ITN-DCH
Newsletter

June 2016

ITN-DCH: PROJECTING OUR PAST TO THE FUTURE

IN THIS ISSUE

Secondment @ CNRS, Marseille, France

by Manolis Alexakis, ESR15

In the framework of ITN-DCH project, the Laboratory of Modeles et simulations pour l'Architecture et le Patrimoine (MAP) of the Centre National de la Recherche Scientifique (CNRS) in Marseille, France, organised a Secondment under the Scientific Supervision of Dr. Livio de Luca. The Secondment started on 02/05/2016 and completed on 20/05/2016 and it was attended by the following ITN-

DCH fellows: Magdalena Ramos Calles (ESR2), Diego Bellido Castaneda (ESR3), Elisavet Konstantina Stathopoulou (ESR4), Anaïs Guillem (ESR6), Matevž Domajnko (ESR7), Emmanouil Alexakis (ESR15), Rosella Suma (ESR16) and the host fellow Nicola Carboni (ESR8). Within this context, Dr. Livio de Luca, head of the MAP laboratory, gave an introduction presentation to the fellows concerning the lab and its research activities, followed by the fellows introducing themselves to the members of the laboratory presenting their current research activities and disseminating their work and results (Figure 1). The Secondment activities took place in CNRS were divided in four sessions: 1) lectures-presentations, 2) workshops, 3) data acquisition and 4) laboratories visits.

CNRS – MAP
The National Center for Scientific Research, or CNRS, is a public organization under the responsibility of the French Ministry of Education and Research. MAP - Models and simulations for Architecture and Cultural Heritage, ICT for advancing knowledge on architecture and cultural heritage.

Figure 1: ITN-DCH Fellows' and CNRS-MAP members' introduction presentations.

the workshops. The three dimensional (3D) reconstruction of the visited sited is illustrated in Figure 2.

Taken the opportunity of the fellows Secondment in Marseille CNRS, a scientific visit to the Laboratoire d'Archéologie Médiévale Et Moderne en Méditerranée in Aix-en-Provence was organized. There, Dr. Andreas Nicolaides, ITN-DCH associate partner, gave to the fellows a tour around the Institute's laboratories introducing them and the ITN-DCH project to his colleagues (Figure 3 left). In the context of the ITN-DCH dissemination, fellows gave a presentation of their work and research results (Figure 3 right).

The lectures and presentations were given not only by the members of MAP laboratory but also from contractors during the duration

also workshops related to the historical and spatial data analysis and applications. To be trained on the aforementioned software, a

All in all, the Secondment experience had an overall positive impact not only from the aspect of providing the tools (open source photogrammetric software MicMac) for the fellows training but also giving the opportunity of networking with other researchers from different scientific backgrounds and disciplines creating the potential of future collaborations. All the aforementioned, was achieved due to the flawless organization coming from the CNRS-MAP laboratory and more specifically to Dr. Livio de Luca and the ITN-DCH Early Stage Researcher Nicola Carboni.

Figure 2: Saint Catherine Chapel in the Les Baux-de-Provence. Left: An image taken during the acquisition campaign. Right: A corresponding 3D reconstruction with the use of MicMac

of the Secondment. They concerned the scientific topics each researcher is working with in order to create the potential for collaboration. The workshops were mainly focused on learning MicMac, an open source photogrammetric software for three dimensional (3D) reconstruction and geometric documentation but there were

data acquisition campaign took place at Saint Catherine Chapel in the Les Baux-de-Provence (http://www.lesbauxdeprovence.com/en). A LASER scanner and digital single-lens reflex (DSLR) cameras were used in order to collect data and subsequently being able to process them with MicMac back at the CNRS during

Figure 3 Left: ITN-DCH Fellows guided by Dr. Andreas Nicolaides in his department laboratories Right: Presentations given by the fellows disseminating ITN-DCH project.

Workshop ITN-DCH @ CASA Conference, Geneva

By Simon Senecal, ESR 13

Figure 4: ITN-DCH @ CASA Workshop

The Conference for Animation and Social Agent took place in Geneva from the 23th to the 25th of May.

The ITN-DCH workshop was scheduled on Monday, with a specific program embedding presentations from all fellows, a talk by the coordinator and research group presentation. The venue was the magnificent and recent completed Biotech Campus, located close to the lake and international quarter.

Ranging from "Aerial and terrestrial image-based methods for the 3D geometric documentation of the Donaustaufcastle and its landscape", "Interlinking physical and conceptual dimensions of heritage artefacts into semantically-enriched representations" as well as "Mobile, AR, gamified character
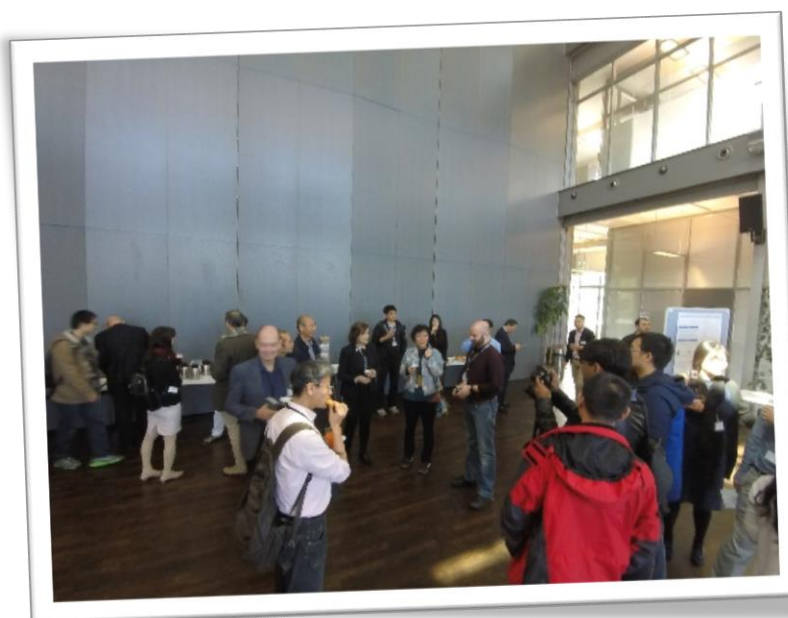

Figure 5: CASA Conference

rendering with Geometric Algebra interpolation and GPU skinning", also "Integrated Documentation by Computer Aided Methodologies for Cultural Heritage Protection and Preservation", "Integrating various techniques for 3D reconstruction of complex objects" and "Intangible heritage and cultural character rendering: A liturgy in the church of Asinou", the conference workshop's program was very diverse and focused on cultural heritage, documentation and preservation.

The social dinner on Monday night was held in the restaurant "Chausse-coqs", a typical Genevois style restaurant that serves traditional food along with famous local wine local.

Finally the conference itself with all presentation of papers took place on Tuesday and Wednesday.

Figure 6: CASA Conference

MIRALab
Where research means creativity

MIRALAB UNIGe
Founded in 1989 and headed by professor Nadia Magnanat-Thalmann, Milalab is an interdisciplinary group that works in the field of Computer Graphics, Computer Animation and Virtual Worlds that works under the aegis of the Centre Universitaire Informatique (CUI), University of Geneva.

Visit http://www.miralab.ch

The 29th International Conference on Computer Animation and Social Agents (CASA 2016) was held at University of Geneva, on the beautiful BIOTECH Campus on May 23-25, 2016.

The conference is organized by MIRALab, University of Geneva in cooperation with ACM-SIGGRAPH and The Eurographics Association.

CASA is the oldest international conference in computer animation and social agents in the world. It was founded in Geneva in 1988 under the name of Computer Animation (CA).

CASA 2016 provided a great opportunity to interact with leading experts, share your own work, and educate yourself through exposure to the research of your peers from around the world.

On Monday the 23rd, a few workshops and tutorials were organized in parallel to the conference. The ITN-DCH event took place in the morning from 9 to 12.

http://casa2016.miralab.ch/

Salone del Restauro

By Nikoletta Skordaki, ESR 14

Figure 7: ESR14 while she tries the portable laser scanner (left). Two EU projects together: ITN-DCH and INCEPTION project at Salone del Restauro (right).

Visit http://www.salonedelrestauro.com

Salone del Restauro is an event, which took place in Ferrara, Italy, from 6th to 9th April 2016. The event's main goal was the promotion of the cultural economics and its role in conservation, protection and promotion of the tangible and intangible Cultural Heritage. A plethora of companies and academic projects participated in the Salone del Restauro by presenting their work to the public, that many of them were students and young researchers.

Nikoletta Skordaki (ESR14), alongside with Prof. Roko Žarnić and coordinator of ITN-DCH project Dr. Marinos Ioannides, participated in the exhibition. There, they presented the ITN-DCH project (Fig. 1), in the exhibition area entitled "Innovation in 3D technologies: data capturing, survey and Heritage documentation, INCEPTION - Inclusive Cultural Heritage in Europe through 3D semantic modelling", which was set up by Federico Ferrari, Federica Maietti, Nicola Tasselli, Francesco Viroli, Marco Medici and Daniele Felice Sasso under the scientific supervision of Roberto Di Giulio and Marcello Balzani within the framework of the INCEPTION project (Project Coordinator: Roberto Di Giulio) (Fig.2). INCEPTION project is a European project (project coordinator: Department of Architecture, University of Ferrara|TekneHub) in which 4

ITN-DCH partners [Prof. Roko Žarnić (UL), Prof. Antonia Moropoulou (NTUA), Prof. Vlatka Rajčić (UNIZAG) and Dr. Marinos Ioannides (CUT)] actively participate. In the same exhibition area Leica Geosystem, GeoMax, Nikon, MicroGeo and Zoller+Fröhlich Gmb also attended and demonstrated their work. ESR14 had fruitful discussions with the researchers from the Department of Architecture from University of Ferrara as well as with the personnel of the companies above regarding the protection of the Cultural Heritage in the modern era and the use of IR thermography, whilst they motivated her to try a portable laser scanner (Fig. 3).

Moreover, ESR14 presented her research work including the procedure of 3D modeling and the post processing of the models of Asinou Church and of movable objects and the application of IR thermography.

Bye ITN-DCH: thanks fellows!

By Magda Ramos, ESR 2

Figure8: One of our meetings

Some more fellows have already left the ITN-DCH project: Chance, our little American guy who held the fellows' representative position till now, and Rosella, our sweet Italian girl, who left me in charge of this newsletter giving me the opportunity to write these lines.

By the time the next newsletter will be written, many of us will have finished our fellowship as well: Matthew, Anais, Nikoletta, Manolis and me, therefore I will take advantage of this chance.

Figure 9: Anais and Rosella wearing the typical Bavarian dress

It was in Euromed 2014, when I was less than six months in the project and we all didn't know that much each other. One evening, in the middle of the conference, we were asked to move to another room to stay more time because we should meet and talk with some of the advisors. It was late, we were really tired, and really I was expecting a boring speech, so I took a coffee and went there. Instead, one of them surprised me talking about friendship: "look around because you

Figure 30: Chance in Asinou   *Figure 11: Matt on the beach*

will share so much time and experiences together, that most probably this people will become even your closer friends". I did look around, but I didn't even know much more than their names at that time.

Right now, I realized it turned out to be true: we have been sharing conferences, writing papers, deliverables, reports and more reports, sharing ideas, planes, social dinners, socks... but over all we have spent our birthdays together, either with a meter of beer or with five kg of Nutella, we have learnt

Figure 12: ArcTron3D farewell party

Greek dances and some essential words in all the languages, we have been driven a boat, hiking, dancing, cooking "e"spanish omelette in the early morning, skiing, sledging... joking, sharing pictures and moments.

Figure 23: Fellows visiting the best deliverable

Therefore, although I knew I was lucky to belong to this project, I feel much more thankful to have been one of you: really thanks fellows!

"Friendship multiplies the good of life and divides the evil", Baltasar Gracián.

Figure 14: Manolis helping with his stick

Recommended Publication: 3D Recording, Documentation and Management of Cultural Heritage

By CIPA

Documentation of our cultural heritage is experiencing an explosion of innovation. New tools have appeared in recent decades including laser scanning, rapid prototyping, high dynamic range spherical and infrared imagery, drone photography, augmented and virtual reality and computer rendering in multiple dimensions. These give us visualisations and data that are at once interesting, intriguing and yet sometimes deceptive.

This book provides an objective and integrated approach to the subject, bringing together the techniques of conservation with management, photographic methods, various modelling techniques and the use of unmanned aerial systems. This interdisciplinary approach addresses the need for knowledge about deploying advanced digital technologies and the materials and methods for the assessment, conservation, rehabilitation and maintenance of the sustainability of existing structures and designated historic buildings. Furthermore, this book actively provides the knowhow to facilitate the creation of heritage inventories, assessing risk, and addressing the need for sustainability. In so doing it becomes more feasible to mitigate the threats from inherent and external causes, not only for the built heritage but also for moveable objects and intangible heritage that suffer abandonment and negligence as well as looting and illegal trafficking.

The book is written by a team of international experts based upon their practical experience and expertise. It therefore creates a unique book that encapsulates the knowledge of this discipline required by anyone working in this field.
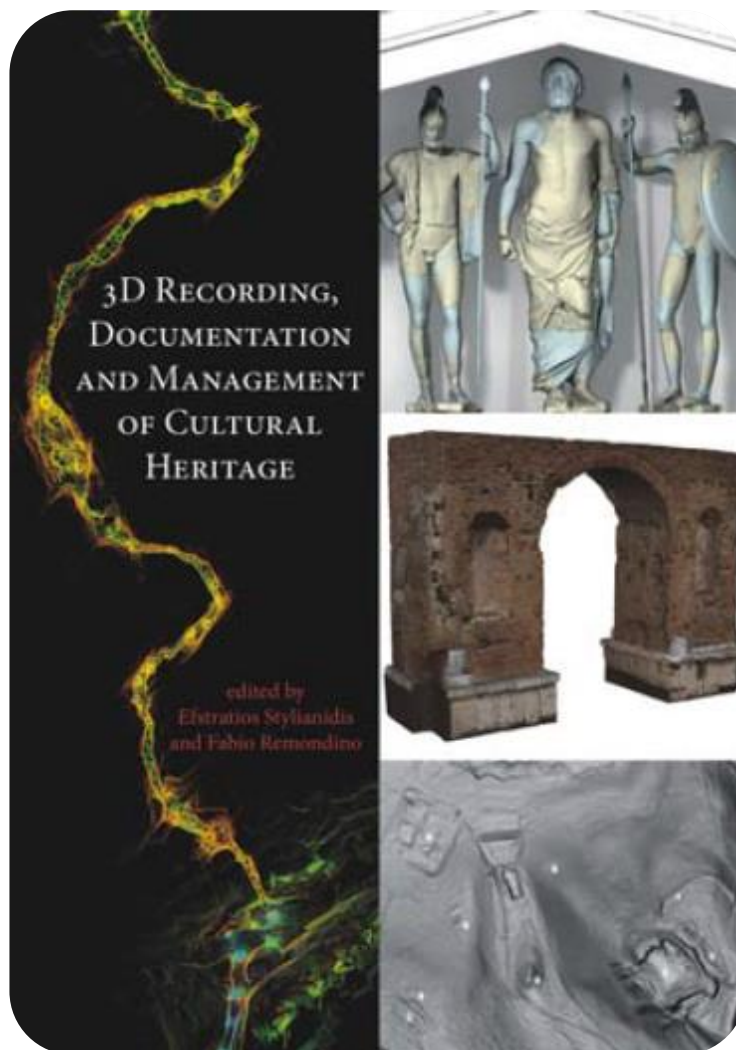

Figure 45: 3D Recording, Documentation and Management of Cultural Heritage. Authors:

- Efstratios Stylianidis, Assistant Professor, Aristotle University of Thessaloniki, Greece and
- Fabio Remondino, Scientific Researcher and Head of Research Unit, Bruno Kessler Foundation, Italy

New Fellows @ ITN-DCH: Welcome!

By ITN-DCH

Figure 16 (From left to right): Eirini Papageorgiou (ER2), Vasiliki Nikolakopoulou (ESR12) and George Leventis (ER3).

Eirini Papageorgiou was born in Athens, Greece and has studied Architecture at the Aristotle University of Thessaloniki (AUTH.). She continued her undergraduate studies at the Technical University of Berlin (TU Berlin) through an Erasmus scholarship. She has a M.Sc. degree in the field of Protection, Conservation and Restoration of Architectural Monuments (AUTH.) and has also completed studies at the School of Pedagogical and Technological Education (ASPETE.) of Athens.

Through scholarships Eirini has attended summer schools at the Freie University of Berlin in Germany and at the University of Aarhus in Denmark. She has also been provided scholarships of excellence by the Greek State Scholarships Foundation (IKY) as well as other institutions. She speaks fluently Greek, English and German.

Through several years of practice as an architect, restorator and trainer, combined with continuous education through M.Sc. programmes, training programmes, congresses, seminars, workshops and extended research as well as on-field-experience and collaboration with technical and consulting companies, institutions and individuals, Eirini gained valuable and high quality of experience.

Eirinis involvement in the ITN-DCH is in the field of Educational Perspectives in Digital Cultural Heritage. Digital Management of the different types of digital content, sharing knowledge in a way that is easily accessible and user-friendly as well as Education and Training of the people, in order for cultural heritage not only to become available but also to be transformed into a unique experience for everybody.

In her free time she loves travelling, discovering different cultures, hiking, engraving, dancing traditional greek dances and kick boxing.

Vasiliki Nikolakopoulou is from Athens, Greece, where she finished her Bachelor degree in Mathematics at the National and Kapodistrian University of Athens. During the last year of her studies she focused on applied research and applications.

She continued with her Master Thesis in the area of Design of Interactive and Industrial Products and Systems from the University of Aegean (Syros, Greece). The results of her research, lead to the creation of an interactive application on multitouch table in order to enhance student's learning and engagement in mathematics. During her MSc, she specialized on 3D modelling of industrial products, Computer Aided Manufacturing (CAM) and Engineering (CAE), Information Architecture, User Interface design and User Experience.

She has been exposed in multidisciplinary environments' for the design of new technology applications in mathematics. In addition, she gained unique experience from her active involvement in the EU-funded MASCIL (Mathematics and Science for Life) Research project, in Athens as well as from the EU project "Open Academic Courses at the University of Athens".

Her involvement in ITN-DCH is concentrating on new techniques for data storage and archiving of massive and complex amounts of 3D/4D cultural assets by developing innovative methodologies for reusing such content in other domains.

Vasiliki is also interested in sports, such as football, skiing and in music like bass guitar and comics..

George Leventis was born and grew-up in Athens. He possesses a Master of Science in the field of Cultural Informatics from the University of Aegean.

During his studies, he was introduced to the exciting research field of Artificial Intelligence. As a member of the Intelligent Multimedia and Virtual Reality research lab at the University of Aegean, he focused for his specialization on Neural Networks by using optimal fuzzy clustering algorithms as well as machine learning algorithms (such as C-Means, Fuzzy C-Means, Learning Vector Quantization). Currently his main interest lies in the use of machine learning techniques for processing 3D/4D cultural assets.

Besides his research activity, in his free time he likes listening to music as much as he likes going out with friends. Moreover, he is passionate in playing golf as it is something very different compared to other popular sports.

2nd International Conference on Science and Engineering in Arts, Heritage, and Archaeology (SEAHA), University of Oxford,20th – 21st of June 2016, Oxford, UK

The EPSRC Centre for Doctoral Training in Science and Engineering in Arts, Heritage and Archaeology (SEAHA) is an 8-year initiative (2014-2022) to establish an infrastructure meet challenges set by the heritage sector, industry and government.

An international conference on heritage science, emerging techniques, innovative research and best practice for the conservation, interpretation and management of cultural heritage. **Heritage science** is a cross-disciplinary field connecting science and the humanities and the conference will provide a platform for the gathering and engaging of scientists, engineers, professionals, entrepreneurs, and policy-makers, to discuss innovative research being conducted in the field.

Some of the ITN-DCH fellows will actively participate with podium presentations and posters.

http://www.seaha-cdt.ac.uk/seaha-conference-2016/

Spectral Imaging Processing and Data Analytics for life quality improvement in public spaces, urban environments (SIPDA) held in conjunction with ACM PETRA conference, 29th of June – 1st of July 2016, Corfu, Greece

The PErvasive Technologies Related to Assistive Environments (PETRA) conference is a highly interdisciplinary conference that focuses on computational and engineering approaches to improve the quality of life and enhance human performance in a wide range of settings, in the workplace, at home, in public spaces, urban environments, and other. Outcomes of this conference have a broad impact in application areas that include, manufacturing, transportation, healthcare, energy systems, security and safety, robotics, biomedicine, environment and conservation, and many others

SIPDA is a workshop held in conjunction with PETRA to serve as an international forum for experts from both academia and industry to present their latest research findings, ideas, developments and applications in the wide area of vision systems & data analysis for non-conventional application scenarios that have been rarely surveyed in the literature, emphasizing in life quality improvement/support.

http://www.petrae.org/workshops.html

CGI'16: 33rd Computer Graphics International conference, 28th of June – 1st of July 2016, Heraklion, Crete, Greece.

Computer Graphics International is one of the oldest, international annual conferences in Computer Graphics and one of the most important ones worldwide. It is a yearly meeting where academics present their latest algorithms, models and technologies, and explore new trends and ideas.

The conference is organized by the **ITN-DCH** partner Institute of Computer Science of the Foundation for Research and Technology Hellas **(ICS-CVRL/FORTH)** in cooperation with ACM-SIGGRAPH and The Eurographics Association.

Several, important CGI-related events will be co-located this year with CGI'16:

- **CGI'16 Workshops & Tutorials:**
  1. CGI Workshop on Geometric Algebra in Computer Science and Engineering
  2. CGI Tutorial on Presence, Robotics and Human-Machine synergetic, social interaction
- **Summer School with the theme: "Cultural Heritage Simulations in Mixed Reality"** Jointly organized by **Marie-Curie** Initial Training Network on Digital Cultural Heritage **(ITN-DCH) and** Cost Action TD1406 Innovation in Intelligent Management of Heritage Buildings (i2MHB)

- **ITN-DCH Network meeting: Initial Training Network for Digital Cultural Heritage**

http://www.ics.forth.gr/CGI2016/

International society for photogrammetry and remote sensing, 12th-19th July, Prague

ISPRS is a leading organization in remote sensing, photogrammetry and spatial information sciences - very high-resolution satellite imagery, terrain based imaging and participatory sensing, inexpensive platforms, and advanced information and communications technologies.

Every 4 years the Congress welcomes participants from all over the world. This gathering strengthens relations among the researchers, professionals and representatives of governmental and non-governmental organization thus enhancing the co-operation within the field. ISPRS welcomes all papers bringing new results, achievements, methods and theory to help to shift the present level of knowledge.

All interested organizations are welcome to participate at the Congress as exhibitors. Profit from the opportunity to present your products and services to the leaders in the field.

http://www.isprs2016-prague.com/

ARQUEOLÓGICA 2.0 - 8th International Congress on Archaeology, Computer Graphics, Cultural Heritage and Innovation 5th – 7th of September, 2016 Vera Campus, Universitat Politècnica de València, Valencia, Spain

ARQUEOLÓGICA 2.0 – 2016 is a conference organised by the Spanish Society of Virtual Archaeology (SEAV), the Virtual Archaeology International Network (INNOVA), and the Universitat Politècnica de València in cooperation with CIPA Heritage Documentation.

Researchers, professors, archaeologists, architects, engineers, art historians from archaeology, computer graphics and geomatics dealing with cultural heritage are invited to share knowledge and experiences in the field of Virtual Archaeology.

Thematic areas will be:

- Data acquisition with metric, photogrammetric, remote sensing and geophysical devices
- Documentation of cultural heritage
- High-end digitisation and 3D modelling of objects, monuments and sites
- Virtual conservation/restoration
- Virtual archaeology
- Virtual architecture
- Virtual museums
- Virtual Exhibitions
- Cultural heritage gaming
- Collaborative environments for cultural heritage
- Internet technologies and social media in archaeology

http://arqueologica8.webs.upv.es/

14th EUROGRAPHICS Workshop on Graphics and Cultural Heritage, 5th -7th of October 2016, Genova, Italy

The 14th EUROGRAPHICS Workshop on Graphics and Cultural Heritage (GCH 2016) aims to foster an international dialogue between ICT experts and CH scientists to have a better understanding of the critical requirements for processing, managing, and delivering cultural information to a broader audience. The objective of the workshop is to present and showcase new developments within the overall process chain, from data acquisition, analysis and synthesis, 3D documentation, and data management, to new forms of interactive presentations and 3D printing solutions. Interdisciplinary approaches for analysis, classification and interpretation of cultural artefacts are particularly relevant to the event.

Specific sessions will be devoted to reports on applications, experiences and projects in this domain. Contributions are solicited (but not limited to) in the following areas:

- 2/3/4D data acquisition and processing in Cultural Heritage
- Multispectral imaging and data fusion
- Digital acquisition, representation and communication of intangible heritage
- Material acquisition analysis
- Heterogeneous data collection, integration and management
- 3D printing of cultural assets
- Shape analysis and interpretation
- Similarity and search of digital artefacts
- Visualization and Virtual Museums
- Multi-modal and interactive environments and applications for Cultural Heritage
- Spatial and mobile augmentation of physical collections with digital presentations
- Semantic-aware representation of digital artefacts (metadata, classification schemes, annotation)
- Digital libraries and archiving of 3D documents
- Standards and documentation
- Serious games in Cultural Heritage
- Storytelling and design of heritage communications
- Tools for education and training in Cultural Heritage
- Experiences and projects in Computer Graphics and CH documentation, conservation and dissemination

http://gch2016.ge.imati.cnr.it/

EuroMed2016, October 31st - November 5th, 2016, Cyprus

The 6th EuroMed2016 brings together researchers, policy makers, professionals and practitioners to explore some of the more pressing issues concerning cultural heritage today. In particular, the main goal of the conference is to focus on interdisciplinary and multi-disciplinary research on the holistic documentation of tangible and intangible Cultural Heritage, the use of cutting edge technologies for the protection, restoration, preservation, massive digitalization and presentation of the CH content. The event will also cover topics of research ready for exploitation, demonstrating the acceptability of new sustainable approaches and new technologies by the user community, SME's, owners, managers and conservators of cultural patrimony.

www.euromed2016.eu

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The "**Initial Training Network for Digital Cultural Heritage: Projecting our Past to the Future**" (ITN-DCH) is a **Marie Curie fellowship projects** in the area of the e-documentation / e-preservation and CH protection funded by the European Union under the FP7 PEOPLE research framework. The Project started on the 1st of October 2013, its consortium comprises **14 full partners and 9 associate members** covering the entire spectrum of European CH actors, ranging from academia, research institutions, industry, museums, archives and libraries. The project aims to train **20 fellows** in the area of CH digital documentation, preservation and protection in order to create them a strong academic profile and market-oriented skills which will significantly contribute to their career prospects. ITN-DCH targets **all aspects of CH** ranging from tangible (e.g. books, newspapers, images, drawings, manuscripts, uniforms, maps, artefacts, archaeological sites, monuments) to intangible content (e.g., music, performing arts, folklore, theatrical performances) and their inter-relationships.

Visit:

http://www.itn-dch.eu/

Find us on

http://ww.facebook.com/itndch

https://www.youtube.com/watch?v=1npcQvGaQJY

Credits:

Thanks to all the people that have contributed to this edition of the ITN-DCH newsletter in particular:

Magda Ramos Calles, Manolis Alexakis, Simon Senecal, Nikoletta Skordaki, Anaïs Guillem, Fabio Remondino, Alan Chalmers

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