ER1

Name: George Bruseker

Credentials: Philosopher / PhD in Philosophy
National and Kapodistrian University of Athens

Start day: 01/01/2015 **End day:** 31/3/2016

Involved in WP: WP1, WP4 **Hosting Institution:** FORTH

Research Training Activity in ITN-DCH

A. Summary of the Career Development Plan:

In my career, I have had the opportunity to work in very distinct roles as part of very different aspects of the digital cultural heritage equation: research, ICT implementation, project design. As a researcher in philosophy, I have worked on the user demand side, seeking tools to better find, record and analyze data. As an ICT specialist, I have worked on the design and implementation of ICT solutions, especially in collections and research management in order to meet such needs. As a consultant, I have worked on the business side in assessing needs, designing and executing projects. My interest is in designing integrated, holistic and sustainable ICT solutions for cultural heritage institutions that leverage the latest in technological developments and help people – from professionals, to students, to the general public – to engage cultural heritage, learn from it and preserve it.

The Marie Curie action ITN-DCH comes at an exciting moment in the progress of applying complex ICT solutions at a wide level in cultural heritage. Advanced techniques in data capture allow for the elaboration of ever more sophisticated 3D and 4D representations of cultural heritage objects. The burgeoning mass of data generated over the past decades presents a great challenge for data integration through semantics. Meanwhile, the growing field of argumentation representation presents important new possibilities in terms of recording, interrogating and understanding knowledge provenance.

My training at FORTH and in the ITN-DCH offers a formation in conceptual modeling and knowledge engineering with applications in cultural heritage and in observation based science knowledge management more generally. Moreover, I will receive ample hands-on experience in employing and deploying CIDOC-CRM as well as working with and understanding 3D modeling techniques and methodologies. The focus of my research interest is in representing archaeological reasoning and its relation to virtual reconstructions, particularly buildings.

B. Core Research Training Activity

The training will be carried out both through instruction and practical experience at my home institution of FORTH, through secondment activities with network partners and through participation in conferences. At FORTH, the initial month of the fellowship was dedicated to high-level training activities in knowledge engineering and CIDOC-CRM. On-going supervision and mentorship are provided by Dr. Martin Doerr and Maria Theodoridou in the theory of and practical execution of semantics and formal ontology. Secondments have been arranged with three other network partners in order to build experience and connections with scholars and professionals working on archaeology argumentation, 3D modeling, and heritage conservation.

Extensive participation in conferences and workshops to network with other researchers and to present research results will augment my training and experience.

Event Name	Acronym	Paper Title	Dates
CIDOC-CRM SIG	CRM SIG	--Participation in the Special Training and Educational Needs Session--	19/5-20/5/2015
CIPA 25th International Symposium	CIPA	Semantically Documenting Virtual Reconstruction: Building a Path to Knowledge Provenance	31/8-4/9/2015
EMF-CRM2015	EMF-CRM2015	Workflows in Mapping Source Databases to CIDOC-CRM Using 3M Mapping Tool	17/9-19-2015
Digital Heritage 2015	DH	Building an Argumentation Platform for 3D Digital Reconstruction using CIDOC-CRM and Drupal	28/9-2/10/2015
Scientific Computing and Cultural Heritage 2015	SCCH	Reconstructing Iconographic Motifs and Themes in a Semantically Structured Argument Environment	23-25/11/2015
TBD		D4.1 'Learning and pattern recognition algorithms'	

C. **Secondments:**

1. DAI-KAAK: February 12 – March 6, 2015
   The goal of this secondment was to work with researchers actively doing argumentation over a complex archaeological data set that included traditional documentation with 2D and 3D data objects. It provided practical experience in CIDOC-CRM mapping and achieving semantic normalization for the purpose of analyzing argumentation patterns.
2. CNRS-MAP: May 4 – May 29, 2015
   This secondment will focus on semantic structuring and annotation of reality-based and hypothetical digital representations (2D, 3D, 4D), informative modeling, information and knowledge visualisation, and visual analytics.
3. UL: Fall 2015
   This secondment will provide an opportunity to learn about analytic methods of investigating historical construction and to understand the arguments from material studies as a primary souce for analyzing such aspects of archaeological monuments as provenance of material, techniques of construction, traces of use, and environmental decay factors among others and, eventually, how this affects risk analysis.

D. Dissemination & Outreach:

As part of the ITN-DCH training, ER1 will participate in a number of outreach activities, to offer training and research results back to a public forum.

Event Name	Participation Description	Dates
CIDOC-CRM SIG	Attendance, Networking	9-12/2/2015
Marie Curie Alumni Association Athens Event	Attendance, Networking, Poster	24/4/2015
CIPA 25th International Symposium	ITN-DCH Workshop	31/8/2015

E. Added Value to my Future Research Career:

The training I am receiving from Forth and ITN-DCH is invaluable to my future career. Aside from the knowledge gained in terms of semantic representation, knowledge engineering, archaeological argumentation and 3D modeling technologies, the fellowship provides intensive training in article writing, research presentation and public outreach. It also provides invaluable networking opportunities for discovering new research paths and partnerships.

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