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EDITORIAL. DIGITAL CULTURAL HERITAGE, ARTS REPRODUCTION AND MUSEUM SYSTEMS. LANGUAGES AND TECHNIQUES IN A COVID AND POST-COVID SCENARIO FOR NEW FORMS OF HERITAGE AGAINST THE SILENCE OF A FRAGILE CULTURE

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Abstract

The pandemic and post-pandemic scenario makes it urgent to reflect on potentials of digital transition for Cultural Heritage in order to boost critical awareness and to democratise art supporting the heritage communities and the common goods. Nowadays, digital facsimiles can be considered as heritage itself, including the so called born digital heritage, whose processes, methods and evolution over time, have to be preserved and reused as a potential source of knowledge for future generations. This issue collects positions in favor of a scientifically based 'digital culture' and to bring together best practices in the definition of digital transformation strategies for museum and cultural heritage. It also reports some theoretical-methodological reflections as well as success cases applications in the field of DCH, assessing the scientific reliability, technical feasibility and economic sustainability of outstanding experiences.

Keywords

Digital transformations, digital cultural heritage, museums, fac-simile

Nos Beaux-Arts ont été institués, et leurs types comme leur usage fixés, dans un temps bien distinct du nôtre, par des hommes dont le pouvoir d'action sur les choses était insignifiant auprès de celui que nous possédons. Mais l'étonnant accroissement de nos moyens, la souplesse et la précision qu'ils atteignent, les idées et les habitudes qu'ils introduisent nous assurent de changements prochains et très profonds dans l'antique industrie du Beau. Il y a dans tous les arts une partie physique qui ne peut plus être regardée ni traitée comme naguère, qui ne peut pas être soustraite aux entreprises de la connaissance et de la puissance modernes. Ni la matière, ni l'espace, ni le temps ne sont depuis vingt ans ce qu'ils étaient depuis toujours. Il faut s'attendre que de si grandes nouveautés transforment toute la technique des arts, agissent par là sur l'invention elle-même, aillent peut-être jusqu'à modifier merveilleusement la notion même de l'art.

Paul Valéry, *La conquête de l'ubiquité*, 1928

1. *Introduction*

Digital Cultural Heritage (DCH) represents a challenging research and innovation field still today, living in a very transforming time. Advanced technologies such as 3D, Artificial Intelligence (AI), Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality (MR) – to name but a few – offer unprecedented opportunities to update the process of use, conservation, enhancement and management of Cultural Heritage (CH) with multilevel impacts on all economic and cultural sectors, also for tourism activities.

The CoVid-19 pandemic, on the one hand, confirmed the vulnerability of the tangible and intangible cultural heritage, which was very much at risk due to the extended inability to directly experience the physical dimension of places. On the other hand, the scenario encourages, as last call, the whole scientific community to consider digital technologies as a driving force in the development of new paradigms for cultural heritage. As a matter of fact, the radical change in the way of accessing and enjoying (and thus interpreting) cultural heritage is one of the most disruptive effects of the lockdown and it should act as accelerator. The pandemic and post-pandemic

scenario makes it urgent to reflect on potentials of digital transition for Cultural Heritage in order to boost critical awareness and to democratise art supporting the heritage communities and the common goods.

Moreover, digital facsimiles can be considered as heritage itself, including the so called born digital heritage, whose processes, methods and evolution over time, have to be preserved and reused as a potential source of knowledge for future generations. As the Pietrelcina Chart (DiCultHer - Scuola a Rete per la Formazione nel Digital Cultural Heritage Arts and Humanities, 2019) pointed out, the entities that should be taken into account are: Born Digital Heritage, Digital for Cultural Heritage and Digital as Cultural Heritage.

The first ones are digital native entities whose representations record processes, methods and techniques used by contemporary communities for their co-creation, to be safeguarded, reused and preserved in the time as a potential historical memory and source of knowledge for future generations.

The second comprehend processes, methods and techniques of digitization aimed at the co-creation of digital entities that reproduce the tangible and intangible cultural heritage, integrating images and descriptive metadata (digital libraries, virtual museums, demo-ethno-anthropological databases, etc.).

Lastly, the Digital as Cultural Heritage includes digital entities produced by the digitization and dematerialization of entities, including cultural, tangible and intangible, whose representations regis draw approaches, processes, methods and techniques identifying their evolution over time, to be safeguarded, reused and preserved, enhancing them as a potential historical memory and source of knowledge for future generations.

In this light a reflection about new relationships between science and art, raising competences and understanding in digital humanities, is mandatory.

Framed by a very active European reference scenario, the special issue aimed to collect positions in favor of a scientifically based 'digital culture' and to bring together best practices in the definition of digital transformation strategies for museum and cultural heritage. It was also encouraging theoretical-methodological reflections as well as success cases applications in the field of DCH, assessing the scientific reliability, technical feasibility and economic sustainability of outstanding experiences.

1.2 The European scenario

There are certainly many programmatic documents recognizing Information and Communication Technologies (ICTs) or Advanced technologies as enabling factors to emphasize the role/value of heritage as a common good; among them, the most recent one was signed up during the CoVid-19 pandemic. This is the *Europe Day Manifesto (2020)* which refers to the European Institutions' leading role in DCH and highlights the great potential they have for the progress of new technologies such as Artificial Intelligence and Machine Learning, while pursuing humanistic and ethical principles. The need to reduce the gap between non-digitally equipped and digitally equipped Institutions is a key point in the desired digital transformation process. Another goal is to democratize access to heritage by supporting diversity, inclusiveness, creativity and critical engagement in education as well as by promoting the development of digital skills in as many cultural Institutions as possible.

As a matter of fact, the transition towards the 'Digital Era' involves a real 'Digital Revolution', as it was defined during *Digital Day 2019.* In the field of DCH, a first significant milestone was achieved with *Europeana (2008)*, the European digital platform for cultural heritage, established as an advanced digital service infrastructure within the Connecting Europe Facility (CEF) to bring digitised European cultural heritage material online and to promote its visibility, accessibility and usability across the EU. Soon after the construction of Europeana a new goal was achieved with the launch of the *Digital Agenda for Europe (2010)*; as part of this latter, the report *The New Renaissance' by the Comité des Sages on bringing Europe's cultural heritage online* and the *Commission Recommendation on the digitisation and online accessibility of cultural material and digital preservation* (European Commission, 2011) were published in 2011. Although the document foresaw as a milestone to digitize the whole European cultural heritage by 2025 and despite the great contribution of various projects (3D ICONS, CARARE, ARIADNEPLUS, only mentioning a few), the feeding of Europeana with 3D digital data semantically rich in meaning is still an open point. Another breakthrough in the digitalization of CH was recorded during the *European Year of*

Cultural Heritage (EYCH 2018) which opened new scenarios in the field of heritage curation and life, above all considering the new digital technologies. (Lykourentzou & Antoniou, 2019) summarized lessons learnt during the EYCH, based on several interactions with projects and research groups, meeting reports and research literature. The analysis included the dimensions of digital innovation facilitators, highlighting different key element in the most important pillars (Innovation ecosystems, dialogue between ICT and Social Sciences and Humanities, project and stakeholder networking) to enable the Cultural Heritage domain benefit.

Moreover the topic of evaluation for digital CH innovation is addressed. Finally the IPR issues that constitute a potential blocking point in the road towards the sustainability and continuity of digital innovation for CH, while EU-wide repositories for digital CH software artefacts, accompanied by proper documentation and manuals, and Open Software Piloting, made mandatory by the open access paradigm, should quickly overcome the problem.

This analysis paves yhe way for further reflection and a fruitful dialogue between researchers, citizens, policy makers and stakeholders on the future directions of Digital Innovation for Cultural Heritage.

Another significant debate arised thanks to the EYCH is testified in (Corr et al., 2019): the discussion animated by DG EAC and the Voice of Culture (VoC) teams revealed the challenges and opportunities faced by heritage related professions. It were collected answers about: a) boundaries of "traditional" and "emerging" (tangible, intangible and digital) heritage professions b) current challenges in the transmission of traditional knowledge faced by the heritage sector c) skills and training needs related to the "emerging" professions, including those concerning the digital shift.

The discussion ultimately focused on a key issue, which was to identify the needs, current challenges, and future strategies in the capacity building and knowledge transfer for an integrated approach to cultural heritage.

In addition, to make the impact of digitization more effective, the *New European Agenda for Culture* (European Commission, 2018) also defined the *Digital4Culture strategy* to provide the creation of a network of competence centres across the EU aimed at safeguarding knowledge of heritage at risk through large-scale digitization and establishing a pan-European network of Digital Creative and Innovation Hubs to support digital transformation. At the same time, the acquisitions of the (LEEUWARDEN DECLARATION - Adaptive Re-Use of the Built Heritage: Preserving and Enhancing the Values of Our Built Heritage for Future Generations, 2018) are worth mentioning, which highlighted the importance of a good digital storytelling as an unconventional form of CH use-reuse.

Finally, if the richness of the above-mentioned initiatives – which are just some of the mainstays – makes clear the centrality of DCH sectors enabling CH future, the current state of policies increasingly denounces the need of new programmatic actions to start thought shared roadmaps but to implement mainly on a local scale. This was also highglighted by the public consultation held between June and September 2020 (DG Connect - Interactive Technologies Digital for Culture & Education Group 2, 2020). Beside other replies, it is worth to mention that respondents were asked about the importance to support digital transformation in the cultural heritage sector in the aftermath of the COVID-19 crisis. 81% strongly agreed that the EU and Member States should intensify their actions to help cultural heritage institutions to address the challenges and seize the opportunities of the digital era.

The Commission is now carrying out a deeper analysis of the replies. The results, which are non-binding for the Commission, together with other consultation activities, will feed into the Commission's work on the evaluation and potential revision of Recommendation 2011/711/EU.

2. *Main tasks in digital transformations of Cultural Heritage curation and preservation*

Built up on our research experience and collaboration with cultural institutions, public and private, it is possible to recognizes 4 research pillars demonstrating to constitute the main challenges in digital transformations of Cultural Heritage, bot for curation and preservation purposes.

These pillars are also closely linked to 4 macro-tasks, able to reach the proposed objectives in creating a new conscious, sustainable and proactive digital value chain for cultural heritage.

2.1 Digitization

To ensure a scientific update in collecting, archiving and managing high-quality cultural content so as to support activities for CH protection, conservation, management, promotion and dissemination by fostering a network of relations between scientific institutions (Universities and Public Administrations). Starting from the consolidated 2D and 3D data acquisition and processing pipelines, the CH digitization must be based on advanced data interpretation approaches oriented to semantics and process automation.

The main characteristics of digitization supply chain are detailed in the following paragraphs.

Digital acquisitions start from point clouds of art objects, archaeological remains or ruins, architectures and historical landscapes as well as Cultural Landscape, based on heterogeneous and multiscale acquired data.

Data have to be stored in digital archives and repositories, collecting high-value cultural heritage data sets (e.g. sets of digitised cultural artefacts with high-quality metadata) for helping innovation in AI and for in deep studies in Digital Humanities. The consequential data interpretation is aimed to new historiography/archaeology/ architecture knowledge but also at standardising processes on a territorial, architectural and artefacts scale, favoring the process of annotation on a semantic basis.

The optimization of the parameterization and enrichment process of virtual models through learning-based approaches is able to facilitate the data annotation, thus enabling to train Artificial Intelligence models. The 3D knowledge-based enriched and annotated data significantly boost the creation of enabling systems/products to build experiences of enjoyment.

2.2 Enjoyment and edutainment

In the current digital transforming scenario, it is important to build unprecedented digital experiences of accessing and enjoying heritage with scientific credibility, technical feasibility, and economic sustainability. In this perspective, it is necessary to converge towards the construction of open databases. The optimization of data structures, as the only container of information that can be used on different multimedia outputs, will also make it possible to standardise the interfaces designed as a gateway for the end user.

These features should be pursued in fully online experiences, such as Virtual Museums, and in hybrid online/onsite experiences. These last are very relevant in the current scenario caused by the pandemic because they ensure to maintain the relationship with the places where possible, resulting also in a power tool for relaunching the proximity tourism.

Particular attention should be paid to multidevice experiences, providing the same level of usability for different target users, including inclusive design, paired with the need of information standardisation, exploiting the paradigm of open/ big data and Artificial Intelligence

2.3 User behaviour observation

To measure the impacts of DCH experiences in relation to specific targets and calibrate subsequent actions, including the construction and design of a 'digitization chain', in order to assess impacts and quantify benefits from each kind of users.

The main steps of similar projects and management plans of digital experiences can be summarized: a) user feedback measurement systems (on different targets); b) possibility to calibrate the virtual services according to the measurement detected; c) verification and updating of social behaviour models and interaction with digital heritage contents; d) tracking technologies combining museological and museographic knowledge and expertise in the field of technologies applied to neuromarketing; e) design of new forms of data visualization (e.g. Management Dashboard) and KPIs (Key Performance Indicators) determination to use as a decision support tool for the manager, stakeholders and/or decision makers in DCH

In general, the verification of the digital experience effectiveness is essential in the post Covid process of digital transformation of museum systems, in which particular attention should be paid to the monitoring of users' feedback and interest.

In relation to high immersivity tools it is possible to make a study of users' interest through eye tracking system, so it is possible to analyze what people watch more and how they behave in a virtual environment.

Within medium immersivity tools we can study users' analytics to understand the use of the app. The use of devices such as smartphone or

tablet also allow the tracking of the users' position in outdoor museum space, such as archaeological parks. This last tracking should become also relevant to study user's behavior. It is important to carry on these studies not only during the exercise phase, but also during the development one.

be taken into account for a next generation of users' profiling.

2.4 Education and training

All recent documents, consultations and surveys demonstrated a compelling need to

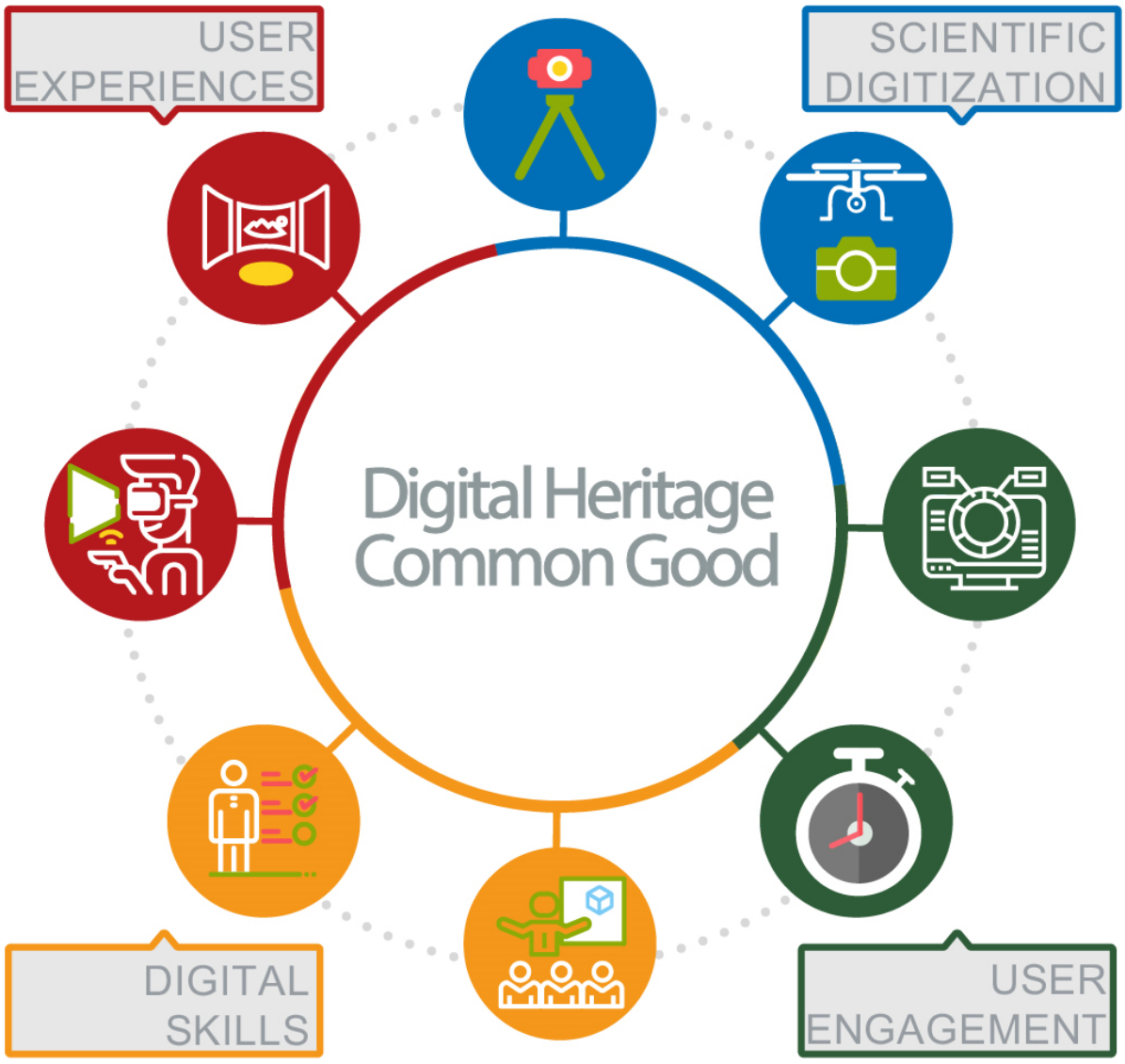

Fig. 1: The four pillars able to create a new conscious, sustainable and proactive digital value chain for cultural heritage

Eventually, the use of questionaries is always useful to study and evaluate users' satisfactions and make comparison between different kind of visits.

In situ advanced tracking technologies based on video streams and analysis of user and visitor behaviour and acted with an interdisciplinary approach, exploiting Artificial Intelligence, should

educate and train new professionals in the field of DCH. The pandemic demonstrated in an unprecedent way that large part of our public/private institutions lacks in digital literacy. In this light, we already highlighted that the investment plan for digital cultural heritage must take into account the need to develop skills and update CH professionals while keeping abreast of the evolution of new technologies and overcoming

the digital divide (Clini & Quattrini, 2020). There is the demand of new strategies to make it easier for professionals to design, build and develop their own digital experiences both in terms of acquisition and on line/on site accessibility, also considering the following chance to internally manage and sustain them.
A new generation of professional thus could ensure future sustainability of digitization strategies and practices and innovate an entire economic sector, it will be also able to capacity build and refine the expertise needed to operate in a sector that is constantly updated and evolving. By establishing a real 'new application field', it will be also encouraged new collaborative practices, facilitating dialogue between the public and private sectors, enhancing new forms of digital-related business, exploiting the cultural and creative enterprises of the territories.
In addition, the digital transformation consistent with DCH increases co-responsibility, both through the development of multimedia tools and solutions that allow an agile and autonomous management of digital and multimedia experiences, both ensuring to bring digital knowledge into schools, favoring the learning process mediated by the figure of teachers at all levels of education. The above mentioned steps bring also to a significant change in policy making.

3. The contributions in the issue

This special issue has the ambitious goals to bring together best practices in digital transformation strategies for museum and cultural heritage as well as to collect theoretical-methodological reflections in the field of DCH. It is possible to affirm that both goals were reached thanks to the effective and valuable efforts of the authors.

The President of the International Council of Museums (ICOM), Alberto Garlandini gives an essay on the basis of the results of ICOM's 2020 global surveys: It shows how museums benefited of the opportunities of digital innovation during the lockdown, while the pandemic has increased inequalities and widened disparities in accessing heritage and in participation to cultural life. Considering also that Covid crisis is accelerating the digital change and interactive technologies are enabling museums to interact with communities more efficiently and attract new public, the paper addresses the impact on museums of the crisis of global mobility and mass tourism and point out to the need of new business models and exhibition policies. All those considerations call for public support to museums' cultural, technological and managerial innovation and it shows that the challenges of the digital world require new interdisciplinary competencies and more professional interaction.

Paolo Giulierini depicts the digital strategies of National Archaeological Museum of Naples (MANN- Museo Archeologico Nazionale di Napoli. It constitutes undoubtedly a success case, given several targets addressed by new applications and project built upon the Museum strategic plan. It is also interesting that the paper testifies links and joint initiatives with other public institutions, such as schools and universities, but also with private companies in gaming and entertainment. In general it emerges a strategy that may result in a new cultural horizon of true autonomy, helping "to regenerate" the city from a cultural, economic and social point of view.

The Galileo Museum has been on the digital path for about thirty years in the belief that information technology is an indispensable tool for the scientific research and enhancement of cultural heritage. The essay thus illustrates the state of the art of the initiatives undertaken in the field of digitization. In particular, two thematic digital libraries are presented stressing thei purposes to facilitate research and scientific exchange between scholars. Moreover, the digital explorations of historical documents that are difficult to read and interpret are depicted. All the cases shows the intent to project the museum beyond its walls and to educate through heritage.

The paper authored by Annalisa Cicerchia and Ludovico Solima demonstrates as the COVID-19 has acted as a huge crash test on the role, structure and functioning of museums. It focuses on the worsening of existing gaps and differences but also on the opportunities for museums to become aware of the importance of digital resources as a tool to keep alive their relationship with their audiences and to activate new relationships with new demand segments. The main achievement in this paper is the evaluation by virtual visitors of their experience with digital contents and the discussion on future scenarios shaped by lessons learned and new, emerging audiences, above all because the results are based upon data collected among museumgoers.

The paper titled *"Reproductions, relocations and displacements of cultural heritage"* by Matteo

Treleani offers a theoretical dissertation about experience visits to heritage sites and artifacts at a distance. These reproductions imply a rearrangement of the space of reception of heritage. The so-called phenomenon of relocation constitutes a common element to the processes of "patrimonialization" and "mechanical reproducibility". Making-heritage implies a rearrangement of the space around an artifact, this rearrangement also takes place during its mechanical reproduction. The paper discusses some forms of relocations of heritage, highlighting that these phenomena have always been at the heart of practices of valorisation of past. The analysis of a success case of archaeological virtual reconstitution reveals also some of the current trends.

The paper by Andrea Siniscalco and Lorenzo Appolonia starts from the consideration that the emergency has put insiders in a position to find solutions to make the works usable in digital mode, applying research and technologies that have been the subject of research over the last twenty years. In their contribution, the case study of the Consolata Roman Villa museum was choose in relationship to its usability and accessibility problems, also present before the pandemic. Some possible interventions are discussed to improve readability and communication with potential visitors. The scalable complexity of the entire installation is discussed also depending on the economic investment available, the choice of implementing a virtual visit based on X3D technology, via web browser, or through the use of VR equipment.

The paper "Digital perspectives to bring dissonant heritage back to life. The military landscape of the Galla Placidia line" (Ugolini, Zampini, Mariotti) focuses on enabling strategies to enhance the military landscape of the Galla Placidia Line by stressing all opportunities offered by digital technologies in the field of cultural heritage. Supporting a conscious digital transition of cultural sectors as a new way of understanding, enjoining and preserving historic architectures and sites, aims of the research also face the pressure due to Covid-19 pandemic. It presents the tested digital tools pointing out their positive effects on processes of knowledge, conservation and enhancement of the dissonant heritage, i.e.: the fortified system of German bunkers erected along the Adriatic coast during World War II.

The essay authored by Massimilano Ciammaichella and Gabriella Liva describes results of a biennial research project that focuses on the survey, digitization and restitution of the statues preserved at the Venice National Archaeological Museum. The focus is mainly on Roman copies of Greek originals that have undergone extensive restorations since the second half of the sixteenth century, in order to document their transformations in multimedia installations that guide the visitor in understanding and reading the works. The achieved results present a clear and wide multidisciplinary character, also considering the digital clones as harbingers of other exhibition configurations, boosting the paradigm of the virtual repositions.

The paper by Nanetti, Radzi and Benvenuti from Nanyang Technological University offers an interesting review of the secondary literature published in English about the strengths and weaknesses of the web-based learning tools available in museum systems as brought forward by the outbreak of the COVID-19 pandemic. This review contextualizes the solutions designed and developed within the online interactive system Engineering Historical Memory to fully access permanent and temporary exhibitions. With these solutions, the manuscript original artefacts, or their physical and digital replicas, become gateways to online interactive applications.

The paper about Ghibertiana Project reflects on the inclusive and widespread use of the cultural heritage, already in place in the last decade, but exacerbated by the health emergency, which stimulated the proliferation of alternative experiences based on ICT. The variety of tools available has generated a multiplicity of technical solutions based however on the essential operation of the digitisation of the heritage, promoted for years by MiBACT and today even more urgent. The contribution aims to illustrate the current work within the "Ghibertiana" project for the preparation of the digital contents of the soon-to-be-established "Interpretation Centre of the Lower Valdisieve Territory" and "Documentation Centre on Lorenzo Ghiberti". Overcoming the preconception of coarse scientific value in virtual reality products, the Ghibertiana project demonstrates that digital technologies open up new interpretative horizons as well ase their results can be profitably conveyed.

The paper autored by Bagnolo, Argiolas and Cocco Bellumori deals with a workflow aimed to

investigate the potential of advanced technologies by reconciling the needs strictly related to the two principles of measurement and visualization. The construction of an information system is able to facilitate not only the classification and management of the digital plaster collection but also communication for scientific and educational purposes. Two different possible applications are considered: the first for the construction of a web platform for the remote interactive query of the database, the second for the virtual visit of the rooms that host some of the casts through the delivery platform for point & click games developed in a research project. An interesting hint is that by this new applications the plaster casts, previously neglected, embodied and conveyed the ideals of classical civilization, gaining an aid in learning and understanding the history of art.

The study jointly conducted by Bilkent University of Tirana and Polytechnic of Bari deals with a hot topic in DCH after the Covid restrictions: the virtual tours. In fact, after the outbreak of pandemic, galleries and museum have been experimenting new ways to engage a potential audience remotely. This study focuses on the level of engagement of virtual tours in museums looking at representation of architectural space, representation artifacts, and ease of use, as possible correlated factors. A sample group of eighty early-career experts in the field of art, architecture or design assessed their visit at the archaeological museum of Troya Müzesi in Çanakkale, Turkey. This paper has addressed the following research questions with an online multi-level study: how is the online exhibition platform evaluated by its audience? Can regular employment of virtual tours engage new visitors in the long term? Is the representation of a museum, in the form of a virtual twin, an adequate surrogate that creates an immersive visiting experience? The authors usefully collected several hints such as the virtual tours can be used to complement information before and after the visit, the duration of the virtual visit comparable with that of a physical exhibition, but multimedia additional contents are welcomed. In general, it is understood that the peculiar design is decisive for the improvement the quality of the virtual visit.

The paper “Measuring and evaluating visitors’ behaviors inside museums: the CO.ME. project” by Angeloni, Pierdicca, Paolanti, Mancini and Tonelli presents a system to turn exhibitions into sensitive spaces, able to quantify and register visitors’ behavior. Taking advantage of innovative methods of data acquisition through ambient intelligence and space sensing infrastructures, it is discussed a solution that provides to museum professionals all the necessary data to understand their public, making possible to structure a cultural offer based on visitors’ needs. After a short theoretical introduction, the paper presents the case study of the Civic Museums of Palazzo Buonaccorsi in Macerata (Italy), demonstrating the effectiveness of this approach in terms of both data collection and monitoring system; useful solutions to improve museum installations and communication, as well to optimally plan staff attendance. Although some main challenges and problems highlighted in the issue, the experimentation carried out demonstrated a large potential for monitoring systems. It is envisaged to transform the collected data into useful information for museum referents in order to improve the installations and the communication, and also to optimally plan the attendance of the staff. A quick overview of the next steps is provided.

The paper authored by Rita Maria Francesca Valenti, Concetta Luana Aliano, Emanuela Maria Paternò and Erika Gazzè is titled “Silent cultural heritage: digitalization of the archaeological artefacts of Santa Lucia di Mendola for an interdisciplinary reconstruction”. It poses an interesting and somehow recurrent topic for our heritage, the lost or no more existing architecture, in fact thee site was chosen because it is characterized by “an absence”. The Norman basilica, whose decontextualized architectural and sculptural remains are only partly visibly exhibited in museums, others are “invisibly” kept in stores. The investigation has involved close interdisciplinary collaboration and is based on archive studies and on geometric and formal studies of survey products, also this fact is an invariant for good project in DCH. Surveying operations were scientifically conducted in order to provide a digital scenario of the cultural object. The achieved results make it possible to virtually disseminate the “silent” museum heritage, not to consign it to oblivion and set up a system for knowledge protection and cultural dissemination. The implementation of digitalization technology in the hypothesis of an absence reconstruction provides the final product which redefines the historical and archive arguments, a powerful tool

is the 3D modeling of the archaeological objects (both visible and invisible). The interdisciplinary cooperation also broadens the perspective and leads to different attitudes towards culture suggesting at the same time new approaches towards the "traditional" digital modeling in museology. In a wider perspective, the adopted study methodology will trigger a debate about the topic of the "forms" of museum heritage, represented by digital products accessible to art experts and architects and also to the common visitors of the museum. The authors are so able to conclude that digitalization is a cultural experience which implements innovative technologies to disseminate and stimulate attention on "silent heritage".

The paper "Preparing rural heritage for another kind of covid pandemic: heritage digitalization strategies in the Alto Guadiato valley and Subbetica of Cordoba, Spain" moves from the knowledge that, historically, the province of Cordoba was one of the wealthiest territories in the region of Andalusia and left behind a rich heritage that is still largely unknown. The research shows initiatives developed for the digitization of its heritage that have been very successful in transmitting these assets to society. During the COVID-19 pandemic, the projects have proven to bring numerous socio-economic benefits. The issue discusses the virtualization of this heritage and presents the results of the various digital interventions carried out in the province of Cordoba to consolidate a digital landscape that is publicly accessible. Several results of the proposed DCH strategies are highlighted: digital preservation of endangered heritage, interest and commitment of the local inhabitants in their own heritage, engagement ensured by VR applications and socio-economic consequences able to boost local economy and attract cultural tourism.

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