



ITN-DCH: PROJECTING OUR PAST TO THE FUTURE

# ITN-DCH Newsletter

## December 2016

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## Aerial Laser Scanner in Donaustauf Castle

By Diego Bellido Castañeda, ESR<sub>3</sub>

Donaustauf castle, one of the case studies of the project, has been extensively documented since the beginning of the ITN-DCH. Aerial and terrestrial images of the castle, macro photogrammetry at the Historic Museum of Regensburg as well as different terrestrial laser scanners have been used to enhance the training of the fellows in 3D documentation during various events such as the secondment at ArcTron3D in July 2015. However, the trainings and documentation of the monument have been continued and a new Aerial Laser Scanner data set was incorporated into the documentation.

The ruins of the castle sit on a hilltop, in the township of Donaustauf, 10 km east of Regensburg (Bavaria, southern Germany). From the ruins looking down visitor can easily understand the strategic situation of the fortification, which stands on a plateau protected with a topography of drastic height differences. In addition, it has a privilege position of the Danube waterway. The first documents preserved about the castle date from the beginning of 10<sup>th</sup> century (although

different archaeological excavations revealed previous Celtic settlements). After an eventful history the castle was destroyed in 1648. Since then, the castle remains in ruins.

Based on the field experience by ArcTron3D, a combination of aerial and terrestrial images have successfully produced 3D models of the castle. The documentation process focused on the man-made structures. These man-made structures, mainly defensive walls and remains of buildings, occupy the plateaus in the higher part. There, the vegetation is continuously cleaned and the space carefully maintained in order to allow the visitors to contemplate the combination of views between the Danube and the old ruins. However, the rest of the hill is covered by a leafy vegetation. This fact blocks the chances for aerial images to acquire information on the ground, even if one flight has been performed in the

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season of the lowest vegetation. Information on the ground is essential to produce a quality DSM (Digital Surface Model). In such a case, an accuracy DSM is an essential step in the documentation of the site, because it allows us to understand the location of the castle regarding the topography, know the position of the not preserved defensive walls or the understanding of the different entrances and trenches of the castle.

Aerial Laser Scanner sensors have mainly been used in planes and helicopters. However, in the last years, the development of the UAVs and the requirement of mobile mapping systems have been reducing the size and the weight of the sensors. On one hand, these sensors are able to achieve points under the vegetation, produce results in complex structures (metallic, bridges or power lines), distinguish the different surfaces by classifying the properties of the laser and they are not demanding of favorable weather conditions. On the other hand, these systems require the additional sensors to colorize the point cloud.

In summer 2016, a research campaign was organized by ArcTron3D in collaboration with RIEGL and Eichstätt University. The VP-1 sensor from RIEGL was integrated onto the ArcTron3D paraglide trike. This sensor is a Turnkey solution for Long Range LIDAR in airborne missions, which integrates the LIDAR sensor, IMU/GNSS, control unit and different possibilities of cameras (SONY ALPHA ILCE-6000 in this case). The motorized double seated paragliding trike (XCitor), commonly used for surveying campaigns in the company, is able to perform very stable flights. During the flight the operator can control the log/in the scanner, control the GNS/INSS values and visualize in real time the footprint above ground, also providing real time output to the pilot.

A flight was performed in July 2016 focusing on Donaustauf castle and its surrounding area. 10 scans produced more than 100 M points in a surface larger than 1500000 m<sup>2</sup> including residential areas, forests, hills, the Danube river, industrial structures and historic buildings. The data has been processed using a different set of software; <sup>1</sup>RiParameter (Parameter calculation of the flight), RiAquire (Data acquisition), POSPac (trajectory calculation), RiProcess (Signal extraction, cleaning and classification) and RiScan Pro (Filtering vegetation and analysis). In addition, Geomagic, Cloud Compare and aSPECT3D have been used for the analysis, registration and comparison of the PC.

Preliminary results indicate a high density of points, a good penetration under the vegetation as well as an accurate registration between the scans. Furthermore, this data has been prepared for web visualization using PoTree and it has been incorporated into the beta version of the web dedicated to the castle enhanced by some additional interactions.

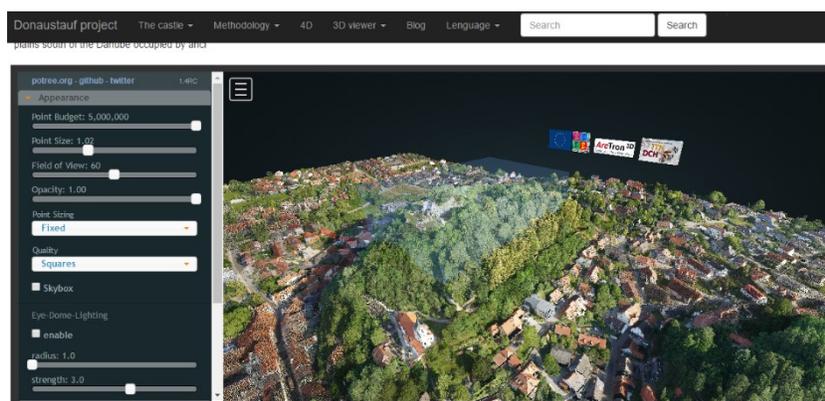


Figure 1: Donaustauf castle in the beta version of the website.

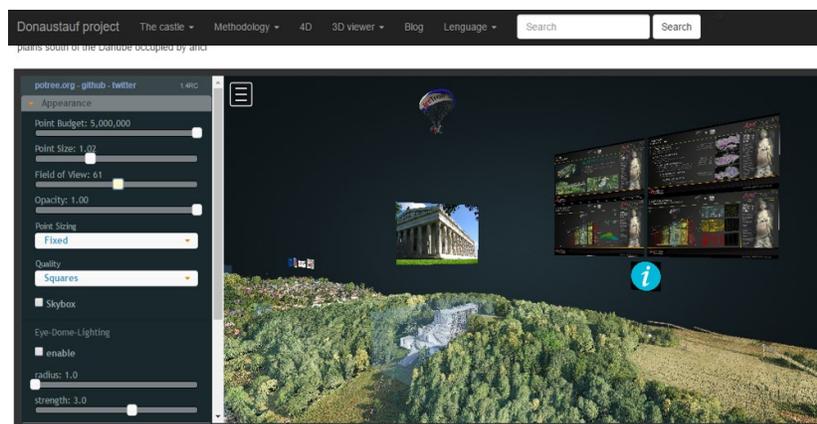


Figure 2 (From top to bottom): Walhalla monument (located also in Donaustauf) in the beta version of the website including some interactions; Detail of Walhalla.

<sup>1</sup> Ri: RIEGL software

# European Researchers' Night 2016

## Slovenia

By Matevž Domajnko, ESR7

The main purpose of the Science for Life project is to popularize the research profession and introduce it to the general public (esp. the youth) in Slovenia. Through various activities, the project raises awareness of the important role of researchers, science and its impact on all areas of human activity. At the same time, the project informs of various European and national funding programmes and other activities aimed at researchers' career development, research work, equipment and attractive working conditions („Science for Life“, 2016).

The central event organised within the Science for Life project is the pan-European [Researchers' Night](#), taking place on seven different locations in Slovenia: Ljutomer, Maribor, Brežice, Koper, Izola, Nova Gorica and Ljubljana, on 30 September 2016 and 29 September 2017. Some of the ITN-DCH fellows (ESR3 – [Diego Bellido Castañeda](#), ESR4 – [Ellie Stathopoulou](#), ESR5 – [Gina Stavropoulou](#), ESR7 – [Matevž Domajnko](#), ESR8 – [Nicola Carboni](#), ESR9 – [Marleen de Kramer](#)) participated the European Researcher's Night 2016 events in Slovenia. They presented two European projects from the cultural heritage field: [ITN-DCH](#) and [INCEPTION](#). Moreover, the FP7 project ITN-DCH is a Marie Curie fellowship project that aims to train 20 fellows in the area of CH digital documentation, preservation and protection. INCEPTION (Inclusive Cultural Heritage in Europe through 3D semantic modelling) is a related project from H2020 Reflective framework programme, which aims to realise innovation in 3D modelling of cultural heritage.

In Ljubljana, the event took place in the shopping center CityPark (<https://www.znanostzavljnje.si/en/researchers-night/programme-ljubljana/animals-around-us>). The local organizers have set a booth block, and provided all the needed equipment for a spectacular event (monitors, poster stands, dissemination material etc). Ellie (ESR4) and Nicola (ESR8) were asked to join the European Corner booth, where important dissemination material regarding EU projects was available. Various posters

about the ITN-DCH project were set by the fellows, along with background videos and leaflets, providing the important information to the public. One of the highlights of the event was the visit of an entire class (age 14-15) with their teachers. A short presentation of the project, the European Commission actions and the general life of a researcher was given, motivating the students to follow such a career and positively received. Prof. Roko Zarnic from University of Ljubljana also was present to the event.



Figures 3, 4: European Researchers' Night in Ljubljana, Slovenia.

At the same time, a parallel event took place in Ljutomer, where other fellows (Gina, Marleen, Diego and Matevž) organized a workshop about photogrammetry and digitization techniques for high school students (<https://www.znanostzavljnje.si/en/researchers-night/programme-ljutomer>).

The workshop started with a short presentation of the ITN-DCH project and theoretical background of digitization techniques and preservation of cultural heritage.

The second part of the workshop was held on the main square in Ljutomer, where participants got practical instructions on data acquisition (images) for image-based 3D reconstruction. Afterwards, ITN-DCH fellows tutored participants in data processing in order to get 3D models of acquired cultural heritage objects.

The final presentation took place in the Auditorium of the high school. Marleen, Gina, Diego and Matevž presented results of the workshop and furthermore, possible applications for cultural heritage.

(additional GMFL photos: [http://www.gfm-media.si/?lang=&option=gallery&gid=16&album\\_id=433](http://www.gfm-media.si/?lang=&option=gallery&gid=16&album_id=433))



Figures 5-7: European Researchers' Night in Ljutomer, Slovenia.

# Cyprus

By Vasiliki Nikolakopoulou, ESR12



Figure 8: European Researchers' Night in Nicosia, Cyprus

This year, Researchers' Night in Cyprus took place in Nicosia town, at Filoxenia Conference Center. Among many Universities, Colleges and Research centers from Cyprus, Digital Heritage Research Lab and its ITN-DCH fellows together with ESR10, Margarita Papaefthymiou from FORTH, were actively and dynamically present at the event, showcasing aspects of the digital lifecycle of a Heritage asset; from its digital creation to its final use and re-use.

The main purpose was to engage children, students, adolescents and adults to the digitization process of Cultural assets and introduce them to a few of the applications that are being used after their digitization. Starting from "easy to use" data acquisition techniques, by collecting images of the asset to be digitized, the pipeline of Lab's booth was finishing at the asset's 3D printed model. Agisoft's software was displayed as well as the accurate way of gathering images perimetrically of an object. Students and their teachers were given instructions and an email address in order to get involved in the process by taking images of a 3D object of their choice and then emailing us their collection of images so we can send them back the generated 3D models via our authorized Agisoft software. This particular movement was adopted in an effort to engage educationally both the teachers and the students in the data acquisition process with hands-on activities.

Continuing with our pipeline, interactive applications with Leap Motion, Virtual Reality's equipment, Oculus Rift, which was presented by ESR10, Augmented Reality's ITN-DCH mobile Asinou app and gamified educational digital content from Cypriot UNESCO Monuments in the form of digital puzzles and riddles, were shown to the audience. The 3D printer was at the final stage of the pipeline and it was printing repeatedly 3D models of the Asinou Church that were later given to the children. European Commission's Project Officer Dr. Marcella Doholova, who was present at the event, was also given a model and toured around our booth's applications.

Key goal of the Researchers' Night was accomplished; Researchers were given the opportunity to stress the importance of their role into society by engaging the public in interactive ways, disseminating widely their research attainments and raising awareness. ITN-DCH fellows, ER2 Eirini Papageorgiou, ER3 Georgios Leventis, ESR12 Vasiliki Nikolakopoulou and ESR10 Margarita Papaefthymiou, had the chance to interact with many students from schools, Universities and other researchers from different sectors, to demonstrate the work that has been done in the project and to emphasize the importance of digitization for the preservation of our history and our Cultural Heritage.



Figures 9-11: Interactive installations at our booth.

# ITN-DCH @ UL and Symposium at ZVKDS

By Matevž Domajnko, ESR7

The fellows that participated in the researcher's night events in Slovenia also visited University of Ljubljana and Institute for the Protection of Cultural Heritage of Slovenia. On Monday 03/10 it was scheduled a meeting at the ITN-DCH partner University of Ljubljana and the supervisor Prof. Roko Zarnic at his office, where he had an open discussion with the fellows about their progress in the project so far and the future prospective in their careers within ITN-DCH and beyond.

Presentations about current projects of the institute followed (e.g. Conservation plan of the integral elements of the Tartini monument), as well as a tour in the labs and more specifically the room where the remains of a longboat were conserved.

Some fruitful discussions between the fellows and the researchers of the institute followed the presentations.



Figure 12: ITN-DCH fellows with Prof. Roko Zarnic.

A meeting on Digital Cultural Heritage at the Institute for the Protection of Cultural Heritage of Slovenia (ZVKDS) (<http://www.zvkds.si/en>) followed. It was organized as a "knowledge exchange symposium", where ITN-DCH fellows and professionals from digital heritage field in Slovenia shared their experiences and knowledge. The fellows presented the ITN-DCH project, their current research within the ITN-DCH and their training activities. More particularly, the following presentations took place:

- The ITN-DCH project (Matevž)
- 3D Reconstruction of Lost Cultural Heritage (Ellie)
- 3D Digitisation of Pergamon Altar (Matevž)
- Digitisation of small CH objects with the minidome (Gina)
- Aerial Laser Scanning in Cultural Heritage (Diego)
- VR and AR for Cultural Heritage (Marleen)



Figure 13 (From top-left clockwise): ITN-DCH fellows presenting their work; Conserved remains of a longboat; Presentation about institute's current projects.

During the weekend, various cultural visits to the surroundings were organized by the hosting high school. The fellows had an opportunity to use more than 100 years old wine press and to design their own pottery products. They also visited some of the most important cultural sites of the old city center Ljubljana.



Figure 14 (From left to right): ITN-DCH fellows using a wine press; Fellows design their own pottery products.

# EuroMed2016 Conference was in “Memoriam” of Werner Weber, Ewald Quak and David Arnold

By CUT

**Werner Weber** (15.09.2014 †) was responsible to the Federal Government Commissioner for Culture and the Media (BKM) in Bonn and in Berlin for all affairs related to Culture and



Media on the EU level and actively worked as the BKM representative in several EU Committees in Brussels and in Luxemburg (such as the Member States Expert Group on Digitalisation and Digital Preservation - MSEG). He was one of the inventors of the EU Initiative for the Pan-European e-documentation of the 1st World War (Europeana Collections 1914-1918: <http://www.europeancollections-1914-1918.eu/>) and of the European project for the documentation and preservation of the Fall of the Berlin Wall in 1989 (Europeana 1989 - <http://www.europeana1989.eu/en/>). Werner, was passionate and had an infectious personality that motivated others to join and work intensively in Digital Heritage documentation. He was energetically involved in the planning and financing of Europeana (the biggest digital library in the world) and in the first stages for the creation of the German Digital Library, which is the leading aggregator for the Europeana ([www.europeana.eu](http://www.europeana.eu)). We enjoy today Werner's diplomatic achievement with the digital Cultural Heritage Research in the H2020 Framework programme!

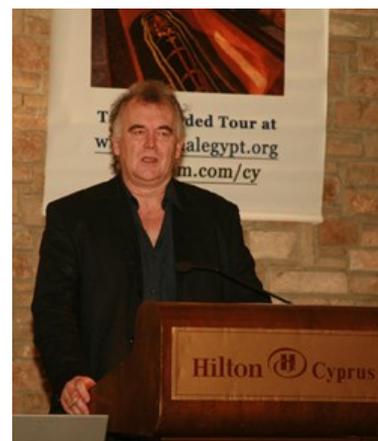
**Ewald Quak** (29.04.2015 †) received his PhD from the University of Dortmund in 1985, and until 1987 worked as a researcher at the same time. He was a fellow of the Alexander von Humboldt Foundation and he worked as an academician and researcher in leading institutions in the USA, Norway, Germany and Estonia. During the last decades, he worked



intensively in the area of Cybernetics, Computer Graphics and Digital Heritage. For more than 15 years he was Evaluator, Reviewer and Vice-Chair in the area of Engineering by the European Commission in Brussels. He was one of the visionaries of the Marie Curie Initial Training Network (ITN-DCH – [www.itn-dch.eu](http://www.itn-dch.eu)), the only fellowship project in the World in the area of Digital Heritage) and he served as the Chair of the Advisory Board until he passed away. Ewald was the Co-Editor of the first Volume (published by Springer Verlag in 2015) of 3D

Challenges in Cultural Heritage, about one of the most complicated areas of research in Cultural Informatics. Springer-Nature Verlag has agreed to continue this publication, which will be always dedicated to Ewald's memory.

**David Arnold** (25.10.16 †) was involved for over 40 years in research into the design of interactive computer graphics systems and their application in architecture, engineering, cartography, scientific visualisation and over the past 18 years in Cultural Heritage. David was educated at the University of Cambridge and held an MA in Engineering and Computer Science and a PhD in Architecture. He subsequently spent 24 years at the University of East Anglia,



Norwich, UK and 14 years at the University of Brighton where he was Dean of the Faculty of Management and Information Sciences and later the University's Director of Research Initiatives and Dean of the Brighton Doctoral College. Critically for the field of Digital Heritage, David was also the director of the university's Cultural Informatics Research Group which he founded in 2002. David was a pioneer and a real European in the area of the e-documentation of the Past. Many EuroMed conference attendees will be familiar with David as the Co-Chair of EuroMed2006 in Nicosia (the 1<sup>st</sup> EuroMed Conference - [www.cipavast.org.cy](http://www.cipavast.org.cy)), a Member of the Advisory Board in the EU FP7-PEOPLE Marie-Curie ITN-DCH Project ([www.itn-dch.eu](http://www.itn-dch.eu)) and in H2020 CSA COOP8 ViMM Project ([www.vi-mm.eu](http://www.vi-mm.eu)) and a co-coordinator of the EPOCH Network of Excellence under the EU's Framework 6 programme (FP6), involving 95 partners (<http://epoch-net.org/>). More recently he coordinated 3D-COFORM, a large scale Integrated Project under FP7. He was the founding Editor-in-Chief of the ACM Journal on Computing and Cultural Heritage and was a past Chair of the European Association for Computer Graphics.

# EuroMed2016: Opening Ceremony

By Georgios Leventis, ER3

The 6<sup>th</sup> International Conference on Digital Heritage, EuroMed2016, placed under the auspices of His Excellency the President of the Republic of Cyprus, acted as a common place of meeting for researchers, professionals, stakeholders as well as policy makers from all over the world that work on the protection, preservation and promotion of Cultural Heritage either on academic or private sector. The opening ceremony took place at Filoxenia Conference Centre on Monday 31<sup>st</sup> of October 2016 in a brilliant and festive atmosphere, where important personalities of European and Cypriot authorities attended and addressed in their salutes the significant contribution of Cyprus University of Technology towards the preservation of the World Cultural Heritage. During the ceremony, attendees had the opportunity to watch a well-composed and interesting video (<https://www.youtube.com/watch?v=xEEfHljCVKI&t=14.5s>) created by Digital Heritage Research Lab regarding the challenges Cultural Heritage faces in a constant battle with time. Thereafter a minute of silence was kept for the deceased colleagues and friends; Werner Weber, Ewald Quak and David Arnold, whose work and contribution was valuable to the further implementation of the EU projects that Dr. Marinos Ioannides coordinates. Among others present at the ceremony were the Patriarch of Jerusalem and All Palestine; His Beatitude Theophilos III, the President of the Commission for Culture and Education of the Cypriot House of the Representatives; Dr. Kyriacos Hadjiyiannis, His Excellency the German Ambassador in Cyprus; Nikolai von Schoepff, His Excellency the Spanish Ambassador in Cyprus; Ángel Lossada Torres-Quevedo, the Deputy Foreign Minister; Mr. Nikos Xydakis, the President of ICOMOS Cyprus; Mr. Chrysanthos Pissarides, the President of the Technical Chamber of Cyprus; Stelios Achiotis, the Representative of International Relations Office of Cyprus Organization for Standardization; Ms. Marilena Nicolaou.



Figure 15: Distinguished participants of EuroMed2016 during the opening ceremony.

As in every conference thus in EuroMed2016, the best paper submissions were selected to be awarded during the opening ceremony for their excellence in Cultural Heritage. To honor the memory of Mr. Weber as well as his contribution in the documentation of Cultural Heritage, it was decided the Best Paper Awards to be called the "Werner Weber Awards". Hence, His Excellency the German Ambassador of Cyprus; Nikolai von

Schoepff along with the family of Weber handed over the "Werner Weber Best Paper Awards" to authors whose research work was considered of high significance that adds value to the multidisciplinary field of Cultural Heritage digital documentation.



Figure 16: The Werner Weber Best Paper Awards.

Subsequently, the director of Fraunhofer Institute for Computer Graphics Research IGD; Prof. Dr. Dieter Fellner gave an intriguing presentation on the challenges the digitization of Cultural Heritage currently faces. Since the work of Prof. Dr. Dieter Fellner and his research group is pioneering in the documentation of Digital Cultural Heritage, he received from His Excellency the German Ambassador in Cyprus, Nikolai von Schoepff together with the family of E. Quak the honor "Ewald Quak Award"; an award given in the memory of our colleague. Moreover, the "Ewald Quak Award" was also given to Europeana for the outstanding work in making available and accessible the digitized cultural collections of Europe over the Internet. To honor David's hard work, dedication and achievements, as of the next EuroMed conference in 2018 (the EU Year dedicated on Cultural Heritage) we will confer on the best PhD Fellowship, the David Arnold Digital Heritage achievement for PhD Students.



Figures 17, 18: Prof. Dr. Dieter Fellner honored by His Excellency the German Ambassador in Cyprus with the "Ewald Quak Award".

# EuroMed2016 Conference

By Eirini Papageorgiou, ER2

The Digital Heritage Research Laboratory (<http://www.digitalheritagelab.eu>) of the Cyprus University of Technology has organized and successfully held the 6th International Euro-Mediterranean Conference on Digital Cultural Heritage **EuroMed2016** (<http://www.euromed2016.eu>) from 31st of October to 5th of November 2016 at the Filoxenia Conference Center in Nicosia, Cyprus.



Figure 19: Prominent participants @ the opening ceremony of EuroMed2016.

Being already a milestone in the field of Cultural Heritage documentation and preservation the conference was held under the auspices of the president of the Republic of Cyprus and has been **bigger than ever before** in its 10 years' history:

- over 100 of **excellent papers** (selected from 504 submitted papers) in nine (9) back to back Sessions, with main topics: *From Data Acquisition to Metadata, Semantics and Ontologies in Cultural Heritage (CH), Innovative methods on Risk Assessment, Monitoring and Protection of CH, The New Era of Museums and Exhibitions-Digital Engagement and Dissemination, 3D Reconstruction and Modelling, Novel Approaches to Landscapes in CH, Heritage Building Information Model (HBIM), Digital CH in Education, Learning and Training, Visualisation, VR and AR and Serious Games, Non-destructive Techniques and Digital Applications for Materials' Preservation and Conservation in CH*, all included in a 2-volume collection LNCS 10058 (<http://www.springer.com/gp/book/9783319484952>) and LNCS 10059 (<http://www.springer.com/gp/book/9783319489735>) published by Springer-Nature Verlag with editors Marinos Ioannides, Eleanor Fink, Antonia Moropoulou, Monika Hagedorn-Saupe, Antonella Fresca, Gunnar Liestøl, Vlatka Rajcic and Pierre Grussenmeyer.

- **ten (10) professional Keynote Speakers**, such as Prof. Dr. Antonia Moropoulou, Prof. Dr. Dieter Fellner, Prof. Dr. Wolfgang Kippes, Mr. Axel Ermert, Mrs. Rosella Caffo, Prof. Dr. Sarah Whatley, Mr. Vasco Fassina, Mr. Jean-Pierre Massué, Prof. Dr. Mustafa Erdik, Prof. Dr. Gunnar Liestøl,
- **three (3) Workshops**, on Virtual reality, Gamification and CH, on 3D Research Challenges in CH and on e-Documentation of European Intangible Heritage-a challenge for Open Digital Humanities,
- **four (4) Panel Discussions**,
- **two (2) European Projects' Kick-Offs**, Dariah-CY ([www.dariah-cy.eu](http://www.dariah-cy.eu)) and ViMM (<http://vi-mm.eu/>),
- **two (2) newly published Books presentations**, "Mixed Reality and Gamification for Cultural Heritage" (<http://www.springer.com/gp/book/9783319496061#aboutBook>) and "3D Research Challenges in Cultural Heritage II" (<http://link.springer.com/book/10.1007/978-3-319-47647-6>),
- **18 Meetings of European Projects**, such as Dariah-CY, i-Treasures, Dariah-MT, H2020-Terpichore, 4D-CH World, ITN-DCH, COST, INCEPTION, EU-FP7 IAPP, Europeana-Space, Europeana Sounds, Europeana Food&Drink, Europeana Fashion, Europeana Photography, EU ScreenXL, Photoconsortium, PREFORMA, ENERGIC-OD.



Figure 20: Workshops & brainstorming.

Among the prominent participants of the EuroMed2016 conference was also his Beatitude Theophilos III, **Patriarch** of the Holy City of Jerusalem and all Palestine, Syria, Arabia, and beyond the Jordan River, Kana of Galilee and Holy Sion, who talked about the ongoing restoration project of the **Holy Aedicule of the Holy Sepulchre in Jerusalem**. The restoration interventions were in further detail presented for the first time by Prof. Antonia Moropoulou, who is the scientific coordinator of the interdisciplinary team carrying out the project, consisted also

of other prominent experts of the field such as the NTUA professors E. Korres, A. Georgopoulos, C. Spyarakos and Ch. Mouzakis.



Figure 21: His Beatitude Patriarch of the Holy City of Jerusalem at the opening ceremony.



Figure 22: Prof. Moropoulou presenting for the first time the restoration project of the Holy Aedicule of the Holy Sepulchre in Jerusalem.

In parallel to EuroMed's opening ceremony His Excellency German Ambassador in Cyprus, Nikolai von Schoepff together with the families of the deceased, honored the best papers of the conference with the Werner Weber Best Paper Award, while distinguished professionals in DCH domain have received the Ewald Quak Award for their outstanding contribution in the documentation of Digital Heritage.



Figure 23: Best Paper Awards at EuroMed2016 Opening Ceremony.

EuroMed2016 was supported by national and international institutions, organizations and authorities such as the European Commission, UNESCO, ISPRS, CIPA, ICOMOS, ICOM, Interpol, Europeana, Getty Foundation etc. and also by more than four

hundred (400) policy makers, stakeholders, professionals and delegates from more than 48 countries of the world who have participated to present and review research results and the latest innovative ideas in Digital Cultural Heritage, exchange know-how and experiences as well as the current and future worldwide developments in the field of Cultural Heritage.

Taken also into consideration the increasing risks as well as the man-made and natural disasters that Cultural Heritage faces worldwide and in particular in the Euro-Mediterranean basin, EuroMed2016 prominent participants have urged the close collaboration between stakeholders and agencies in charge of the cultural heritage assets and the ones in charge of crisis management. To this direction they have signed the **EuroMed2016 Resolution on Crisis Management and Protection of Cultural Heritage**. ([http://www.euromed2016.eu/application/files/8314/7984/7542/Euromed\\_resolution.pdf](http://www.euromed2016.eu/application/files/8314/7984/7542/Euromed_resolution.pdf))

Throughout the conference participants had the opportunity to enjoy the poster session with excellent scientific works, the Virtual Exhibition "All Our Yesterdays", with a selection of pictures of the last century, already presented with great success in Italy, Belgium and Denmark, as well as high-end applications and products presented by various exhibitors. Moreover, the prominent experts have enjoyed an excursion to the 11<sup>th</sup> century UNESCO-World Heritage List Monument of Asinou church.



Figure 24: The printed 3D model of Asinou church delivered to Dr. Hadjiyiannis, President of the Commission for Culture and Education by ESR9 Marleen de Kramer.

The participation in this highly scientific conference has moreover offered the participants extended networking opportunities in the presence of many national and international representatives, while the scientific audience, prominent stakeholders, researchers and professionals were provided also a tour in the Nicosia "Buffer Zone" during the Social Dinner.



Figure 25: Night tour in the Nicosia "Buffer Zone".



Figure 26: Enjoying the Cypriot cultural heritage.



Figure 27: ITN-DCH fellows@ EuroMed2016.

Several supervisors attended this great conference with an active role as speakers, chairmen and participants in the various workshops, EU-project meetings and events, while Prof. Nicolaidis attended also the **excursion to the Asinou church** and has offered an exceptional in-situ presentation of the monument, its wonderful frescoes and a description of the work done in it.



Figure 28: Prof. Nicolaidis unveiling the history of Asinou to the prominent experts.

Their own work and expertise in front of the scientific audience as well as the applications they have developed through the study of the ITN-DCH project's case studies, presented also at the Asinou church the fellows ESR3 Diego Bellido Castañeda, ESR7 Matevž Domajnko, ESR8 Nicola Carboni, ESR9 Marleen de Kramer, ESR10 Margarita Papaefthymiou, ESR12 Vasiliki Nikolakopoulou, ESR13 Simon Senecal, ER2

Eirini Papageorgiou and ER3 Georgios Leventis.



Figures 29, 30: Fellows explaining their work in ITN-DCH project to EuroMed2016 participants.



ESR7, ESR9, ESR12, ER2 and ER3 have also been members of the **International Scientific Committee (ISC)** of EuroMed2016 conference, responsible for the review of submitted scientific papers. Moreover, the CUT fellows ER2 Eirini Papageorgiou, ER3 Georgios Leventis and ESR12 Vasiliki Nikolakopoulou were core-members of the **local Organizing Committee**, responsible for the preparation and holding of the conference, in which they have also participated with their scientific papers.

In particular, ER2 Eirini Papageorgiou has presented her own paper with the title "Towards the Sustainable Development of Cultural Landscapes Through Two Case Studies on Different Scale" (doi: 10.1007/978-3-319-48496-9\_50) and together with ESR12 Vasiliki Nikolakopoulou and ER3 Georgios Leventis have been co-authors of the following papers: "Towards Monuments' Holistic Digital Documentation: the Saint Neophytos Enkleistriotis Case Study" [doi:10.1007/978-3-319-48496-9\_36], "Educational Creative Use and Reuse of Digital Cultural Heritage Data for Cypriot UNESCO Monuments" [doi:10.1007/978-3-319-48496-9\_72], "Monuments Immersive Digital Heritage Experience with the Use of Interactive Technology" [doi:10.1007/978-3-319-48974-2\_30], "Parian Marble: A Virtual Multimodal Museum Project" [doi:10.1007/978-3-319-48974-2\_29], all presented during EuroMed2016 conference and published by Springer International Publishing AG 2016.



Figure 31: ESR12 Vasiliki Nikolakopoulou presenting the paper "Educational creative use and reuse" together with Dr. Pavlos Chatzigoriou.



Figure 32: ER3 Georgios Leventis presenting the paper "Parian Marble" together with Dr. Pavlos Chatzigrigoriou.

The ITN-DCH fellows also had the opportunity to participate in the welcome event organized by the Exarchate of the Orthodox Patriarchate of Jerusalem in the presence of his Beatitude Theophilos III, Patriarch of the Holy City of Jerusalem and in the Social Dinner the next evening.



Figure 33: The welcome event at the Exarchate of the Orthodox Patriarchate of Jerusalem.



Figure 34: Social dinner @ Chateau Status Restaurant, located in the neutral "Buffer Zone".

Moreover, the fellows have presented themselves to the ITN-DCH Advisory Board and became chair(women) in the different conference sessions, an experience which is better described through their own words. Special thanks are to be given to ESR9 Marleen de Kramer for setting up a questionnaire, all the fellows who have filled it in and thus contributed to the formulation of this Q&A section and of course ESR12 Vasiliki Nikolakopoulou for coming up with the idea of sharing experiences and organizing the process of getting the fellows' feedback and carefully selecting the quotes presented here.

So, here it comes!



**What advice would you give other first-time chairs?**

**"Be bold! Time limits are there for a reason, even if some speakers seem to not grasp the concept."** Nicola

**"I found that thinking of a short summary statement of each presentation during the talk itself helped the presenter feel that at least one person was listening..."** Marleen



**"As far as the time is concerned...be strict, remember there are others that want to present too! Also, do not be anxious, chairing in a conference is a unique experience!"** Georgios



**What was the most challenging part of chairing? Was it what you thought it would be, or something totally unexpected?**

**"...Perhaps the biggest challenge was announcing all the international names - it helps to double check with each presenter in advance whether you're pronouncing them right."** Marleen

**"The most challenging part of chairing was that I was also presenting my own paper in that same session...too stressful! I was**

**lucky enough not to have any expectations, therefore I think everything worked out fine!"** Eirini



**"It was challenging to find all the speakers before the session. Furthermore, not all of them were present, thus we had to make modifications of the program on short notice. Regardless of that, chairing of a session was a success."** Matevz

**"It was something that I expected so I was trying to be particularly concentrated in order to be able to ask the presenters interesting questions."** Margarita



**How did you divide up the work if you were co-chairing?**

**"We divided the speaker's according our area of expertise. Due to it was a long session, we can prepare each of us appropriate questions for each speaker."** Diego

**"We alternate the presentation of people so that we can rest a little bit during the presentations."** Simon

**"One of us was focusing at the time span and ringing the bell (!) when time was over, and the other one was keeping notes and distributing the microphone to the audience at the questions' part."** Vasiliki

# A Personal Insight of “EuroMed2016” Conference

By Eirini Papageorgiou, ER2

The 6<sup>th</sup> International Euro-Mediterranean Conference on Digital Cultural Heritage EuroMed2016 was held in Nicosia from 31/10/2016 to 5/11/2016. More than 400 stakeholders, policy makers and professionals from the sectors of academia and research as well as the private sector have participated in this prominent event.



Figure 40: Opening ceremony of EuroMed2016.

As core-members of the local Organizing Committee the CUT fellows ESR12 Vasiliki Nikolakopoulou, ER2 Eirini Papageorgiou and ER3 Georgios Leventis have very actively experienced *all the phases of the conference* extending from preparations to hosting. The months prior to EuroMed2016, with the preparations having already started in August, were intensive and stressful but also creative and productive. Reviewing scientific papers, formulating thematic areas according to the context of the accepted ones as well as writing our own scientific papers exposed us to a variety of information and stimulated thoughts and creativity. Contacting authors, speakers, keynote speakers as well as various suppliers taught us a good lesson about precision as well as coping with delays and/or cancellations. Invitation letters, press releases, brochures' editing, printing, folding, packing, transferring were only some of the stages of the “conference procedure”, adding some more pepper to this multiparametric experience.

But EuroMed2016 was *something more than that* for ITN-DCH ER2 fellow Eirini Papageorgiou. The exposure to a great deal of information based on her research activity within the framework of DHRLab and ITN-DCH allowed the interaction with her former work experience as an architect and monument's' restorator, the result of which was the writing of her own paper with the title “Towards the Sustainable Development of Cultural Landscapes Through Two Case Studies on Different Scale” (doi: 10.1007/978-3-319-48496-9\_50).



Figure 41: ER2 ITN-DCH fellow presenting her paper @ EuroMed2016.

The theory developed in this has to do with basic key-concepts evolved around the concept of “monument”. In particular, since the beginning of the twentieth century the definition of Cultural Heritage has gradually expanded from the scale of individual monument to the scale of cultural landscapes. The broadening of the term has at the same time increased the complexity of the information originating from different domains and being on different scales and forms. In this context, the objectives as well as the challenges involved in the Cultural Heritage sector have become highly diversified, often leading to fragmented and less successful interventions which do not conform with the principles of Sustainable Development. Therefore Cultural Heritage and Sustainable Development should correlate with each another. Pursuing the achievement of sustainable models of development for cultural landscapes, the paper investigates how the factor of scale can act as a linkage between the fields of Cultural Heritage and Sustainable Development.

The paper aims to incorporate the key correlations between *Cultural Heritage* and *Cultural Landscapes*, *Individual settlements* and *Network of settlements*, the *Scale factor* and *Sustainable development*, *Heritage management* and *Strategic planning*. The theory ER2 fellow has developed through the research activity within ITN-DCH is supported through the relevant methodology she has already previously implemented on two real case studies on different scale: the first case study is a network of 19 riparian rural settlements, where the scale shifts from “regional planning” to the scale of “urban planning” and the second case study is an individual rural settlement, where the scale shifts from that of “urban planning” to the

scale of “single building”. Both cases have been studied with the use of 2D and 3D CAD platforms, GIS, graphic design platforms, etc. while various products have been developed such as 3D models, architectural drawings, thematic maps etc., all evolved around the concept of monument and the wide spectrum that Cultural Heritage embraces.

But the *challenge* of preparing the scientific paper became even bigger when the time came to present it in the EuroMed2016 international conference session “*Novel Approaches to Landscapes in Cultural Heritage*”. The presentation for the first time of her own paper in front of an international audience of prominent experts became an even greater challenge, due to the fact that Eirini was presenting in the same session in which she was chairwoman, also for the first time.



Figure 42: ESR9 Marleen de Kramer co-chairing with ER2 Eirini Papageorgiou in the session of “Novel Approaches to Cultural Landscapes”.

A stress which was significantly diminished with the valuable help and support of the co-fellow Marleen de Kramer, who accepted to share the chairmanship with Eirini and made the demanding situation all so much easier to handle. A contribution for which special thanks are to be given to Marleen but also to the rest of the co-fellows for the support and the good team spirit!

Thank you ITN-DCH!



Figure 43: Chilling out with the ITN-DCH co-fellows after the presentation.

# EuroMed2016: Excursion to Asinou Monument

By Georgios Leventis, ER3

In the context of the scientific activities of EuroMed2016, an excursion to Asinou church was scheduled, where the conference's participants were given the opportunity to admire in close a World Heritage monument and experience a unique demonstration of the research work conducted over the years by the fellows of ITN-DCH project. Upon the arrival at the outskirts of Nikitari village, the visitors departed from the bus and gathered at the courtyard of the church waiting for Mr. Andreas Nicolaides to inform them about the history of the monument.

While fellows were preparing their work along with their talks, Mr. Nicolaides guided the attendees on a journey back in time starting from church's build in 1099 with the donation of Magistros Nikephoros Ischyrios; who later became a monk with the name Nikolaos, the various historical phases the monument has been through over time until its abandonment at the end of 18<sup>th</sup> century. Subsequently the crowd along with Mr. Nicolaides entered the nave, where he gave an intriguing detailed speech regarding Asinou's vivid frescoes depicting scenes from the Orthodox Christian faith.



Figure 44: Andreas Nicolaides explaining Asinou's frescoes.

As soon as this fruitful tour ended, the fellows located outside of the church; ESR7 – Matevž Domajnko and ESR9 – Marleen de Kramer presented the updated Asinou mobile application that uses AR technology as well as explained the existing challenges of 3D scanning reflective objects by using as an example a censer given by the priest. While our 2 co-fellows were enjoying the sunny day, the rest of us; ER2 – Eirini Papageorgiou, ER3 – Georgios Leventis, ESR3 – Diego Bellido Castañeda, ESR8 – Nicola Carboni, ESR10 – Margarita Papaefthymiou, ESR12 – Vasiliki Nikolakopoulou and ESR13 – Simon Senecal were in church's interior presenting our work covering at the same time a wide spectrum of thematic areas ranging from the use of VR/AR technology along with 3D modelling and 3D printing techniques to showing explanatory videos about the project and the e-learning platform as well as explaining the semantic recording of propositions about iconography and showing some preliminary results of applying Artificial Intelligence methods in the field of Cultural Heritage.



Figures 45, 46: Fellows presenting their research work.

Before returning to Nicosia, the attendees had lunch at a nearby local tavern, where the view was astonishing...a World Heritage

monument stood in front of them defying any natural or manmade wear that occurred over centuries and hopefully it will keep standing at its place for the generations to come.



Figure 47: ESR10 presents her VR work on a tablet.



Figure 48: Conference's participants at the courtyard of Asinou.



Figure 49: The censer and Asinou in the background.



Figure 50: View of Asinou from the local tavern.

# Meeting with the ITN-DCH Advisory Board @ EuroMed2016

By Georgios Leventis, ER3

The 6<sup>th</sup> International Conference on Digital Heritage, EuroMed 2016 provided a common place for researchers and professionals of academic and industrial sector from all over the world to present their research work in the documentation of Cultural Heritage. In this scientific context the ITN-DCH fellows; ER2 – Eirini Papageorgiou, ER3 – Georgios Leventis, ESR3 – Diego Bellido Castañeda, ESR7 – Matevž Domajnko, ESR8 – Nicola Carboni, ESR9 – Marleen de Kramer, ESR10 – Margarita Papaefthymiou and ESR13 – Simon Senecal were given the opportunity to meet up and discuss important matters concerning project's final year with the advisory board of ITN-DCH constituted by distinguished professionals of Cultural Heritage domain; Monika Hagedorn-Saupe, Andreas Nicolaides, Alex Ya-Ning Yen and Thomas Kline.

In conclusion, the meeting considered successful through the fruitful discussion that took place which will act as a driving shaft towards the continuation of the project as well as the achievement of its objectives that will further contribute to the cultural community.



Figure 51: Fellows (left) and the advisory board (right).

The meeting started with fellows introducing themselves along with their background and research activities in ITN-DCH, which was very important especially for the 2 ER's since that was the first appointment they had with the advisors from the beginning of their fellowship. Within ITN-DCH the Marie – Curie fellows are given the opportunity to enroll for a PhD in their field of expertise. Based on that, the advisory board asked the young researchers whether they had started their doctorate studies; as expected most of the fellows have already started their PhD, while the rest are about to start soon. During the meeting ESR13 – Simon Senecal showed a virtual application on his laptop, allowing the user to walk inside the Asinou Church, watch a virtual liturgy and interact with the priest through a "Question & Answer" process by typing his/her questions in a provided text field. As the project is undergoing its final year, the fellows' future expectations were discussed as well as in which sector (academia or business) would desire to be employed. Furthermore, the advisory board gave to the fellows important suggestions and useful ideas about the final conference that is scheduled for May 2017 and how this could help in the dissemination of their research work such as publishing a book that will include all 20 fellows' scientific articles published over project's running years.



Figure 52 (From left to right): Monika Hagedorn-Saupe, Thomas Kline, Alex Ya-Ning Yen and Andreas Nicolaides.

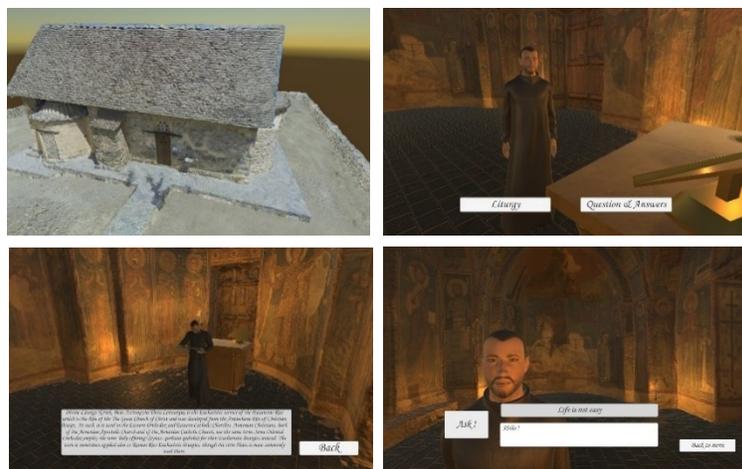


Figure 53 (From top left clockwise): Representation of Asinou; User's options: liturgy or Q&A; Priest answering questions; Priest doing liturgy inside the virtual Asinou.

# ITN-DCH Network Meeting @ Leipzig

By Diego Bellido Castañeda, ESR<sub>3</sub>

The 7<sup>th</sup> ITN-DCH Network Meeting was organized by ArcTron3D on 9<sup>th</sup>-10<sup>th</sup> November in Leipzig (Germany). Network meetings are organized two times per year with the goal to reinforce the multidisciplinary aspect of the project and expose all fellows to the different disciplines, schools of thoughts and cultures. Taking the opportunity of bringing the different fellows together the event aimed to set, organize and plan the future activities in the project. Some particular emphasis has been placed on the definition of the different outputs for each case study as well as the organization of the final conference.

The event took place in Victor's hotel located in the center of Leipzig, which is the largest city in the state of Saxony, 160 km southwest of Berlin. At this location, the meeting started with the presentation of the research performed by the fellows who attended the event. ESR<sub>8</sub>, Nicola Carboni, started with his presentation "Towards a new framework for the semantic description of visual items". Then ESR<sub>7</sub>, Matevž Domajnko, introduced to his work in "Incremental photogrammetric reconstruction for image resolution". Hereafter ESR<sub>10</sub>, Margarita Papaefthymiou, presented her outcomes in "Interactive mixed reality in digital cultural heritage" and finally, ESR<sub>3</sub>, Diego Bellido Castañeda talked about "Aerial Laser Scanner, vegetation filtering and its applications in Donaustauf castle". After that, practical sessions and open discussions dealt with tasks such as image-based methods in reflective objects by a combination of different software, color calibration of dark objects and the possibilities of photo stacking in macro photogrammetry.



Figure 54: Fellows working during the network meeting at Leipzig.

After lunch, the meeting went forward with a discussion about the future activities of the project. A brainstorming was done between

the attendees in order to start preparing the necessary procedures for the organization of the final conference. Furthermore, the discussion finished with a working document which includes tasks such as the venue, the type of conference and a draft of the agenda.

The decision of hosting the event in Leipzig was done with the intention to co-allocate the meeting at the same dates and place as the DENKMAL, one of Europe's leading events in Cultural Heritage. At this major trade fair experts come together from the areas of e-documentation, restoration and the protection of CH. In addition, this fair shares its space with MUTEK, which is the International Trade Fair for Museum and Exhibition Technology. Both events cover a broad spectrum of disciplines, combining exhibitors' presentations and practical demonstrations.

Therefore, the second day of the meeting was reserved for visiting the trade fair hosted at the Exhibition Center (Leipziger Messe).



Figure 55 (from top to bottom): Fellows at ArcTron3D stand during the Denkmal; Martin Schaich at the ArcTron3D stand during the Denkmal.

There, the different attendees had the opportunity to visit the stands and get a first-hand experience of the activities performed by master craftsmen, architects, sculptors, painters, photographers, computer scientists or surveyors joined by the common topic of the European Cultural Heritage conservation.

Therefore, intersections between culture and business, the interaction between different disciplines and the innovations presented an

extraordinary educational and experience value to the event.

Additionally, two partners were participating as exhibitors at the fair. ArcTron3D presented its airborne, terrestrial & high resolution 3D services for Archaeology & Cultural Heritage, as well as different examples of 3D printing, augmented reality and 3D devices such as the zSpace and Oculus Rift. At the same time, Fraunhofer institute IGD displayed in their exhibition booth their new advances in research and their instruments for CH digitization, such as the modular scanning pipeline named as CultLab3D.



Figures 56, 57: Fraunhofer IGD stand at MUTEK.

# ITN-DCH @ InterGEO 2016

By Matevž Domajnko, ESR7

[InterGEO](#) is the world's largest trade fair for geodesy, geoinformation and land management, organized every year. This year it took place from 11<sup>th</sup> until 13<sup>th</sup> November 2016 in Hamburg, where exhibitors showcased new technologies and solutions in a wide variety of fields, ranging from surveying, geoinformation, remote sensing and photogrammetry. As such, it is one of the most important exhibitions from a technological perspective for the interdisciplinary field of digital cultural heritage. Therefore, every year many ITN-DCH fellows attend the exhibition in order to immerse themselves in geoinformatic topics. This year's key topics were big data, digital construction, and smart cities.

Ellie and Matevž from ITN-DCH project were just few of 16,000 visitors from 92 countries that had an opportunity to attend the fair and share knowledge and expertise with other specialists. One of the most fruitful discussions they had was at the booth of an ITN-DCH industry partner – ArcTron3D. Martin Schaich presented airborne, terrestrial & high resolution 3D services for Archaeology & Cultural Heritage, as well as software environment [aspect3D](#) and AR applications for cultural heritage. Ellie and Matevž had a chance to test an interesting new functionality of aspect3D - volume calculation, and to experiment with Augmented Reality App, where you have to catch Pokémons with virtual dinosaurs.



Figure 58: ESR4 – Ellie discussing the history of InterGEO



Figures 59-61 (from top to bottom right clockwise): Participants at InterGEO 2016; Participants using AR technology; UAV as a medium of capturing data.

(Pictures: Courtesy of InterGeo 2016)



# ITN-DCH @ Europeana Space 3<sup>rd</sup> International Conference. Cultural Heritage: Reuse, Remake, Reimagine

By Vasiliki Nikolakopoulou, ESR12

The 3<sup>rd</sup> Europeana Space International Conference took place at Berlin on November 21<sup>st</sup> to 22<sup>nd</sup>, at Hamburger Bahnhof - Museum Für Gegenwart.



Figures 62, 63: Hamburger Bahnhof - Museum Für Gegenwart.

The Conference started with an overview of where the project is now and where it is going next: pilot studies, evaluation and dissemination actions. After an extensive and quite informative speech by the Project Officer at European Commission, Marcel Watelet, the sessions followed were very interesting and inspiring, showing the first results of the already running E-Space sub-projects and incubation projects.

The first session was about *Using CH in the Digital Era* and the impact of its reuse in the educational context. Nicole McNeilly from the Europeana Foundation, presented the challenges, the open issues and the pilot studies to follow on how teachers use, perceive and reimagine the Cultural Heritage (CH) content provided by the Europeana. This was a thoroughly valuable presentation concerning my research on reusing digital CH content for educational purposes and evaluating already created digital context focusing on the metadata needed in order the context to be presented, organized and licensed according to, first of all, teachers' needs, which are a main (or key), huge subset of digital libraries' and repositories' users.

Upcoming next, E-Space leading pilots presented their work in the fields of dance digitization, gamification with CH, photography, open and hybrid publishing, museums' applications and TV. Impressive presentations by influential experts, professors, stakeholders from the creative sector as well as artists and interactive designers were shown, and as a trainee also in the domain of CH creative reuse, I had the chance to investigate, discuss and found common grounds with my personal research interests. The photos below are presenting just a part of this massive insertion of ideas, thoughts and research questions raised during the session:



Figure 64 (from top to bottom clockwise): Jonathan Shaw presenting *PHOTOMEDIATIONS*; *PHOTOMEDIATIONS* exhibit; Nicole McNeilly, Europeana Foundation - *The Impact of Reuse*.

Completed prototypes, mobile applications where the user has the ability to interact through his mobile device with CH content presented on a wide screen while at the same time audio or/with additional text information is provided, were demonstrated and the audience had the chance to test some of the prototypes during the coffee breaks.



Figure 65: ESR12 testing the Pop-Up Museum application *Noterik*.

On the next sessions, leading experts of the project presented their contributions, lessons learnt and experience earned while between every expert's presentation, an incubated project of E-Space had its 5-minute presentation, making the sessions more intriguing. Copyright issues were also one of the main topics as well as the tools that Europeana developed to resolve them.

Projects as *Storypix*, winner of Europeana Challenge award 2016, *Vivl.io*, one of the winners of the 2016 "Hack the Book" Hakathon event by Europeana Space, *Nora*, an online, interdisciplinary culture based magazine, and the *Picasso's Cat*, a funny and entertaining version of an application where interacting and blending user content with famous paintings takes place, are just a few to mention.

The second day - and last day of the conference - started with a wonderful keynote speech by Cornelia Sollfrank, from Art Warez, about *Artistic abuses of copyrighted material*. This one day session about **Remediating the Archive**, was followed by a panel discussion on *reusing the archive, reimagining and remaking the past* and concluded with the presentation of the work on digitizing dance at Dachverband Tanz, one of ITN-DCH Associated partners, by Michael Freundt.

As an overall review, this conference was one of the best I have ever attended. Creative manifestations of CH assets, mostly paintings and museums' exhibits, in digital forms were shown. Some of them in a meaningful context, some of them lacking it, hence creating fertile ground for researching of semantical links that are missing and user scenarios that could turn them into fully and purposely reusable digital assets by the CH stakeholders and end-users from the tourism, religious, creative (fashion, galleries etc.) and educational sector. Moreover, the fact that during these conferences you have always the chance to discuss those ideas with influential researchers from familiar research fields is quite important, since they can understand your ideas and at the same time value their conceptual contribution to their project thus making possibilities and opportunities for future collaborations and co-creations.



Figure 67: An amazing prototype - Storypix



Figure 66: Aris Karatarakis presenting the Vivl.io.

# Science Slam at CHNT

By Marleen de Kramer, ESRg

Every year, 7reasons helps organise the conference on Cultural Heritage and New Technologies (CHNT) in Vienna, Austria, which is hosted by the Viennese City Archaeology department. This November, the 21st annual conference saw the introduction of a new kind of session - a Science Slam!

The Science Slam is a competitive format in which presenters are judged by the audience on clarity, novelty, and especially entertainment value. They have eight minutes and can present alone or in teams, using any props they want - but no powerpoint! Score sheets are given to small groups of viewers, rather than individually, to encourage them to talk amongst themselves about the entries.

I have been successfully competing in science slams as part of the "outreach" work package and think it's a great way of doing popular science and avoiding the usual "speaker reads bullet points off slides" style of presentation, so I suggested it at the first brainstorming session. Though there was some initial puzzlement at the idea, it was eventually accepted as an experimental session to be chaired by me. Our call was open to all, but the goal was to attract younger researchers and those not working on formally defined projects.

Based on the abstracts submitted, we selected four competitors, with topics ranging from photogrammetry to historic food. The audience was initially sceptical, with many attending, as they admitted, solely to find out what a science slam is, but there was plenty of interest. We not only filled our room, but left the more conventional parallel session nearly empty!

Expectations were high, but they were easily met by our high-calibre presenters. Despite our time slot just before lunch, the audience stayed to watch us count the votes in a neck-to-neck finish.

First place went to two young architects, Doris Grandits and Lukas Stampfer, who gave a very entertaining account of their time surveying an Indonesian museum while finger-painting live in the style of the artist.

Throughout the rest of the event, we had attendees telling us how much they enjoyed the session and encouraging us to have it again in a bigger room next year - a resounding success! We hope that it will soon become a CHNT fixture.



Figure 68: Science Slam competition.

# ITN-DCH @ 20<sup>th</sup> Anniversary of Marie Skłodowska-Curie Actions

By Marleen de Kramer, ESR9

2016 marks the 20th anniversary of Marie Skłodowska-Curie Actions (MSCA). Since the start of the programme in 1996, it has funded 98,000 researchers, and former Marie Curie fellows have been awarded a total of five Nobel prizes and an Oscar!

On the 29th of November, the European Commission held its anniversary celebration, in Brussels, Belgium - and ITN-DCH was part of it! Framed by congratulatory speeches and panel discussions, the core of the festivities was formed by TED-style talks from former and current researchers designed to demonstrate the breadth of topics covered by Marie Curie fellows and how outreach to the next generation forms and integral part of the concept.

I was contacted by Manel Laporta-Grau of the European Commission in September and asked to participate as a speaker, but only after sending videos of my science slam entries and multiple phone calls. I was advised on which elements to include in my presentation, but otherwise given free rein to write it as I thought best.

It was clear from the start that the EC wanted to ensure that these presentations met a strict standard, but how strict only became apparent when I arrived. We had been informed that there would be a meeting the afternoon before the event to rehearse our presentations and receive some feedback, but this turned out to be a coaching session with a professional public speaking trainer, Lars, who had previously worked on Barack Obama's campaign!

Since I was representing not only ITN-DCH, but the entire field of cultural heritage, I was, by this point, very anxious about getting it right, and the beautiful but intimidating historic theatre that was to be the presentation venue made us all even more nervous. Fortunately, Lars had individual tips for all of us that greatly improved our presentations, ranging from breathing techniques and effective use of the stage while speaking to improving the flow of the images in our slide shows.



Figure 69: ESR9 presenting ITN-DCH at the 20<sup>th</sup> Anniversary of Marie Skłodowska-Curie Actions.

Doing the coaching in small groups with the other presenters meant that they were able to help us decide which parts of the presentations needed polishing so an audience not familiar with the subject matter could understand them. Interestingly, though the areas of expertise ranged from science to medicine to engineering to humanities, most seemed to touch on the common theme of our perception of truth and the prediction of the future, meaning the talks formed a coherent whole.

A small dinner hosted at the hotel in the evening allowed us to meet some of the EC members who were involved in MSCA and exchange tips with the other participants, but we all had an early night to finish polishing our presentations in the amazingly luxurious hotel rooms.

On Tuesday, we promptly ignored the advice given in the nutritionist's talk on stress eating and turned to the comforts of chocolate during the coffee break - exploring the intangible heritage of our Belgian hosts. Watching and mentally cheering on the others in our little group of presenters helped distract us from our own nervousness. The coaching turned out to have been very effective; we saw a marked improvement in the style and flow of every presentation.

It was interesting to see that, unlike at most conferences, there was hardly anyone using laptops, though twitter was buzzing with references to the conference - a good sign that the presenters were holding the attention of the audience and that the live stream was being watched as well!

The entire event was very well managed and ran extremely smoothly. Travel bookings were centrally managed, a moderator introduced the participants and kept the panel discussions under control, and sound and lighting engineers ensured that the presenters looked professional, even when we didn't feel it.

My initial disappointment at not having time to explore the city the previous day turned out to have been unfounded. Riding the post-presentation buzz and fuelled by the cocktail reception, I walked out into a city that felt somehow otherworldly, with Gothic architecture seeming to float away on the lights from the Christmas market - seeing it by daylight first would have made it feel much more mundane!

Those interested can watch the entire event, including all presentations, on the event website at [http://ec.europa.eu/research/mariecurieactions/news-events/events/year/2016/1129-20-years-msca\\_en.htm](http://ec.europa.eu/research/mariecurieactions/news-events/events/year/2016/1129-20-years-msca_en.htm)



Figure 70: ESR9 representing ITN-DCH in Brussels.

# Publications

By CUT



## 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., Fresca, A., Liestøl, G., Rajčić, 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.



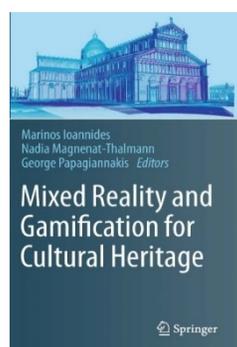
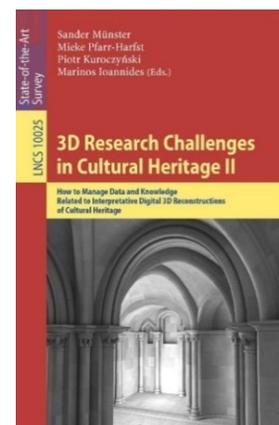
## 3D Research Challenges in Cultural Heritage II

### 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.



## 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.



# Former Fellows Share Their Experience

## ITN-DCH: A Lifetime Experience

By *Nikoletta Skordaki, ESR14*

My journey to the ITN-DCH project began at June 2014 in Ljubljana and lasted 25 months. These months were one of the most fruitful periods of my life and career. When I went to Slovenia I had a good background regarding materials characterization, study and assessment of Cultural assets' current condition and real time protection of Cultural Heritage, but I was observing and approaching cultural assets in a more "classic" and "clear engineering" way, without taking so much under consideration how digital methods can be used. Therefore, the transition to the digital era needed many hours of work, study, training and measurements.

Through my research and work as well as under the guidance of Prof. Roko Žarnić (UL), Prof. Antonia Moropoulou (NTUA), Prof. Vlatka Rajčić (UNIZAG) and Dr. Marinos Ioannides (CUT) among others, I broadened my knowledge and gained new skills regarding digitized techniques, visualization tools and the application of non-destructive techniques.

The combination of applied techniques on site and the digitized methods helped me to know better of the missing pieces of the 'documentation puzzle'; a knowledge that is very useful to understand which data and how should be collected and digitized for an integrated and innovative documentation. My interaction with the other fellows, ITN-DCH partners and significant researchers and scientists from the field of digitization and protection of Cultural Heritage contributed to the better understanding of different approaches, that academic, private and research institutions around Europe have. All these helped me to become a better and more mature researcher and scientist and to have a broader conception about the approaching, documentation and protection of cultural assets.



Figure 71: The research activities during ESR14's fellowship



"The warmth and love surrounding Christmas is a joy to be savoured with family and friends. It is a time to give and share with one another. Here's to wishing you **the best** this season has to offer."



***MERRY CHRISTMAS  
&  
A HAPPY NEW YEAR!!!***

## Forthcoming events & meetings

### 3D-ARCH 7<sup>th</sup> International Workshop - 3D Virtual Reconstruction and Visualization of Complex Architectures and Scenarios -, 1<sup>st</sup> - 3<sup>rd</sup> March 2017, Nafplio, Greece

3D-ARCH is a series of international workshops which started in 2005 in Venice and move throughout the years to Zurich (2007), Trento (2009, 2011, 2013) and Avila (2015), organized as an [ISPRS](#) and [CIPA](#) event.

The main focus of the workshop is to discuss steps and processes for smart 3D reconstruction, modelling, accessing and understanding of digital environments from multiple data sources.

Topics include:

- Multi-source data and multi-sensors approaches
- Low-cost sensors and open-source algorithms for terrestrial 3D modeling
- Automation in data registration
- Image matching and 3D reconstruction
- Point cloud analysis
- 4D modelling
- Procedural modeling
- Accuracy requirement and assessment in 3D reconstructions
- 3D applications in terrestrial and underwater environments
- Virtual and Augmented Reality applied to the visualization and conservation of complex architectures and heritage

More info: <http://www.3d-arch.org>

## Computer Applications and Quantitive Methods in Archaeology 2017 (CAA 2017), 14<sup>th</sup> - 16<sup>th</sup> March 2017, Atlanta, USA

Welcome to the official website of the 2017 [Computer Applications and Quantitive Methods in Archaeology \(CAA\)](#) international conference. The conference will be held between **March 14<sup>th</sup> and 16<sup>th</sup>, 2017** at Georgia State University in Atlanta, GA, USA.

The 45<sup>th</sup> CAA conference will bring together scholars from across the globe to share their cutting-edge research from a diverse range of fields in a focused, but informal, setting. One thing that the CAA prides itself on is a strong sense of community, and we hope to continue to grow that community by welcoming new participants this year. This is only the 3<sup>rd</sup> time the conference has been held in the United States, and we are excited to have old and new members join us in Atlanta this coming spring.

More info: <http://www.caaconference.org/>

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 YouTube

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

Credits:

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