DIGARCH 2015 Presentations Outline – Multimedia Research Group, Athena Research Centre

Timeslot: Monday 3/8/2015 10:00 – 11:00 am **ID:** 1
Title: 3D Digitisation Case Studies - Creating 3D digital replicas of medium-to-large scale monuments for Web dissemination
Presenters: Anestis Koutsoudis (akoutsou@ceti.gr) George Pavlidis (gpavlid@ceti.gr) Arnaoutoglou Fotis (fotarny@ceti.gr), Multimedia Research Group, Athena Research and Innovation Centre, Xanthi's Division, PO BOX 159, Xanthi 67100, Greece
Presentation Abstract: Web-based dissemination of cultural heritage 3D content has been vividly increased over the last decade. EU-funded research and development projects established affordable pipelines in order to allow efficient 3D documentation and dissemination. Such an example is the 3D-ICONS project that was focused on the 3D digitisation of outstanding cultural importance European monuments and their dissemination through Europeana. This presentation focuses on the methodologies applied by the Athena Research Centre digitisation team in order to provide high-resolution 3D digital replicas of six medium-to-large scale monuments that are listed as UNESCO world heritage. The selected monuments are all located in the regions of Macedonia and Thrace, Greece and their timespan ranges from the Roman era up to Late Byzantine era. The presentation covers the hybrid 3D digitisation pipeline along with important details of the 3D data generation and Web-based dissemination approach. It focuses on the use of the WebGL/X3DOM framework as well as the support of novel low-cost interactive virtual reality approaches such as the Google cardboard. The presentation in enriched with video sequences of the 3D models

Timeslot: Tuesday 3/8/2015 09:00 – 12:00 am & 17:00 – 19:00 **ID:** 2
Title: 3D Digitisation of objects using photographic techniques
Presenters: Anestis Koutsoudis (akoutsou@ceti.gr) George Pavlidis (gpavlid@ceti.gr) Arnaoutoglou Fotis (fotarny@ceti.gr), Multimedia Research Group, Athena Research and Innovation Centre, Xanthi's Division, PO BOX 159, Xanthi 67100, Greece
Presentation Abstract: This practical session involves the demonstration of a semi-automated 3D digitisation system evolved by the Athena Research Centre digitisation team. The session will involve tutorials on collecting data using the system (*a computer controlled turntable with computer triggered mirrorless DSLR cameras, a lightbox and polarisation filters*) along with 3D data generation (using Agisoft PhotoScan Professional) and data processing with Meshlab. The session is supported by supplemental documentation as well as software applications that will be utilised in situ.

Timeslot: Wednesday 3/8/2015 09:00 – 12:00 am & 17:00 – 19:00 **ID:** 3
Title: 3D Digitisation of monuments using photographic techniques
Presenters: Anestis Koutsoudis (akoutsou@ceti.gr) George Pavlidis (gpavlid@ceti.gr) Arnaoutoglou Fotis (fotarny@ceti.gr), Multimedia Research Group, Athena Research and Innovation Centre, Xanthi's Division, PO BOX 159, Xanthi 67100, Greece
Presentation Abstract: This practical session involves the in-situ digitisation of parts of the archaeological site using the SFM/MVS and terrestrial laser scanning TOF pipelines. The session will involve tutorials on collecting data using mirrorless DSLR cameras, photogrammetric targets, tripods and variable height monopods along with 3D data generation (using Agisoft PhotoScan Professional) as well as data processing with Meshlab. The session is supported by supplemental documentation as well as software applications that will be utilised in situ.

Timeslot: Saturday 3/8/2015 09:00 – 11:30 am **ID:** 4
Title: Creation of interactive virtual exhibitions
Presenters: Anestis Koutsoudis (akoutsou@ceti.gr) George Pavlidis (gpavlid@ceti.gr) Arnaoutoglou Fotis (fotarny@ceti.gr), Multimedia Research Group, Athena Research and Innovation Centre, Xanthi's Division, PO BOX 159, Xanthi 67100, Greece
Presentation Abstract: The idea of enriching a cultural heritage visitor's experience by employing mobile devices such as smartphones and tablets is an active research domain. This is mainly due to the worldwide user penetration of such devices along with their continuous hardware performance enhancement. This tutorial will introduce the participants of the summer school in some of the technologies involved in order to implement a simple Web-based information system based on mobile devices and QR-codes. The tutorial is support by supplemental documentation including source code and open source applications that will be utilised in situ. The participants will use content that they have captured during the previous digitisation sessions.

Timeslot: Saturday 3/8/2015 17:00 – 18:30 am **ID:** 5
Title: A Web-based virtual museum
Presenters: Anestis Koutsoudis (akoutsou@ceti.gr) George Pavlidis (gpavlid@ceti.gr) Arnaoutoglou Fotis (fotarny@ceti.gr), Multimedia Research Group, Athena Research and Innovation Centre, Xanthi's Division, PO BOX 159, Xanthi 67100, Greece
Presentation Abstract: The Web based visualisation of 3D models that are derived from our cultural thesaurus is a significant scheme for their dissemination in the modern world. Over the last fifteen years, a wide number of approaches to integrate 3D technologies in Web browsers have been developed. It is this evolution of real time 3D computer graphics technologies in combination with the currently available high bandwidth Internet connections and modern Web browsers that enable today users to explore online complex 3D scenes. This tutorial focuses on the development of a dynamic Website that integrates HTML, X3DOM and PHP technologies in order to deliver 3D content to the end-user without the need of installing any plug-ins to a Web-browser. The participants will use content that they have captured during the previous digitisation sessions.