



CIPA Newsletter

The official newsletter of CIPA Heritage Documentation

In this Issue:

- 1 2014 CIPA WORKSHOP IN BEIJING
- 2 PROJECTS & IDEAS
- 4 CIPA SUSTAINING MEMBERS
- 5 FUNDING OPPORTUNITIES
- 6 ANNOUNCEMENTS & EVENTS

Editor's Note

S. Stylianidis - stratos@geoimaging.com.cy



Our 2nd e-newsletter is a reality. This issue is dedicated to Prof. Petros Patias and Dr. Antonio Almagro that during our last CIPA Symposium in Strasbourg, were declared as honorary president and honorary member respectively.

Petros is Professor at the Aristotle University of Thessaloniki teaching photogrammetry; He was CIPA president for 4 years (2003-2007) and during his presidency, CIPA adopted the new Statutes and the By-Laws that came into force in January 2004. Antonio is an Architect; now retired, but even now he is continuing to giving his life for CH. Both of them have been active in CIPA for decades and they inspired several young people to enter CIPA and contribute in science and culture.

In this second issue, we provide information on CIPA forthcoming workshop in Beijing, China as well as reference to running research projects master theses and ideas. One section is dedicated to our sustaining members, the organizations supporting CIPA. Finally, the newsletter provides information on Funding opportunities in the framework of the EC Horizon 2020 programme and announces the EuroMed 2014 event taking place in Cyprus.

Do not forget that the CIPA newsletter is open to everyone and wishes to announce or publish news and articles related to CH. Input and comments for improving our newsletter are also welcomed. We count on your support.

Have all a lovely reading!



CIPA 2014 Workshop in Beijing

ICOMOS-CIPA Workshop CHCD 2014 Symposium

Mr. Shang Jin – shaangjin@gmail.com

CIPA will launch its 40th workshop on Sep 1-4 in Beijing, China, which was announced by Chair Mario Santana at CIPA 24th symposium closing ceremony on Sep 6 2013 in Strasbourg.

On behalf of the host organization, Tsinghua Heritage Institute for Digitization (THID) made a presentation of the proposal. 7 organizations will support and work with THID to prepare the first workshop in China: ISPRS, ICOMOS China, Tsinghua University, Tsinghua Holdings Human Settlement Construction Group (THHSCG), Tsinghua Tongheng Urban Planning and Design Institute (THUPDI), Beijing Haidian District People's Government, and Yuanmingyuan Administration.



www.CHCD2014.org

The 2014 workshop that facilitates the debut of CIPA in China has carefully chosen as the working site the imperial garden of Yuanmingyuan in Beijing, the capital of China. In conjunction with the 3rd CHCD Symposium, it will discuss how the "translation of lost heritage" can be realized through interdisciplinary cooperation by means of advanced documentation techniques. A new serial program will also make it a significant event for heritage dissemination, education and media communication. It is expected that such event will make CIPA further established in the Asia-Pacific region, and well connected with the Chinese heritage community.

All members are welcome to participate in this groundbreaking event, and a well-prepared program together with a discount registration fee offered. More information of CIPA 2014 Beijing is available through the CIPA website, or www.CHCD2014.org

Important Dates

2014	Workshop	CHCD Symposium
Mar.ch15	Registration Deadline	
April1	Workshop Topic Confirmation	Abstract Submission Deadline
May 15		Notification of Abstract Acceptance for Oral Presentation
May 30		Last Day for Early Payment
June 15		Invitation Letter
July 15		Full Paper Submission Deadline (Payment to be made for at least one author)
August 1	Work Plan Finalized	Notification of Paper Acceptance in Proceedings

Projects & Ideas

Digitisation of a large number of artefacts in the Archaeological Museum of Milan

S. Gonizzi - sara.gonizzi@gmail.com



The goal of the 3D-ICONS project (<http://3dicons-project.eu/>) - funded under the European Commission's ICT Policy Support Program - which builds on the results of CARARE and 3D-COFORM, is to provide Europeana with a large number of 3D models of architectural and archaeological monuments and objects of remarkable

cultural importance. The main purpose of this project is to produce around 4000 3D digital models that have to be generated in simplified form in order to be accessible and viewable on low-end personal computers and on the web. In order to reach this goal a suitable workflow of surveying and modeling has to be outlined. Within the 3D-ICONS project, the research group of Politecnico di Milano (Gabriele Guidi, Sara Gonizzi Barsanti, Laura Loredana Micoli, Michele Russo and Davide Anghelèddu) developed a pipeline to quickly survey a significant number of objects (around 500) of the Archaeological Museum in Milan (Italy) and to create accurate 3D models. The museum holds a large number of archaeological objects from the Roman, Greek, Etruscan, Barbaric and Medieval periods. The Archaeological Museum is organized in thematic rooms, one for each historical period, with the Roman age covering the ground floor and the two courtyards, the Medieval period on the first floor, Etruscan on the second floor and the Greek period on the top floor. Some objects are fixed on pillars or on the walls, others are movable or in cases. Rooms are lit with spotlights pointed directly on the objects - on the ground floor there is a big glass wall forming one side of the room.

The fixed position of some objects imposed a short camera-object distance and therefore the choice of the right type of camera and a lens short enough to frame a suitable portion of the object, was a critical point. Illumination in the museum also influenced the survey, especially when the spotlights were directly oriented on objects. In these cases, the illuminating conditions may prevent the automatic algorithm to identify corresponding portions of the object. A big problem was the possible presence of windows that created a significant backlight effect compromising sometimes the shots. The solution in those cases was to use dark panels to shield the backlight avoiding the strong light imbalance and reflecting panels to shed light on the relatively dark foreground.

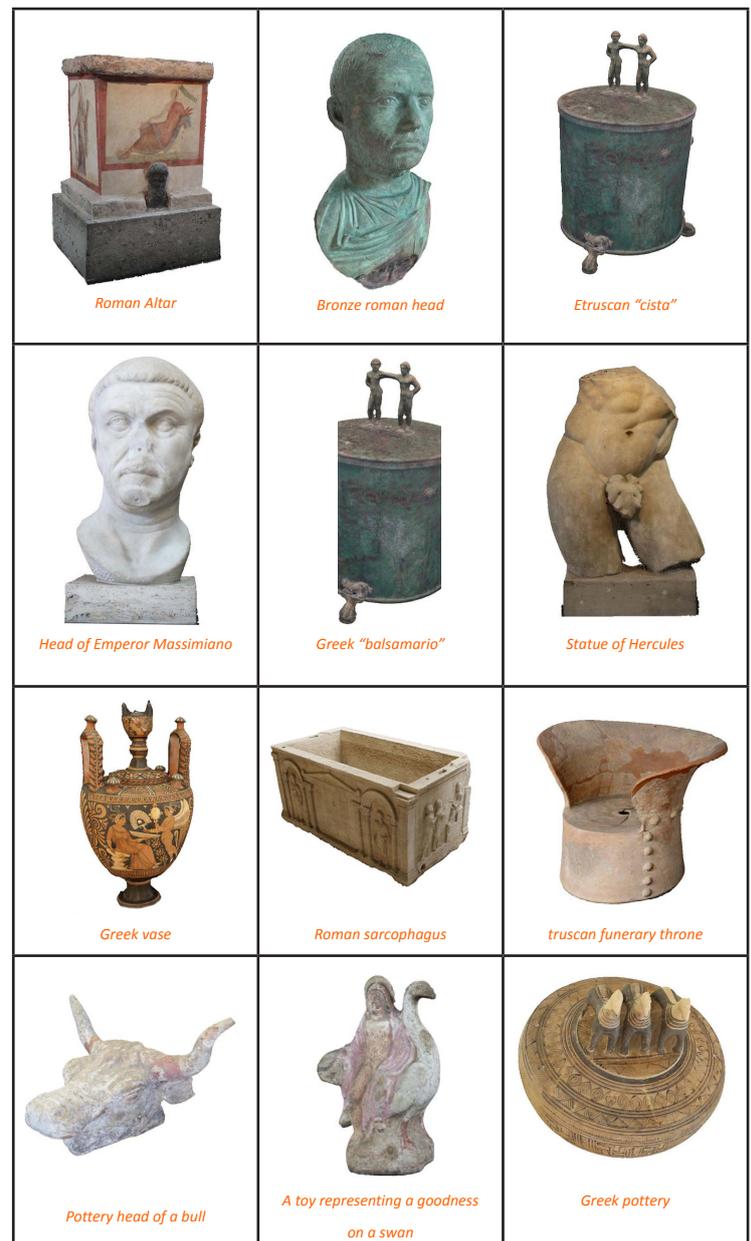
The Agisoft Photoscan software was used for data processing. The software implements the entire photogrammetric pipeline, from the image orientation to mesh and texture generation. As a software derived from the Structure from Motion (SfM) philosophy, Photoscan works better with many images taken with a short baseline rather than few images with a relatively long baseline as in standard photogrammetry. This involves a significant overlapping among images that eases the automatic dense image matching. In situations where the narrow viewing angle and the environmental constraints imposed strong limitations in the shooting position, the

software had problems in finding the homologous points and the alignment was not satisfactory, preventing the 3D reconstruction procedure.

Several tests were done using items with different shapes, positions and sizes, to define the most suitable settings with this kind of objects and the best pipeline for producing a huge amount of models in the shortest possible time frame.

All set of images included a scale reference made with targets suitable for automatic recognition, thus all models are metrically scaled in order to be not only suitable for visualisation (the primary goal of the project), but also reusable for further applications such as documentation, virtual visits, replicas, etc. After the image-based 3D reconstruction process, the derived 3D models are stored in obj format with the whole texture contained in a single 4096x4096 image. The models are further enriched with metadata and converted in suitable formats (e.g. PDF3D) for web visualization.

The figure shows some examples of 3D models generated from some museum artefacts.



Master theses on Cultural Heritage & Geo-Technologies

F. Remondino - remondino@fbk.eu



This CIPA task group is noting the increasing demand of 3D photographs as an important contribution to provide objective iThe Geo-Technologies centre (CGT) of the University of Siena, Italy (<http://www.geotecnologie.unisi.it>) and the Bruno Kessler Foundation (FBK) in Trento, Italy (<http://www.fbk.eu>) have successfully closed their annual cooperation within the masters offered by CGT in archaeology and Cultural Heritage.

FBK and its 3DOM research unit (<http://3dom.fbk.eu>) in 2013 hosted 5 students that accomplished their master works on the following topics:

3D surveying and documentation of the Dome's square in Trento (Cristina Navarra): the square (approximate 60x75 m) was surveyed with terrestrial photogrammetry aiming at the creation of an orthoimage of the building façades at 1:50 scale. For some historical buildings, frescoes were digitized for the realization of thematic maps and conservation purposes.

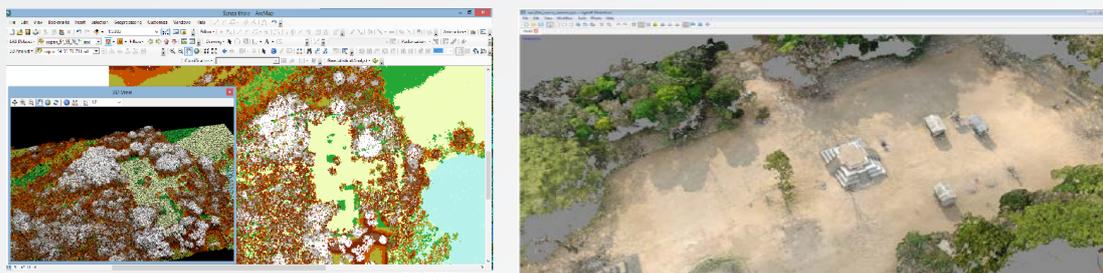


A panoramic view of the Dome's square in Trento and the unwrapped orthoimage (1:50) of all the building façades facing the square.

Comparing photogrammetry and Kinect for heritage artefacts 3D modelling (Marina Terranova): terrestrial photogrammetry and the Kinect low-cost active sensor were compared (from data acquisition to textured 3D model creation) surveying some small artefacts. Advantages and disadvantages were highlighted considering object's material, shape and dimensions, illumination conditions, etc.

Realization of a GIS platform for conservation and valorisation of archaeological areas (Veronica Zori): GIS technologies were used to collect, order, merge, archive and access heterogeneous data of the archaeological area of Paestum. A UAV-base high-resolution (5 cm) orthoimage was digitized, classifying all the heritage structures according to period, function and style. Successively other information (3D models, plans, videos, etc.) was added for the realization of an informatics platform useful for future preservation and conservation policies.

Surveying and analysis of archaeological sites with LiDAR and UAV – a comparison (Pietro Manti): LiDAR data and photogrammetric point clouds (derived from an UAV flight) were compared to identify their advantages and disadvantages when studying archaeological sites.



LiDAR-based analyses of the archaeological area (left) and UAV-based DSM (right).

PointCloud2Publish – web-based visualization and access to 3D models (Simone Minto): the goal was to analyse the actual possibilities to publish on the web reality-based 3D models. Starting from dense point clouds, polygonal models with texture were produced. Then different tools, libraries and remote repositories were evaluated and compared taking into consideration the possibility to keep 3D models segmented or adding external links.

Web-based visualization with a 3DPDF and a remote repository of reality-based 3D models.



Ice castles and snow igloos: Melting tangible or Intangible Cultural Heritage?



M. Lönnqvist - minna.lonnqvist@helsinki.fi

It is winter, at least in the northern hemisphere. Inuits, or eskimos, have a long-living tradition in building igloos from snow. The cutting of snow cubes and planning a dome need extra skills to build a safe nest. These skills have been developed by people in the Arctic living with long winters and permafrost.

Every year in Finland, in my home country, there are a lot of snow castles erected by children and some ice castles, even ice sculpture, are designed and built by adults. There is no permafrost but a part of northern Finland, like Lapland, belongs to the circumpolar sphere. Every winter Lapland offers an ice hotel and a chapel where you can get married and have your first night in an ice hotel after you have had your meal in an ice bar. In the hotel the temperature is - 5°C, and you can sleep on a reindeer fur. Exotic, and tourists are excited. In addition, you can enjoy the northern lights with multiple colours from windows or outside, if the atmospheric conditions are right.

One wonders, how ice or snow buildings should be preserved as cultural heritage as they are melting away. Some are really astonishing architectural achievements and genuine sculptural art like the ice castles constructed for the Harbin Ice Festival in China. The ice buildings are presented there with multiple coloured lights. Think a moment: are the snow and ice castles tangible or intangible heritage? In my view in a way they are both. Now they are glittering in the winter sun, but soon they are melting away with the spring. We can temporarily see, touch and experience them. But we can record and document these disappearing cultural products with digital means and build 3D models. For our cultural memory their documentation would be important.

This year in January a Dutch team consisting of some 60 people, including students and teachers from The Technical University of Eindhoven, has built the world's biggest ice dome in Juuka in Finland. It was opened January 18. It covers dozens of meters in diameter, the size made possible by a new technology. The Dutch team started the dome building by using a huge air balloon covered by a net that defines the structure. The Dutch maintain that it is possible to construct a huge and safe dome of ice by reinforcing the structure with fine wood fibre, like sawdust, that is sprayed in between the layers of dry snow and iced water. The enforcement is needed only for the bottom of the dome. The technology is planned to serve future ice buildings.

CIPA Sustaining Members

TPLM-3D is a 10 years old company mainly dedicated to 3D data acquisition and treatment



The main gain of the services and products that TPLM-3D offers don't limit themselves to the generalization of

tridimensional measurements. Our creed would rather be the will to adapt to the specificities of each of our clients' demands, whether for digital formats of data upon delivery of the product, or even a pertinent evaluation within the carrying out deadlines depending on the type of the project.



In Cultural Heritage Field, the laser scanning technology allows to measure monuments with a very high density of information. The 3D point clouds which are directly rendered from the measurement are very precise and, even more important: very coherent. From these point clouds, we are able to generate a 3D model of the object or extract its characteristic lines as facade, elevation, or section plans.

This technology also allows to deliver orthophotographs based on the 3D model rendered from the laser survey and high quality digital images. For this type of application, we have developed a software called *ImgSurveyor*, allowing to bridge between laser scanning and photogrammetry.

The main benefits of the our methods are: High level of details, 3D display, Time of operation highly reduced, Archiving of historical heritage, Rendering of facades with textures, 3D presentations (film, 3D rendering) and creation of virtual visits. www.tplm-3d.fr

RIEGL Laser Measurement Systems GmbH - Terrestrial, mobile, airborne, and industrial laser scanners and scanning systems



The Austrian manufacturer RIEGL Laser Measurement Systems specializes in research, development, and production of terrestrial, mobile, airborne, and industrial laser scanners and scanning systems. In combination with these systems, RIEGL creates innovative software to provide powerful solutions for multiple fields of application, including Archaeology and Cultural Heritage Documentation.



RIEGL has demonstrated a long-standing commitment to the preservation of cultural heritage sites. Its support of digital preservation of sites such as the Pyramids in Giza, the Sphinx, the Domitilla Catacombs in Rome, Frauenkirche in Dresden, St. Stephen's Cathedral in Vienna and numerous other significant monuments provides future generations the ability to visit such sites in digital form. RIEGL's terrestrial (static) laser scanners VZ-400 and VZ-1000

combined with the software package RiSOLVE provide “one-touch” solutions for automatic scan data acquisition, registration, true-color processing, and ortho-plot generation. The new streamlined workflow optimizes 3D scene capture and time sensitive documentation.

Mounted on various moving platforms (like cars, rail vehicles, boats, etc.) the RIEGL VMX Mobile Laser Scanning System offers efficient data acquisition of extended areas even at high driving speeds. This way, dense, accurate and feature-rich data of the facades of Grand Canal palaces in Venice have been captured. Furthermore the broad product line of RIEGL airborne laser scanners – from the lightweight VQ-480-U for the use in unmanned aerial vehicles (UAVs) to the fully-integrated Dual Channel LiDAR Mapping System LMS-Q1560 – is ready to acquire high resolution, convincing 3D data of large areas. www.riegl.com

The Getty Conservation Institute



The Getty Conservation Institute

The Getty Conservation Institute is a private, non-profit institution that works internationally to advance heritage conservation practice through research, education, applied field work, and the dissemination of knowledge. The work the GCI undertakes seeks to address unsolved problems, to have impact beyond a particular site or object, and to be sustainable over time. The work of the GCI is primarily project based, with many projects involving close collaboration with local, national, and international partners. In all its endeavors, the Conservation Institute focuses on the creation and dissemination of knowledge that will benefit the professionals and organizations responsible for the conservation of the world’s cultural heritage. The GCI is pleased to make available online to the conservation community a wide variety of resources including publications, teaching materials, newsletter articles, conference proceedings and lectures, and videos. The GCI is based in Los Angeles and is a program of the J. Paul Getty Trust. www.getty.edu/conservation

Breuckmann scanners. High-precision 3D scanning technology in cultural heritage



breuckmann
3D Scanner

Breuckmann scanners are synonymous for high-precision 3D scanning technology in cultural heritage. Our company is a pioneer in structured light scanning technology providing system solutions for demanding applications for industry as well as for medical technology. In the broad field of cultural heritage, Breuckmann scanners are used around the globe by museums, research institutions and professionals for the acquisition of high-resolution 3D data along with precise colour information. The smartSCAN product series is ideally suited for digitising projects in museums as well as on site. Data acquisition is fast and easy following an intuitive workflow with high-precision results for publication or minute analysis. For many years, Breuckmann is sustaining member of CIPA and a constant partner in international research projects. The company puts special emphasis on digitization applications in the field of arts and cultural heritage, this is why the Bernd Breuckmann Award was presented at the CIPA 2013 meeting in Strasbourg and will now be established as an annual event.



The winner of the 2013 Award is Steven T. Goldstein from Washington University, St. Louis, USA, for his research proposal, “Assessing Variability in Stone Tool Assessment of Early Pastoralists in Southern Kenya”. He will receive a Breuckmann system for the duration of his project in Kenya as well as € 1000 in cash. The jury also awarded a special prize to Dr. Andreas Pastoors from the Neanderthal Museum, Mettmann, Germany, for his submission ‘Digitization of ice-age foot prints in the cave of Pech-Merle’. Please visit **Breuckmann on the web** for more information and the upcoming 2014 call for award proposals.

Archeotech



Archeotech offers more than 30 years of experience and the latest technology for site surveys and 3D reconstruction of historic monuments and archaeological excavations. The services provided include aerial photogrammetry with all types of UAV, use of terrestrial laser scanners and photogrammetry service on line. www.archeotech.ch

Funding Opportunities

HORIZON 2020 – WORK PROGRAMME 2014-2015 - Europe in a changing world: inclusive, innovative and reflective societies

REFLECTIVE-7-2014: Advanced 3D modelling for accessing and understanding European cultural assets

For a) Research and innovation actions (The Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.) For b) Coordination and support actions, up to EUR 2 Million

Proposals deadline 30-9-2014 - Indicative budget for 2014: 14M€ - [Download Application Package](#)



Announcements & Events

EuroMed 2014 dedicated on Cultural Heritage Documentation, Preservation and Protection - November 3-8, 2014, Limassol, Cyprus.

M. Ioannides - marinos.ioannides@cut.ac.cy



The 5th EuroMed2014 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 tangible and intangible Cultural Heritage, the use of cutting edge technologies for the protection, restoration, preservation, massive digitalization, documentation and presentation of the CH content. At the same time, the event is intended to 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.



Several organizations and EU running projects have decided to join together in order to create an optimal environment for the discussion, explanation of new technologies, exchange of modern ideas and in

general to allow the transfer of knowledge between a maximum number of professionals and participants during one common time period. Those researchers who wish to participate in this event are invited to submit papers on original work addressing the following subjects or related themes in the following two categories: I) PROTECTION, RESTORATION, AND PRESERVATION OF TANGIBLE AND INTANGIBLE CH. II) DIGITAL HERITAGE

Submissions for the joint event are completely electronic, and both the paper and all supplementary material must be submitted through the on-line submission website. The conference accepts only original, unpublished work written in English.

Important Dates

Paper submission full papers	30 th of May, 2014 (24:00 London-UK time)
Paper submission project/short papers	30 th of May, 2014 (24:00 London-UK time)
Notification of Refereeing results	11 th of July 2014
Camera ready FULL papers to printer	1 st September, 2014
Camera ready PROJECT/SHORT papers to printer	1 st September, 2014
Proposals for showcases/ demo's	28 th of June, 2014

ITN-DCH "Initial Training Network for Digital Cultural Heritage: Projecting our Past to the Future"

M. Ioannides - marinos.ioannides@cut.ac.cy



The "Initial Training Network for Digital Cultural Heritage: Projecting our Past to the Future" with acronym ITN-DCH, is the first and one of the largest Marie Curie fellowship projects in the area of the e-documentation / e-preservation and Cultural

Heritage protection funded by the European Union under the FP7 PEOPLE research framework. The Project started on the 1st of October 2013 and its a consortium comprising of 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 (16 Early Stage Researchers and 4 Experienced Researchers – 500 person months) in the area of CH digital documentation, preservation and protection in order to create for them a strong academic profile and market oriented skills which will significantly contribute to their career prospects.

The ITN-DCH project is seeking highly motivated and valuable researchers for PhD positions in the entire field of Digital Heritage, such as: Data Acquisition (Photogrammetry, Terrestrial laser scanning, GIS) and Computer Vision data processing, 3D reconstruction and modeling, symbolic, semantic and ontology representation, metadata, mixed and augmented reality technologies, CH e-services. All the fellows are supposed to travel between the project partners and attend a series of complementary training courses, scientific workshops and summer schools. The call for fellows will be very soon available on the ITN-DCH website: www.itn-dch.eu