# DIGITALHERITAGE INTO PRACTICE

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**Abstract**

DigitalHeritage is an International Congress that federates, since 2013, several workshops, seminars and conferences. As part of this Congress, an Expo is organised where the scientific research in the digital heritage domain is applied to projects and case studies, thus becoming a space for demonstration and discussion.
This paper presents an overview on this field. trying to propose a vision on today scenario and suggesting directions on the future, connected to positive results and potential problems.

**Keywords**

Digital Heritage, Interaction, Immersivity, Communication, Virtual Museums

*Introduction*

Although the accepted UNESCO definition of Digital Heritage concerns any digital material referred to our heritage that has a value and needs to be preserved (*Charter on the Preservation of Digital Heritage*, 2013), Digital Heritage is used today by the scientific community in a wider sense, referring to ICT applications and technological approaches to our cultural and natural heritage, or, better, to the use of digital media in the service of heritage (Cameron & Kenderdine, 2007).

Digital Heritage is a domain that comprehends several different research fields and disciplines, from museography to computer graphics, from archaeology to design, from art history to engineering, from archives to statistics, etc.. It is therefore a general term, which includes many ICT topics and heritage themes, and in most cases most of nowadays research lays in the overlapping and interconnection among them.

In 2013 the International Congress series "DigitalHeritage" started in Marseilles, with the goal of federating main workshops, seminars and conferences in the field of ICT applied to the Heritage domain (Addison, De Luca, Guidi, & Pescarin, 2013). The aim was to let the scientific community to meet in a larger event, every two or three years, to discuss, connect, demonstrate, exchange within the different research areas, applied to cultural heritage. The involvement of

UNESCO contributed to develop a double approach based on "tracks" and "themes". The "digital" approach included six tracks: *1) Digitization, 2) Visualization and Interaction, 3) Analysis and Interpretation, 4) Policy and standards, 5) Preservation and 6) Theory, methodologies and applications of Digital Heritage.* The "heritage" approach included five themes that followed UNESCO classification of heritage: a) Built Heritage from monuments to archaeological sites, cities, and landscapes, b) Culture & Traditions from folklife to languages, crafts, song and dance, c) Museums & Collections from movable objects to the museums, d) Libraries & Archives documentary heritage from books to audiovisual and e) Art & Creativity from digital / new media art to creative digital and online culture.

The structure of the entire congress was built to connect the scientific core, developed through conference presentations, with an applied research arena, the Expo, dedicated not only to the ICT community but to heritage professionals and to visitors.

In 2015, the second edition of the event took place in Granada, Spain (Guidi, Scopigno, Torres, & Graf, 2015), maintaining the same structure. Although the tracks and themes have been slightly revised and simplified (the reduced number of digital tracks have been: 1) Digitization and Acquisition, 2) Computer

Graphics and Interaction, 3) Analysis and Interpretation, 4) Theory, Methodologies, Preservation and Standards, 5) Digital Heritage Projects and Applications), the idea of the Expo was kept.



**Fig. 1:** DigitalHeritage Expo 2015: exhibition area

### 1. DigitalHeritage 2015 Expo

The Expo in Granada is a result of a Call for Application, after which a selection of 25 projects have been grouped into 8 categories: 1) Interpreting our past, 2) Preserving and disseminating heritage in danger, 3) Finding the way into the past, 4) Acquiring and reproducing heritage, 5) Experiencing the past, 6) Immersing in the past, 7) Digital Libraries and 8) Videos and Stereo Computer animations (fig.1).

Each section was built around an emerging question in this domain: How could we use/develop digital tools to better interpret our past (1)? How could we acquire efficiently and in a sustainable way heritage in danger that need to be communicated in digital forms (2)? How to personalise our experience with heritage, such as building our own itinerary (3)? Is there an efficient way to get back from digital to tangible objects (i.e. 3d printing/ tangible interfaces) (4)? How can a user experience the past (5)? How can he feel a complete immersion in it (i.e. immersive VR) (6)? What can be done with big data and large archives organised around the new digital libraries (7)? And finally which narrative can better adapt to computer animations (8)?

During the congress, I have chaired a specific workshop whose aim was to discuss and deeper explain how the exhibitions were developed, the motivation and innovation behind them, together with open issues and perceived problems in the future of digital heritage applications.

Papers presented in this special Issue of SCIRES have been selected as best papers of that workshop:

- "Virtual reconstruction and interactive applications for Korean traditional architectures" (originally in section 1) (fig.2)
- "meSch: Internet of Things and Cultural Heritage" (section 3)
- "Digitizing indoor and underground cultural heritage sites with robots" (Rovina project) (section 3) (fig.3)
- "Game Embrace siegecraft in 'Protect the walls' " (section 5)
- "A virtual itinerary for real experience. The frescos of the Chapel of The Magi in Palazzo Medici Riccardi" (presented only at the workshop)
- "Reconstructing the original splendour of the House of Caecilius Iucundus" (section 8)
- "Personal Hand-Held Devices and Virtual Reality Passive Technology" (section 6)
- "A Framework for remote 3d interaction with handheld devices" (section 7)
- "Advanced Learning with Uffizi Touch Cloud Edu" (section 7)



**Fig. 2:** Korean traditional Architectures project at DigitalHeritage Expo 2015 in Granada

The last paper of this Issue wasn't presented at DigitalHeritage 2015; it was received through the call of the journal, and included here since it offers an interesting vision on how a digital approach could influence the research in itself and not only the communication of our heritage to users (Space Syntax Analysis applied to the study of Albanian Dwellings).

### 1.1. Awards

DigitalHeritage has launched in 2013 three categories of Awards, specifically oriented to applications presented at the Expo, in line with

the general approach of the conference. They have been thought to identify innovative aspects as referred to heritage contents (Quality of Contents award), to more technical aspects (Technical Proficiency award), but also to the appreciation of the visitors (People Choice award). The scientific committee of DigitalHeritage Congress has voted for the first two categories, while it was asked to the general visitors to vote their favourite project, placing their preference into a ballot box. In 2015 the awarded projects have been: for the "Quality of Contents": Bruno Fanini, Enzo D'Annibale for the application *AIRome*; for "Technical Proficiency": Daniele Calisi, Francesca Giannone, Fabio Cottefoglie, Vittorio Amos Ziparo, Claudia Ventura, Paolo Salonia for the application *Rovina: a robotic approach to digitization of indoor and underground CH sites* (in this issue, Calisi et al. fig.3); for People Choice, it was rewarded again the *Rovina* project, and also Antonella Guidazzoli, Maria Chiara Liguori, Daniele De Luca, Silvano Imboden, Giovanni Bellavia, Luigi Verri, Alessandro Rivalta, Simona Caraceni for the application *Etruscan VR Experience*.



**Fig. 3:** Rovina project, during DigitalHeritage Expo

## 2. Conclusions

Which trends can be recognised, looking at this overlapping area, which is Digital Heritage, through presented projects and demonstrations?

One of the first element to appear is the position of the "*human dimension*", considered more and more a key element. Heritage professionals necessities are better taken into consideration, from digital projects early stages;

end users, such as visitors of museums, tends to be involved in some cases during the planning phase.

The "*wow*" effect of ICT technologies for heritage researchers, practitioners and curators is now diminishing, while the sustainability of digital projects and their effectiveness as referred to a specific goal, in constantly increasing. The role of *design* and *co-creation* is emerging (Petrelli et al. in this journal "*meSch: Internet of Things and Cultural Heritage*"), filling the gap among audience, developer and heritage curator.

The role of "*narrativity*" is also considered as important as the coding, for the success of a digital heritage project (Petrelli et al. in this issue).

*Mixed digital outputs* (i.e. serious games including short movies, VR immersive applications that includes passive and active moments, etc.) are experimenting different levels of user interaction and involvement, while trying at the same time to find and define new communication styles and approaches, since the traditional proved to be unsatisfactory (Forlani et al. and Gianni and D'Annibale, in this journal).

Finally, most of the projects have demonstrated a high interest toward the *quality of user involvement*, a topic currently under investigation from different perspectives (UX, immersive displays, Interaction Design, Neurobiology, etc.).

## 3. Aknowledgments

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