritage can be observed in the actions undertaken by local authorities, as well as the region's participation in European Cultural Heritage projects. The creation of Cross/Augmented applications can greatly contribute to the preservation and promotion of Cultural Heritage. These technologies are not only liable to prove very popular with the public due to their current mass appeal; they are likely to shape the Virtual Museums of the future. Overall, the main contribution of this paper is to provide the first bibliographical reference to examine the implementation of Virtual Museums in Cross Reality, Augmented Reality and Virtual Reality using both ARKit and ARCore's latest APIs.

- **3D Models and Virtual Tours for a Museum Exhibition of Vietnamese Cultural Heritage Exhibits and Sites (**Project Paper**)**

Thomas P. Kersten

Abstract:

In this contribution examples of Vietnamese cultural heritage objects of different size and importance, which were reconstructed in 3D from image sequences, in order to manufacture digital (and physical) photo-realistic replicas for an exhibition and for 3D visualisation in virtual applications for museums, are presented. For the „Treasures of the Archaeology and Culture of Vietnam“ exhibition selected cultural heritage objects from different museums in Vietnam were digitised in September 2015 using image sequences taken with a digital reflex camera Nikon D800 and documented in detail by the Photogrammetry & Laser Scanning Lab of the HafenCity University Hamburg. The Treasures of Vietnam, which were never exhibited outside of Vietnam, were shown for the first time in Germany in the context of three exhibitions in the cities of Herne, Chemnitz and Mannheim between October 2016 and February 2018. The workflow from 3D object recording and modelling up to visualisation and 3D printing is described. The results of the generated 3D models and their integration in virtual tours of world heritage sites are presented.

- **An Augmented Reality Mobile App for Museums: Virtual Restoration of a Plate of Glass (**Project Paper**)**

Andrea F. Abate et al.

Abstract:

One of the problems for archaeologic museums is having the opportunity to show most of the objects that they preserve. This is an action they can't afford because of the limitation of exhibition spaces, the high number of artifacts they guard and/or the conditions of the real objects. Nowadays, with the use of cutting-edge 3D technologies, there is the possibility to offer virtual views of objects adding information and enhancing visitor's experience. In this paper, an Augmented Reality app for visualizing restored ancient artifacts is presented. Based on an algorithm that addresses geometric constraints of fragments to re-build the object from parts, the AR application shows a reconstructed artifact offering the possibility for the user to visualize missing fragments. The app has been demonstrated using a real restored glass plate from the Manises Ceramic Museum, under the context of a research project funded by the Spanish Ministry of Economy, Industry and Competitiveness.

- **Touring the Forum Adiectum of Augusta Emerita in a virtual reality experience (**Project Paper**)**

Emiliano Perez et al.

Abstract:

The current advances of Information and Communication Technologies (ICTs) have created new spaces for the recreational participation, mainly on virtual spaces, which can be considered as one of the main drivers of the cultural and creative production. This paper de- scribes the experience in developing and testing an interactive 3D virtual environment for the Aeneas group in the Forum Adiectum. 3D models obtained from different sources can be included in this virtual world after a proper adaptation. We aim to demonstrate that this way of showing Cultural Heritage can motivate and facilitate people's learning of our past rather than traditional media.

- **A Semantically-Enriched Digital Portal for the Digital Preservation of Cultural Heritage with Community Participation (**Project Paper**)**

Cokorda Pramartha et al.

Abstract:

Understanding our past can determine our ability to understand the present. Many people associate cultural heritage with the ancient past and history; however, cultural heritage should be seen as a continuous tradition that lives through daily practices. In this paper, we present the details of our research dealing with one aspect of Balinese culture, the Balinese traditional communication system (kulkul), undertaken in the Indonesian island of Bali. The central aim of our project was to document, organize, and preserve the relevant kulkul knowledge for the benefit of the Balinese community, and the younger generations in particular by designing and developing a digital portal as a dynamic repository. A basic ontology of key kulkul-related concepts and terms and their interrelationships that as part of our digital portal was developed to support the semantic searching and browsing of the online portal and related resources. Much of the content for the digital portal was acquired through community-based crowdsourcing and the informants came from the different geographical areas in Bali. Members from the community were invited to contribute their knowledge to enable the online digital portal to evolve into a living repository of Balinese cultural knowledge. The significant number of digital cultural resources uploaded and the substantial growth of the kulkul ontology by the community are indicators of the success of this research project. The prototype digital portal is implemented on the cloud to facilitate elastic growth and easy user access to the resources both to read and to add content. Finally, the digital portal was made available online and extensive evaluation was carried out based on responses from selected users drawn from community by letting them use and experience the digital portal in order to evaluate the ease of use and usefulness. The evaluation results suggest that, for the most part, the users perceived the digital portal to be relatively useful and easy to use.

- **Towards a Mobile Crowdsourcing System for Collective Memory Management (**Project Paper**)**

Konstantinos Koukoulis et al.

Abstract:

Collective memory characterizes the behavior of certain groups of people that form communities inside an urban environment. Quality of life, as a smart city objective, should concern the understanding of diversity, reducing alienation and preservation of people's intangible cultural heritage. In this paper we attempt to give a first answer to such problems proposing and implementing a trustworthy mobile crowdsourcing system for a collective memory management based on the needs of users, specialists or not. We demonstrate a basic usage scenario to show the strength of the implemented services, along with a first system evaluation showing positive results.

Digital Cultural Heritage Infrastructure

- **PHOTOCONSORTIUM: Opening Up the Riches of Europe's Photographic Heritage (**Project Paper**)**

Valentina Bachi et al.

Abstract:

Digitization and crowdsourcing actions are fostered by the European Union for enhancing access and citizens' participation in culture and research. Several experiences are demonstrating how tangible and intangible heritage is moving nowadays from the concept of representing objects to that of safeguarding memories and stories related to those objects. This process means to have richer, more complex and heterogeneous metadata associated to digital objects. To leverage on such richness of information, new approaches for improving searchability/retrievability of digital resources, storytelling and reuse are developing. Also, dealing with crowdsourced contributions of various types poses new challenges for curation and preservation methods in heritage institutions and across separated repositories, where linked objects and resources lie. PHOTOCONSORTIUM, the international consortium for photographic heritage, is exploring the potential of technologies, which can make possible to enrich metadata and utilize photographic heritage at best for different purposes in education, creative industry, and research.

Friday 2nd November 2018

TIME	PLENARIES AND SESSIONS
08:30 - 18:30	REGISTRATIONS
09:00 - 10:30	EuroMed 2018 - PROJECT PAPERS Digital Cultural Heritage Infrastructure
10:30 - 11:00	Coffee Break
11:00 - 13:00	EuroMed 2018 - PROJECT PAPERS Digital Cultural Heritage Infrastructure Non Destructive Techniques in Cultural Heritage Conservation E-Humanities
13:00 - 14:00	Lunch
14:00 - 15:30	EuroMed 2018 - PROJECT PAPERS E-Humanities
15:30 - 16:00	Coffee Break
16:00 – 18:30	EuroMed 2018 – SHORT PAPERS Reconstructing the Past Visualisation, VR & AR Methods and Applications
19:00	Free

Friday 2nd November 2018 | 09:00 - 10:30

Digital Cultural Heritage Infrastructure

- **Digital 3D Reconstruction Projects and Activities in the German-speaking Countries (**Project Paper**)**

S. Münster et al.

Abstract:

3D reconstructions are important media to educate and investigate history and to research cultural heritage. Against the background of networking and monitoring activities of the workgroup for Digital Reconstruction of the Association for Digital Humanities in the German-speaking area this paper is dedicated to showcase and systematize a range of current work priorities in the German-speaking countries. It aims on strengthening the image- and object-based research within the framework of Digital Humanities.

- **Towards a Global Infrastructure for Digital Cultural Heritage (**Project Paper**)**

Nadezhda Povroznik

Abstract:

The development of global information infrastructure for digital cultural heritage is a key to ensuring the openness and accessibility of objects of such heritage on a global scale, increasing the economic, social and cultural impact of the created resources and services, and more efficiently addressing social priorities. Author shows that documentation systems play an important unifying role in the modern world of information infrastructure for digital cultural heritage. The diversity of information resources requires further study and classification, which is also necessary for more detailed documentation and cataloging of these resources. The development of systems for documenting information resources for digital cultural heritage on a global scale is continuing and has great potential in terms of systematizing data on information resources. This article examines the current state of information infrastructure for digital cultural heritage, identifies primary components and discusses their significance, determining obstacles to the formation of this infrastructure, and tracing the development of the digital cultural heritage infrastructure.

- **The Role of Heritage Data Science in Digital Heritage (**Project Paper**)**

Alejandra Albuerne et al.

Abstract:

The advance of all forms of digital and virtual heritage alongside numerous heritage science and management applications have led to the generation of growing amounts of heritage data. This data is increasingly rich, diverse and powerful. To get the most out of heritage data, there is an evident need to effectively understand, manage and exploit it in a way that is sensitive towards its context, responding to its singularities, and that can allow heritage to keep up with global changes regarding expansion of digital technologies and the increasing role of data in decision making and policy development. Through conversations with industry and academia, as well as through their personal research in the field of cultural heritage, the authors have identified a need for enhanced training for data scientists to prepare them for working in the heritage sector. This paper first proposes a definition of the term heritage data, so far missing from the literature, and then presents the academic rationale behind the identified need for targeted training in data science for cultural heritage.

- **Interdisciplinarity of Cultural Heritage Conservation Making and Makers: Through Diversity Towards Compatibility of Approaches (**Project Paper**)**

Anna Lobovikov-Katz et al.

Abstract:

In conservation of cultural heritage (CCH), experts from diverse areas of knowledge work together, each of them contributing unique expertise. However, in modern dynamic multi- and interdisciplinary collaboration, new contributors often remain conservation outsiders, being deeply submerged in their own research areas with regard to their research methods, their view of hierarchy of aims and values of conservation of cultural heritage, etc. Their understanding of targets of input and outcome of their compartmentalized contribution to specific conservation problems might be incompatible with the principles and criteria of modern CCH, thus affecting productivity of such contribution. This paper focuses on this conflict by examining selected relevant aspects based on the experience of the collaborative interdisciplinary research in conservation of cultural heritage.

- **Capitalize on the experience of the ATHENA project for Cultural Heritage for the Eratosthenes Centre of Excellence for the benefit of the East Med region (**Project Paper**)**

Diofantos G. Hadjimitsis et al.

Abstract:

The “ATHENA” H2020 Twinning project seeks to establish a Center of Excellence in the field of Remote Sensing for Cultural Heritage through the development of an enhanced knowledge base and innovative methods in the areas of Archaeology and Cultural Heritage. This paper presents an overview of the ATHENA twinning project as well a review of the remote sensing in archaeology. The ATHENA stakeholder hub is presented through a WEBGIS platform. The importance of capitalizing on the experience of running the ATHENA project for the benefit of the ERATOSTHENES Centre of
Excellence (ECoE) is explained. In recent years, Earth Observation (EO) techniques have been used extensively for archaeological and cultural heritage applications, which makes the ECoE a key player in EO activities in the Eastern Mediterranean region. The different areas that are under the umbrella of the remote sens- ing in archaeology sector are categorized based on the review findings. Finally, how Earth observation and remote sensing is spread out through research activities in the Eastern Mediterranean region from 1998 to 2018 is presented based on the Scopus engine.

- **On the Pathway to Success: Becoming a Leading Earth Observation Centre through the EXCELSIOR Project (**Project Paper**)**

Diofantos G. Hadjimitsis et al.

Abstract:

This paper presents the pathway towards the establishment of the ERATOSTHENES Centre of Excellence (ECoE), through the upgrade of the existing Remote Sensing & Geo-Environment Group – ERATOSTHENES Research Centre (ERC), within the Cyprus University of Technology (CUT). The ECoE aspires to become a sustainable, viable and autonomous Centre of Excellence for Earth Surveillance and Space- Based Monitoring of the Environment. The ECoE will provide the highest quality of related services in the National, European, Eastern Mediterranean and Middle East and Northern Africa areas (EMMENA). Therefore, drawing on the capitalization of experience and knowledge from previous projects and the research areas and international networks of the ERC, this papers highlights the importance of the establishment of the ECoE in the EMMENA area.

Friday 2nd November 2018 | 11:00 – 13:00

Digital Cultural Heritage Infrastructure

- **The Role of Information and Communication Technologies for Enhancing Access to Cultural Content (The example of Bulgaria) (**Project Paper**)**

Mariela Modeva

Abstract:

The paper presents the more important highlights of a research on the role of information and communication technologies in expanding access to cultural content in the concrete social context in Bulgaria. The subject now is not studied in a comprehensive way. Separate documents and articles are covered various aspects of the problem. In Bulgaria, there is no comprehensive work devoted to this issue. The author does not claim full comprehensiveness of the subject concerned. Account is taken of the fact that a number of researchers, international and national institutions working on the topic of access to cultural content have been interested in it. Specific accents are made and the current state of the problem in Bulgaria is analyzed. Particular attention is given to the digitization in public cultural institutions of memory - libraries, museums, archives where long term availability of cultural content and its long-term accessibility is provided. Good practices are presented, problems that are more important are outlined, results and conclusions are drawn and recommendations are made for possible solutions to the problems. The results of the study confirmed the hypothesis that information and communication technologies play a key role in preserving cultural values and can foster the expansion of access to cultural content. The conclusions highlight the impact of the digitization of cultural values on the economic growth of Bulgaria by taking into account the education, tourism, research and the involvement of the local industry.

Non Destructive Techniques in Cultural Heritage Conservation

- **Contribution of e-Documentation to Technical Rescue Works and Conservation of the Mural Painting of the Dome of Blessed Ladislaus' Chapel in St. Anne's Church in Warsaw. (**Project Paper**)**

Katarzyna Górecka et al.

Abstract:

The paper presents the application of various 3D imagining methods to study the state of the mural painting in the dome of Blessed Ladislaus' Chapel of St. Anne's Church in Warsaw. The temple was built on the embankment of the Vistula river in the XV-th century. The chapel was added to the nave in the XVII-th century. From the beginning this location of the church caused a lot of structural problems. The church stability was disturbed due to digging an underground tunnel nearby in the years 1947-49. The Ladislaus' Chapel, situated close to the tunnel on the side of the escarpment was the most endangered. The current rescue work of the mural painting of the chapel dome required an accurate measurement and inventory of the architectural structure. The dome was measured using various methods: laser scanning and photogrammetry. As a result we obtained 4 models of the chapel dome, which could be combined and compared.

- **On the Integration of Digital 2D and 3D Survey Models for the Geometrical Configuration and the Damage Assessment of a Medieval Building in Venice (**Project Paper**)**

Antonella Manzo

Abstract:

Nowadays more and more innovative survey techniques allow gathering detailed information about historical buildings, their present conditions, the materials composing them and the structural problems mining their stability. Within this context, the integration of digital 2D and 3D survey models can provide a deeper insight on both the present geometrical configuration and the constructive phases, allowing, at the same time, a detailed damage assessment. More specifically, an overview of the complex geometries, the irregular cross-sections and vertical deviations of the buildings can be achieved by juxtaposing sections taken from the point cloud with orthophotos or images obtained through digital rectification. This method can also be used as a support to visual analyses such as stratigraphic or crack pattern surveys. The present paper discusses the advantages of integrating the modern survey techniques of laser scanning and photogrammetric models through photorealistic images and accurate measurements of the Venetian Byzantine church of Santa Fosca on Torcello Island. This building, indeed, lends itself well to the purpose of this work, due to its peculiar geometrical configuration, the numerous modifications occurred throughout the centuries and the current structural damages.

- **A Methodology for the Inspection and Monitoring of the Roof Tiles and Concrete Components of the Sydney Opera House (**Project Paper**)**

Gianluca Ranzi et al.

Abstract:

The Sydney Opera House is a world-class performing arts center and is recognized internationally as a modern architectural masterpiece. This paper describes recent work focused at the development of an inspection and monitoring methodology for the roof tiles of the Sydney Opera House that aligns with the current tile tap testing regime. The particularity of the proposed approach relies on its ability to uniquely identify the location of the tile being tap tested within the building geometry and to associate it to the corresponding measurements and condition assessment evaluation. The outcome of this process is presented in a graphical form based on a simple three color ranking scheme that rates the tiles' conditions from good to acceptable and poor. It is expected that such output could be presented in various forms, such as in a BIM model. Within this procedure, the measurements can be stored for future reference and for the evaluation of historical trends. The broader use of this approach is then briefly highlighted by considering other non-destructive testing techniques and an example is presented in the final part of the paper in relation to concrete components.

- **Inventarisation and non-invasive investigation in the Bieliński Palace in Otwock Wielki (**Project Paper**)**

A. Kaliszewska et al.

Abstract:

The paper presents the ongoing project conducted by an interdisciplinary team at the Bieliński Palace in Otwock Wielki, near Warsaw (Poland). The main aim of the project is to document the architecture and architectural elements with the use of digital methods such as photogrammetry and 3D scanners, as well as investigating the construction phases of the palace, through the analysis of the digital data collected.
The Bieliński Palace is an example of élite architecture of the Baroque period in Poland. Thought the architect responsible for the original plans remains unknown, the plan, the proportions, as well as architectural details find good parallels in the finest buildings of the capital of that time, and show clear inspirations from the western examples of the architecture of the period.
Since the archival data is very scarce, the only way to learn about the history and construction phases of the palace is through a detailed analysis of the building's structure. To this aim we perform a series of analyses of the digital data, such as wall flatness analysis and laser beam refraction intensity. We believe that the careful analysis of the data collected for the purpose of documentation can reveal valuable information that will contribute to our understanding of the building's history.

- **Digital Preservation and Record of War Fortifications - A Case Study of Qiong-Lin Defense Tunnel in Taiwan (**Project Paper**)**

Wun-Bin Yang et al.

Abstract:

The application of digital technology in the preservation of cultural assets is an international common trend. It combines the acquisition and preservation of integrated data which is very practical for the demonstration of various analysis and diversification. In 2017, 19th General Assembly of the International Ruins and Monuments Council Conference held in India states that government have the responsibility to identify, evaluate, record all of heritage sites and raise awareness of their importance. Therefore, digital preservation technology should be made universal in researching digital asset preservation. This project is based on the concept of digitalized conservation technology development. In order to implement the preservation and management of cultural assets, 3D laser scanning and control survey were used to record Taiwan Qiong-Lin civil defense underground tunnel digitally. To achieve the preservation and development of future cultural assets, this project also includes 3D point cloud models for tiled digital topographic map, urban planning, etc.

- **Digitizing the building site for restoration projects: from ALM technologies to innovative material scenarios (**Project Paper**)**

Marco Medici et al.

Abstract:

The ongoing synergy between the digitization of the building process and new paradigms related to the production of architectural constructions and building elements, addresses the definition of new scenarios that are worth investigating. The recurring question, indeed, is how the most advanced digital techniques for material production can have a tangible impact on architecture and its morphological languages. In the field of building design, the chance to turn digital data into matter represents a key point to deal with, in order to demonstrate the possibility to transfer actual benefits from other sectors related to the construction industry. This new technical asset links the digitization of processes with the industrialization of building products. The present research aims at deepening the opportunity of Additive Layer Manufacturing technologies, alongside the current Building Information Modeling and parametric design methods, to push further the hitherto established decision-making rules and the conventional building site organization, towards a sustainable development.

E-Humanities

- **Chronologicon Hibernicum: A Probabilistic Chronological Framework for Dating Early Irish Language Develop¬ments and Literature (**Project Paper**)**

Fangzhe Qiu et al.

Abstract:

This paper introduces the ongoing ERC-funded project Chronologicon Hibernicum, which studies the diachronic developments of the Irish language between c. 550-950, and aims at refining the absolute chronology of these developments. It presents firstly the project organization, its subject matter and objective, then gives an overview of the potentials and challenges in studying the Early Irish language. The project combines historical linguistic analysis, corpus linguistic methods and Bayesian statistic tools. Finally the paper explains the impact of this project in preserving the Irish cultural heritage and the lessons learned in the first three years.

Friday 2nd November 201 | 14:00 - 15:30

E-Humanities

- **Ancient Asian Character Recognition for Literature Preservation and Understanding (**Project Paper**)**

Lin Meng et al

Abstract:

This paper introduces a project for automatically recognizing ancient Asian characters by image processing and deep learning with the aim of preserving Asian culture. The ancient characters examined include Chinese and Indian characters, which are the most mysterious, wildly used, and historic in the ancient world, and also feature multi- ply types. The automatic recognition method consists of preprocessing and recognition processing. The preprocessing includes character segmentation and noise reduction, and the recognition processing has a conventional recognition and deep learning. The conventional recognition method consists of feature extraction and similarity calculation or classification, and data augmentation is a key part of the deep learning. Experimental results show that deep learning achieves a better recognition accuracy than conventional image processing. Our aim is to preserve ancient literature by digitizing it and clarifying the characters and how they change throughout history by means of accurate character recognition. We also hope to help people discover new knowledge from ancient literature.

- **Preservation and Management of Greek Dialectal Data (**Project Paper**)**

Eleni Galiotou et al.

Abstract:

Greek dialects of Asia Minor are considered as ideal case studies on the elucidation of the evolution of the Greek language as well on different phenomena of language contact, due to their longtime contact with the Turkish language and their relative isolation from the other Greek dialects. In fact, the dialects in question constitute a rich cultural and language heritage in threat of extinction. Therefore, there is an urgent need of describing and preserving this invaluable heritage. In this paper, an innovative system of archiving and management of digitized written and oral data from three Greek dialects of Asia Minor (Pontic, Cappadocian, Aivaliot) is presented. The system also contains a search and retrieve component which enables: (a) a combined search at different levels of linguistic representation, (b) combined search in both written and oral data and (c) access to metadata.

- **Unlocking Potential Knowledge Hidden in Rubbing (**Project Paper**)**

Lin Meng et al.

Abstract:

Rubbings are among the oldest ancient literatures and potentially contain a lot of knowledge waiting to be unlocked. Constructing a rubbing database has therefore become an important research topic in terms of discovering and clarifying the potential knowledge. However, current rubbing databases are very simply, and there is no process in place for discovering the potential knowledge discovery. Moreover, the rubbing characters need to be recognized manually because there are so many different character styles and because the rubbings are in various stages of damage due to the aging process, and this takes an enormous amount of time and effort. In this work, our aim is to construct a spatiotemporal rubbing database based on multi-style Chinese character recognition using deep learning, that visualizes the spatiotemporal in- formation in the form of a keyword of rubbing images on a map. The idea is that the potential knowledge unlocked by the keyword will help with research on historical information organization, climatic variation, disaster prediction and response, and more.

Friday 2nd November 2018 | 16:00 - 18:30

Reconstructing the Past

- **Supporting Automatic Extraction of HBIM Features (**Short Paper**)**

Javier Román Cembranos et al.

Abstract:

The purpose of this paper is just detailing a state-of-the-art procedure for the automatic recognition of specific 3D shapes from point clouds of immovable heritage assets supported on a tailored tool using PLY, PTX and PTS formats as input files. To make this tool functional and widely used, it is currently developed as a plug-in for the well-known and representative REVIT BIM software package.The procedure is particularly applied to the Castle of Torrelobatón (Valladolid, Spain) to allow the automation in cataloguing of required elements, as illustrative example of the defensive architecture from the Middle age to the Renaissance in Europe, reason why it is one of the pilot sites of the INCEPTION project. Thus the HBIM process is enhanced, which is continuing right through to provide better services to technicians, scholars and citizens.

- **Three Dimensional Modelling and Analysis of Ancient Indian Structures (**Short Paper**)**

Kondam Namratha Reddy et al.

Abstract:

Ancient structures in India are the practical remains of the past. Exploring these structures helps to understand the structural significance of each and every part precisely and techniques used. The main objective of this research is to model and analyze the historical structural components, in terms of geometry and their arrangement to understand reasons for their higher stability. Columns are one of the major structural elements in transmitting the loads which have both aesthetic appeal and structural significance. For this study, columns and simple mandapas (pillared halls/sanctum) of structures at different ages in the past are considered and analyzed using the 3D models in Autodesk Inventor. The analysis includes mode shapes and stress distribution of these columns and mandapas under gravity. The results attained show the geometry of the structure plays a crucial role in its behavior when subjected to gravity loads. Further this research work will be fundamental for future studies to understand the effects of geometry on the stability of the structure and the scientific reason behind the usage of such designs.

- **A Framework for Semantic Interoperability in 3D Tangible Cultural Heritage in Taiwan (**Short Paper**)**

Chiao-Ling Kuo et al.

Abstract:

Cultural heritage (CH) preservation and management plays a significant role for conserving valuable properties and facilitating relevant historical studies of a country. Advanced technologies developed for CH preservation and management in recent years has made CH digitalization and documentation easily and generated tremendous data for a wide range of applications. However, a great focus among a huge number of CH data is still the CH semantic interoperability because various standards or schemas are applied during data generation. Thus, to make the 3D CH semantic interoperability, an ontology based approach for 3D tangible CH including 3D models, metadata and their restoration information in the whole life-cycle of building information model (BIM) will be proposed and comprehensively discussed in this research. A tangible cultural heritage (TCH) ontology is developed based on a top-level ontology, CIDOC CRM, for heritage information, metadata and restoration accessing which is achieved by mapping from the designated heritage in the national cultural heritage database (NCHDB) with DC-based metadata to CIDOC CRM and from an enriched Heritage BIM (HBIM) with restoration information encoded as industry foundation classes (IFC) ontology to the CIDOC CRM. The proposed framework can successfully combine the 3D model and its enriched information, and available for a 3D model semantically accessing and integration. In this research, we focus on the discussion of the Taiwan's traditional Southern Fujian architecture.

- **Reconstructing the Historic Landscape of Larochette, Luxembourg (**Short Paper**)**

Marleen de Kramer et al.

Abstract:

Cultural Heritage education relies on a solid foundation of scientifically validated knowledge. This case study shows how different disciplines come together to source, combine, and interpret data for a landscape reconstruction of Larochette, Luxembourg. It is the initial stage of a larger interdisciplinary project to create an educational game that highlights the tangible and intangible heritage that can be traced in the town's structures even today.

- **Digital preservation of the Nottingham Ichthyosaur Using Fringe Projection (**Short Paper**)**

Petros Stavroulakis et al.

Abstract:

Natural heritage is an important part of cultural heritage. More specifically, the protection and preservation of the unique biodiversity of flora and fauna in a specific region is an important part of preserving and celebrating the cultural diversity and identity of a region and of a nation. Nottingham is a home of pre-historic natural heritage and specifically of the 'Nottingham Ichthyosaur'; a new species *Protoichthyosaurus applebyi* named in 2017 which was discovered in the area, probably in the early part of the 19th century. The near-complete type specimen of the species is on display at the Life Sciences building of the University of Nottingham. In this work, we describe the process which was used to digitally preserve the specimen which, it is hoped, will be lodged in an appropriate museum. The purpose of the digital preservation would be to aid teaching and research purposes as well as exploit the data for further distributed research by other natural scientists. To digitise the fossil, which was embedded, in cement a commercial fringe projection system was used to register the bone structure and grayscale imaging was used to register the texture of the bones on display.

- **Resilience and Preservation of Cultural Heritage after Natural Disasters: case study of city of Volos, Greece (**Short Paper**)**

Mprouzgou Maria et al.

Abstract:

Natural disasters and their interaction with cultural heritage are a global phenomenon that has come to the attention of the scientific community the last decade. Preventive measures and policies have been developed in order to protect the natural and cultural environment of the humanity. The current study aims at the identification of cultural heritage, its interaction with natural disasters and the up-to-dated developed policies for Volos city in Prefecture of Magnesia, in Greece. The social and economic implications of a heritage at risk, are corroborated by the example of the '50s earthquake at Magnesia Prefecture. The current research indicates that Greek policies are not well targeted, and they are without a vision. Additionally the preventive taken measures are not cost effective and the local community is not aware of the existing risk. Thus, in the current research are proposed a few non-constructive measures such as: i) the creation of a local natural disaster and cultural heritage data-base, ii) the enhancement of the public awareness concerning the natural disasters and its effect on cultural heritage and iii) the promotion of cultural heritage and its value. Aiming at cultural resilience and sustainable development of the region, the proposed measures must also be supported by a strong legal framework.

Visualisation, VR&AR Methods and Applications

- **The Epigraphic Museum of Athens Revisited (**Short Paper**)**

Dr. Athanassios Themos et al.

Abstract:

The main ideas behind the re-exhibition of the permanent collections of the Museum and the use of digital media are presented. For the first time in the Museum, the re-exhibition is supported by digital means. The Museum has focused on touchscreen displays together with mobile devices for organising and supporting the visitors. The Museum tablet application presented, allows the user to get a multilingual integrated approach for each item on display. The plans of the museum are focusing on augmented reality applications running on visitors' smartphones. It is also shown that despite the restricted nature of the museum artifacts (fragments of stones with partial inscriptions) digital presentations can be successfully created, if complementary combined information from other archaeological fields and published research is employed.

- **A Roman in Venice (**Short Paper**)**

Gaia Trombin et al.

Abstract:

Digital documentation of cultural heritage is important especially for endangered monuments. Nowadays fast and low-cost SfM techniques are available, but it is not always possible to digitally acquire the whole artefact, because it is fragmentary or not totally accessible. Combining the 3D acquisition of the object with the 3D modeling of the missing parts allows the hypothetical reconstruction of the original aspect of the monument. A case study will be presented here, regarding a Roman altar reused in Venice.

- **Virtual Reality for Cultural Heritage Monuments – From 3D Data Recording to Immersive Visualisation (**Short Paper**)**

Thomas P. Kersten *et al.*

Abstract:

Recent advances in contemporary Virtual Reality (VR) technologies are going to have a significant impact on everyday life. Through VR it is possible to virtually explore a computer-generated environment as a different reality, and to immerse oneself into the past or in other virtual environments without leaving the current real-life situation. Cultural heritage (CH) monuments are ideally suited both for thorough multi-dimensional geometric documentation and for realistic interactive visualisation in immersive VR applications. Furthermore, VR is increasingly in use for virtual locations to enhance a visitor's experience by providing access to additional materials for review and deepening knowledge either before or after the real visit. Using today's available 3D technologies a virtual place is no longer just a presentation of geometric environments on the Internet or a virtual tour of the place using panoramic photography. Additionally, the game industry offers tools for interactive visualisation of objects to motivate users to virtually visit objects and places. This paper presents the generation of virtual 3D models for different cultural heritage monuments and their processing for data integration into the two game engines Unity and Unreal. The workflow from data acquisition to VR visualisation using the VR system HTC Vive, including the necessary programming for navigation and interactions, is described. Furthermore, the use (including simultaneous use of multiple end-users) of such a VR visualisation for CH monuments is discussed.

- **A Project for Museo Civico Castello Ursino in Catania: Breaking Through Museum Walls and Unlocking Collections To Everyone (**Short Paper**)**

Cettina Santagati et al.

Abstract:

This paper presents the preliminary ideas for the improvement of the cultural offerings' standard and fruition of the Museo Civico Castello Ursino in Catania. In conceiving the project, the requests of the European Commission, the European Digital Agenda, and the Directive on Public Sector Information (PSI) have been taken into consideration. In particular, the digitisation of cultural heritage (embedding museums, libraries, and archives) and its accessibility on a large scale. Among the aims of the project, there are the creation of a digital archive; 3D digitalisation of the museum's collections and their online accessibility; and the use of immersive and interactive solutions for a better audience involvement.

- **Archaeological Landscape Heritage (**Short Paper**)**

Biancardi Michela et al.

Abstract:

The new information and communication technologies (ICT) are playing an increasingly predominant role in contemporary society. We must provide the opportunity to experiment and to develop new possible interactions between narrative techniques and multimedia tools able to promote our Cultural Heritage. Actually, it's very important to focus our attention on trying to get over knowledge from generation to generation, through ICT. This work shows the results of a research project, implemented in close partnership (named Eridano museum network) among a University laboratory of Emilia-Romagna High Technologies Network (TekneHub), Regional Museum Pole Emilia-Romagna, two National Museums, four civic Museums, one Archaeological dig and a creative enterprise (TryeCo 2.0 srl). The study primarily investigates how ICT can contribute to enhancing Cultural Heritage Education, adding value to cultural and didactic activities in museums. In this perspective, all Museums of Eridano network have tested innovative learning and teaching tools, thanks to user-centered design methodology, focusing virtual views, interactive technological platforms, games and immersive experiences. The researchers' team builds a web platform, using VR cardboards linked to the innovative YouTube's feature, 3D-VR-360 videos, through which is possible to discover ancient archaeological landscapes on Eridano river. Then this research aims to investigate new possible interactions between these tools and methodological approaches in the development of FOSS (Free and Open Source Software) Tools, especially OpenWebGIS (Geographic Information System), considering the growing social demand to have an inclusive fruition of cultural and landscape heritage. This new approach highlights the importance of a clearly defined communication strategy able to be inclusive for the different stakeholders of the Cultural Heritage, from museum workers to museum users.

- **A Case Study of Digital Preservation of Motion capture for Bā Jiā Jiāng performance, Taiwan Religious Performing Arts (**Short Paper**)**

Yun-Sheng Syu et al.

Abstract:

Bā Jiā Jiāng (eight generals) are performers painted their faces, playing four generals Gan, Liu, Xie, Fan, and the Four Seasons God and other characters. When the celebration festival parade, as Lord God's the guardian team. It is an intangible cultural heritage of Taiwan's important religious and performing arts. This project sponsored by Bureau of Cultural Heritage, Ministry of Culture(BOCH), Taiwan in 2017, the subject of study was Sheng De Temple, a traditional Bā Jiā Jiāng troupe of Beigang, Yunlin, Taiwan. The project uses optical motion capture technology to digitalize two Bā Jiā Jiāng actors performing in the parade and square, recording to three-dimensional digital motion information, and creating virtual reality software to present the results of technological applications. This is a interdisciplinary integrated project that includes religious folklore, performing arts, and digital technology.

- **Interactive Media Art Based on Location and Motion Tracking of Multi-performers (**Short Paper**)**

Haeyeon Won et al.

Abstract:

In this study, we present a novel interactive media art framework on the theme of culture heritage. From existing research and case studies, interactive media art has shown that the audience be build their own identity through interaction during the process of the artwork, and aesthetic experiences are possible through the origin of folk games. The combination of folk play and interactive media art is considered to have aesthetic commonalities, and it can be presented as a new direction for using traditional culture and the possibility of interactive media art. In this paper, we proposed a framework that is designed for interactive media based on location and hand-motion of multi-performers. Otherwise, from existing methods, we reproduce the changing aspects of folk play that develop from the game, and the interactive media art is performed by a collaboration of multiple performers. To this end, we introduce a conceptual framework for verifying its feasibility.

- **Ego-centric Recording Framework for Korean Traditional Crafts Motion (**Short Paper**)**

Eunsol Jeong et al.

Abstract:

The transmission and safeguarding of intangible cultural heritage (ICH) follow an apprenticeship manner for education. However, people have problems that cannot continue to implement education because of time, space, economic and environmental constraints. Utilizing information and communication technology (ICT), these problem can be settled. Particularly, in this paper, we propose a novel 3D hand motion recording framework to record the motions of the craftsperson in the ego-centric view using Leap-motion vision sensors. In contrast to the existing 3D hand motion recording frameworks, we adopt a head-mounted Leap Motion for recording the ego-centric view of handcraft motions and use the other Leap Motion to solve the problem of severe self-occlusions between the fingers. For the target content for recording, we select Nubi, which is a traditional sewing technique in Korea, and a Nubi craftsperson is designated as the ICH of Korea. From the preliminary experiments, we confirm that the proposed framework can be applied to recording the various sewing hand motions effectively.

- **Digital workflow for Virtual and Augmented visit of Architecture (**Short Paper**)**

Cecilia Maria Bolognesi

Abstract:

This paper adopts Virtual and Augmented reality experiences to be enjoyed in a historical place as tools and bust for the knowledge and dissemination of the culture of a landscape.
The development of this virtual pipeline is focused on some Neoclassical architecture built in the monumental park of the Reggia of Monza and considers the semantic modeling of the digital survey to support a virtualized and augmented environment for culture production and culture dissemination.
The workflow described regards: construction of semantic relations between the various architectures of the case history; survey of the same buildings with advanced technologies; modeling of point clouds to create parametric 3D models of the existing through digital modeling of elements and buildings; experiments of virtual environments; experiences of augmented reality. It considers the buildings as virtual hubs to describe their history and the landscape they set up, where one is related to the other in the same Park by perspective green paths as a spread museum; the aim is a fruition renewed by immersive realities to be enjoyed in situ [1] brought to public, to smart users, for a better knowledge of Cultural Heritage. Due to the integration and interoperability among different technologies many issues grow during the research, [2] and it considers them steps necessary to be investigated.

Saturday 3rd November 2018

TIME	PLENARIES AND SESSIONS
08:30 - 18:30	REGISTRATIONS
09:00 - 10:30	EuroMed 2018 - SHORT PAPERS Visualisation, VR & AR Methods and Applications Digital Applications for Materials Preservation in Cultural Heritage Digital Cultural Heritage Learning & Experiences
10:30 - 11:00	Coffee Break
11:00 - 13:00	EuroMed 2018 - SHORT PAPERS Digital Cultural Heritage Learning & Experiences
13:00 - 14:00	Lunch
14:00 – 18:30	Free

Saturday 3rd October 2018 | 09:00 - 10:30

Visualisation, VR&AR Methods and Applications

- **Usage Scenarios and Evaluation of Augmented Reality and Social Services for Libraries (**Short Paper**)**

Zois Koukopoulos et al.

Abstract:

Libraries are cultural environments that aggregate large volumes of cultural content accessible by experts and the broad public. The continuous attraction and engagement of visitors, along with the production of revenue for the institute are two of the biggest challenges in such an environment. In this work, we propose the provision of Augmented Reality and social services trying to address those challenges. We implement and use as a testbed Active Visitor, a system that offers such services aiming at investigating services' acceptability by visitors and librarians. We propose and implement a series of usage scenarios that use such services in order to facilitate the user activities within a library environment. A specific evaluation methodology is applied to stress the strength of the presented services. The evaluation results provide a first positive indication about the benefits that Augmented Reality and social services introduce in a library environment.

- **Evaluating the Impact of a Virtual Reality Application in Raising Awareness Toward the Destruction of Cultural Heritage Sites (**Short Paper**)**

Christos Hadjipanayi et al.

Abstract:

The aim of our work is to investigate the applicability of Virtual Reality (VR) in raising awareness of users in relation to the destruction of important monuments. The proposed methodology involves the exposure of users to three virtual environments displaying the original state of a monument, the current state and the predicted future state of the same monument in the case that the monument is not maintained. The exposure to the three states of the same building allows the user to experience the "glorious days" of a monument and compare them to the current and future states in an attempt to realize the level of destruction that could occur to the building if the monument is not maintained properly. As part of a pilot case study, a number of volunteers were asked to navigate in virtual environments depicting the three chronological states of a landmark building. Preliminary results indicate a significant increase of the intensity of negative emotions of the users, indicating the applicability of VR in alerting the society toward the destruction of important monuments.

- **Using Linked Data for Prosopographical Research of Historical Persons: Case U.S. Congress Legislators (**Short Paper**)**

Goki Miyakita et al.

Abstract:

This paper shows how biographical registries can be represented as Linked Data, enriched by data linking to related data sources, and used in Digital Humanities. As a use case, a database of 11 987 historical U.S. Congress Legislators in 1789–2018 was transformed into a knowledge graph. The data was published as a Linked Data service, including a SPARQL endpoint, on top of which tools for biographical and prosopographical research are implemented. A faceted browser named U.S. Congress Prosopographer with visualization tools for knowledge discovery is presented to provide new insights in political history.

- **CHISTA: Cultural Heritage Information Storage and reTrieval Application (**Short Paper**)**

George E. Raptis et al.

Abstract:

More and more people use software applications and the Internet in their daily routine. Cultural heritage has been a favored domain for using such interactive software systems. Heritage sites, cultural institutions, and travel agencies provide visitors with digital applications, such as information retrievers and guides, aiming to enhance their visit experience. However, such applications support mainly visits at indoor than outdoor environments, are site-dependent as the information is provided for limited and speci_c cultural heritage items, and they are not customizable to store new information. Our previous work [9] overcome such issues, and in this paper, we extend that work by leveraging the recent technological advances in the telecommunications and the computer science domains. In this paper, we present the design and the preliminary evaluation of CHISTA3, which is an application for storing and retrieving information related to cultural heritage artifacts, sites, facts, etc. using computer vision techniques. We envision that CHISTA will be used by visitors and travelers to obtain cultural heritage information, which is provided by authorized third parties, using common technologies, such as their smartphones and the Internet.

Digital Applications for Materials Preservation in Cultural Heritage

- **Ancient Sandbox Technique: An Experimental Study using Piezoelectric Sensors (**Short Paper**)**

Trishala Daka et al.

Abstract:

Ancient Indian temples are accredited for their immaculate style of construction. These temples are resistant to most natural calamities due to their geometry, material and construction technique. Of these, the foundation is considered to be the major contributing factor for their structural stability. Research on ancient foundation techniques can bring about a huge impact on today's foundation technologies. This paper presents a study on the Sandbox Technique for foundations, which was used around the 11th century, by the Kakatiya Dynasty in Telangana (South India). The sandbox technique was used to build the foundation for two major temples in Telangana viz. Ramappa temple and 1000 pillar temple. As part of our study, we carried out experiments on sand (dry and wet) and wet Red soil materials by building a model which mimics the Sandbox technique. In this context, piezoelectric knock sensors are used to capture the vibrations. We determined the dampening of vibrations for sand (dry & wet) and wet Red soil for various types of loads. Our analysis of the results obtained shows that sand with water absorbs more vibrations as compared to dry sand and wet Red soil.

- **Application of Non-Destructive Techniques (Raman spectroscopy and XRF) Into an Icon by Michael Damaskinos (**Short Paper**)**

Nikolaos Gkoultas et al.

Abstract:

The tremendous growth of technology, aims to serve human and scientific methods, which serve the analysis of the study of our cultural heritage. Initially, most techniques developed, applied to different fields of the cultural heritage, however along the way it was observed that they serve in the analysis of works of art. Such techniques are Raman spectroscopy (Raman spectroscopy) and X-ray Florescence (XRF). In this thesis, we present the study of these techniques on a portable icon of Michael Damaskinos of the Cretan School of the 16th century. Specifically, a study will be conducted on the chemical composition and pigment detection of qualitative and quantitative data in a portable picture of Michael Damaskinos of the Cretan School of the 16th century. The object of this study, is associated with P.G.C. (Post Graduate Course) as it includes innovative applications of automation technologies. The study will cover the gap in the literature of icons and inferences will be made on the use of Raman Spectroscopy and XRF.

- **Pigments Identification in Oil Paintings of 18th – 19th Century From the Museum of Post-Byzantine Art of Zakynthos Using Raman Spectroscopy and XRF (**Short Paper**)**

Katerina Koutliani et al.

Abstract:

The aim was to use non – destructive spectroscopic techniques in selected paintings of the Ionian School of the Museum of Zakynthos, under the supervision of the Ephorate of Antiquities of Zakynthos. We used Raman and XRF spectroscopy in order to identify the pigments of the paintings. In our investigation, the use of these techniques for the first time at the Museum of Post-Byzantine Art of Zakynthos is more than essential due to the historical particularities of the Island. A massive earthquake, followed by a wildfire within the city bounds devastated the Island of Zakynthos in August, 1953 and its archival wealth was almost altogether ruined. These resulted in bibliography gaps and lack of archival material. The scarce scientific information for the understanding of the materials used by the post-Byzantine artists during the 18th -19th century, with the only exception being the artists' manuals and the absence of identified paintings led to the use of analytical techniques in order to answer questions that the History of Art could not answer. The study was focused on four paintings of the temple of Saint George of Petroutsos in Zakynthos, which has been moved after the destruction of the church due to the earthquake of 1953 to the Church of Ascension in the centre of Zakynthos. As well, the paintings that were examined were separated from the temple and today are exhibited in the Museum of Zakynthos.

- **A Status Quaestionis and Future Solutions for Using Multi-Light Reflectance Imaging Approaches For Preserving Cultural Heritage Artifacts (**Short Paper**)**

Vincent Vanweddingen et al.

Abstract:

Single-Camera Multi-Light scanning methods like Reectance Transformation Imaging (RTI) and Portable Light Dome (PLD) are being widely used in the cultural heritage sector. Both technologies followed a long development track in collaboration with cultural heritage partners, resulting in matured technologies. In this short paper, we highlight recent progress with this technique (capturing and modeling reectance, multi-spectral pipelines, material classification) and present ongoing work of how both technologies can be brought closer together. Finally, we ad- dress RTI's and PLD's challenges and possible solutions in terms of long term preservation and valorization by the scientific community.

Digital Cultural Heritage Learning & Experiences

- **eHERITAGE Project – Building a Cultural Heritage Excellence Center in the Eastern Europe (**Short Paper**)**

Duguleană Mihai

Abstract:

eHERITAGE ('Expanding the Research and Innovation Capacity in Cultural Heritage Virtual Reality Applications') is a twinning project which was accepted for financing by the European Commission under the topic H2020-TWINN-2015. The coordinating organization of the eHERITAGE project is University Transilvania of Brasov (UTBv). This institution aims to significantly improve its expertise in the field of virtual heritage by collaborating with 2 other organizations, experts in this area: Jožef Stefan Institute from Ljubljana, Slovenia, and Scuola Superiore Sant'Anna from Pisa, Italy. UTBv is based in Transylvania, a geographical area full of historical landmarks and with a well-defined regional strategy for marketing and promoting cultural tourism. eHERITAGE tries to mold on this strategy and to uplift some of the activities foreseen in it. Our staff interacted on several occasions with local authorities for exploiting and disseminating history through virtual applications. The measures foreseen in eHERITAGE have already influenced the social, economic and cultural environment from Romania in an exponential way, making room for partnerships with other research institutes or with companies which want to use our expertise in order to gain more market traction. The main objective of this initiative is to provide the means for the research staff of UTBv to obtain excellence in "virtual heritage". The aim of this paper is to present the activities and the results of our consortium and to present our expertise to stakeholders, in the hope of establishing new sustainable research cooperation schemes. We strongly believe that cultural heritage can be enriched with the help of new technologies, and we hope that our activities have already contributed to proving this.

Saturday 3rd November 2018 | 11:00 - 13:00

Digital Cultural Heritage Learning & Experiences

- **Migration Experiences: Acknowledging the Past, and Sustaining the Present and Future (**Short Paper**)**

Paul Longley Arthur et al.

Abstract:

Australia is recognised as one of the world's most culturally and ethnically diverse nations. Immigration has historically played an important role in the nation's economic, social and cultural development. There is a pressing need to find innovative technological and archival approaches to deal with the challenge to digitally preserve Australia's migrant heritage, especially given the ageing of the European communities that were the first to come under the postwar mass migration scheme. This paper reports on plans for a national collaborative project to develop the foundational infrastructure for a dynamic, interoperable, migrant data resource for research and education. The Migration Experiences platform will connect and consolidate heterogeneous collections and resources and will provide an international exemplar underscoring the importance of digital preservation of cultural heritage and highlighting the opportunities new technologies can offer. The platform will widen the scope and range of the interpretative opportunities for researchers, and foster international academic relationships and networks involving partner organisations (universities, libraries, museums, archives and genealogical institutions). In doing so, it will contribute to better recognition and deeper understanding of the continuing role played by immigrants in Australia's national story.

- **A Progressive Web Application on Ancient Roman Empire Coins and Relevant Historical Figures with Graph Database (**Short Paper**)**

Kun Hu et al.

Abstract:

In the past years, information and computer technologies have radically changed cultural heritage sceneries. Cultural heritage institutions have faced challenges: extracting from heterogeneous data sources, requiring techniques for system improvements and designing better functions and interfaces to promote user experiences. To enhance user experience, many organizations and researchers engage in merging advanced technologies to cultural heritage digitization to leverage knowledge both with their organization and external users. In this report, we describe a process beginning from refining datasets of Roman coins and historical figures to a final progressive web application. We present the main technologies that support the digital cultural heritage system to presents a collection of interesting information to users.

- **Multidisciplinary experiences of virtual heritage for the documentation of architecture and archaeology within the DigitCH group - Digital Cultural Heritage group (**Short Paper**)**

Paola Puma

Abstract:

Here we address the roadmap of the Digital Cultural Heritage research group DigitCH group, which was set up in 2013 at the Department of Architecture, University of Florence. The aim of DigitCH group was to realize the link between scientifically validated methodologies and contents, innovative storytelling, and technological instrumentation. The spread of electronic devices has enabled rapid and easy technological fallout of research in the field of the acquisition-representation of the survey data expanding audiences and accelerating even an innovative approach to the whole knowledge of CH. Among the objectives that the DigitCH group seeks to achieve is the strengthening of the concrete experience of visitors through the use of technological potential; this allows the promotion of CH in all categories of citizens and the renewal of approaches and languages through more active and interactive educational activities. Moreover, DigitCH aims to increase knowledge of CH gained through experience within bespoke digital environments. A selection of case histories from DigitCH shows how we have designed solutions that promote interactions within a broad context, aiming to establish a communication strategy that "opens the educational box" to the territory (to get in touch with the identity of the visited places), new languages (to foster the links between different kinds of cultural heritage: architecture, archeology, artistic heritage), and to a new public (to create a shared cultural habitat among different institutions).

- **Is E-learning really Flexible? Ideas for Building Effective Interactive Learning Environments for Cultural Heritage (**Short Paper**)**

Afroditi Kamara et al.

Abstract:

The paper deals with the use of e-learning platforms in courses concerning digital cultural heritage. The authors draw from their experience in the use of e-learning modules in the context of Erasmus+ projects focusing on adult/VET education on cultural heritage, and suggest an e-learning approach that focuses on personification, modularity and interactivity. As the authors argue, the above three concepts are particularly important for aiding an adult audience understand and implement basic notions of cultural heritage management and enhancement as well as for introducing them in the world of digital cultural heritage. The paper examines possibilities of employing methodologies which will induce personified and interactive knowledge for the creation of e-learning platforms for digital cultural heritage adapted to the needs of diversified target groups. Such e-learning platforms become more and more a necessary counterpart to several digitization projects, as many agents responsible for cultural heritage management and enhancement do not necessarily possess all the skills needed for accomplishing such projects. Therefore, they should be diversified, adaptable to different realities and include various levels as well as stages of self-assessment of users' needs and self-evaluation of users' accomplishment.

- **Eco Sustainable Graphic Heritage Drawing For a Contemporary Territories Learning And The Creating Smart Cities (**Short Paper**)**

Alessandro De Masi

Abstract:

The research Eco Sustainable Graphic Heritage Drawing (ESGHD) is intended as development of representation models for architecture and urban landscape both in the measurement phase and simulcast description of information. With this premise the research will enable to pursue the knowledge and communication of the processes of modification for Cultural Landscape with the construction of a "visual model", which can be implemented, for "typologies of representation" and the creation of Smart City.

- **Automatic Verification Framework of 3D Scan Data for Museum Collections (**Short Paper**)**

Jeong-eun Oh et al.

Abstract:

Institutions all over the world actively conduct the 3D digital archiving of cultural heritage artifacts. Although there are many developed applications that use the obtained digital 3D scan data, their data management and quality remain unverified by proper means. We propose overcoming this problem with a novel verification framework based on shape and color information between a ground true image and an achieved image from 3D scan data (i.e., mesh data with color mapping). First, we verify that they are identical objects by using the shape context information based on a machine-learning technique. Second, we compare the color information between them to verify the quality of its color mapping. From this study, we expect that non-experts can utilize the proposed framework to verify the quality of 3D scan data automatically, thus museums will themselves be able to manage their 3D scan data systematically and reliably.

- **A Delivery Model for Cultural Heritage Services in Smart Cities Environments (**Short Paper**)**

Konstantina Siountri et al.

Abstract:

The cultural heritage of a city, both tangible and intangible, constitutes a resource of inestimable value that in the uprising digital era needs as well sustainable use and management. The transformation of heritage sites and cultural intangible fields into Smart Cultural Heritage environments implies to the development of Smart Cities. This paper introduces a new delivery model for providing cloud based cultural services to users, through advanced network infrastructures in Smart Cities environments. The proposed model is called Smart Cultural Heritage as a Service (SCHaaS) and aims to promote and preserve the cultural heritage through smart applications and participatory processes. This model also aims to be customized according the special cultural characteristics of a city and the needs of its citizens.

- **Comparative Analysis of Inspection and Diagnosis Tools for Ancient Buildings (**Short Paper**)**

Joana Gonçalves et al.

Abstract:

The survey and inspection of the state of conservation of buildings is understood as an active process of selecting information to support decision making in the rehabilitation of built heritage. The development of new technologies applied to the integrated management of built heritage resulted in digital tools able to support the technicians in on-site procedures. The purpose of this study was to analyse existing methods to the survey and inspection of the state of conservation in ancient buildings. It uses a qualitative methodology, focused on bibliographical sur-vey and comparative analysis. Only methods with identical characteristics were considered: evaluation based on visual inspection of buildings with heritage value. This research shows that structuring information in computer systems is a solution to overcome the main problems pointed out in previous studies related to survey and inspection: expensive, time-consuming, inconsequential procedures and dispersed information. However, these only remain valid if adapted to the different geographic and chronological contexts. Future research may contribute to the development of a method that brings together the added value identified in different models, to establish a tool that allows in a simple but objective way to diagnose the condition of ancient buildings with heritage value.

- **Spaces and Cultural Assets of the Autonomous National University of Mexico (**Short Paper**)**

Catalina Naumis-Peña et al.

Abstract:

The UNAM's cultural spaces and assets have seen constant growth in order to better fulfil the University's commitment to artistic and cultural activities. A special collaboration was established between the cultural area and the librarianship in order to develop a project that would simultaneously facilitate the retrieval of information regarding cultural spaces and infrastructure, record the University's cultural heritage and carry out the scheduling of artistic and cultural activities. The Project was developed via the action research method: plan, act, observe/collect, reflect/review. These activities are carried out in cultural spaces expressly intend-ed for this purpose, as well as in the different campuses and dependencies that make up this immense university. Due to the advances of the Project, a database has been created, gathering the necessary data to consult and recover the cultural resources the University possesses, enabling the University to program activities and make full use of the cultural infrastructure's capacity. Once the basic structure of the data to be organised had been established, the Object-Oriented Analysis and Design methodology was implemented in order to obtain a meta-structure of analysis relevant to the development of systems, with the Entities, Attributes and Relationships. International standards were adhered to throughout both the survey and certification of information.

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