ARCHAEOLOGY AND AUDIENCE DEVELOPMENT DIGITAL STRATEGIES: A RESEARCH CONDUCTED WITH THE TEAM OF «ARCHEOLOGIA E CALCOLATORI»

1. Introduction

A direct experience of internship at the Istituto di Studi sul Mediterraneo Antico (ISMA) of the Italian CNR was the starting point for my Master's Graduation thesis at Università Commerciale Luigi Bocconi: "Audience Development in Archaeology: Strategies Based On Digital Innovation" (supervisors Professor Aura Bertoni and Professor Laura Forti). The present paper focuses on the study that was conducted for the above-mentioned work. The investigation was supported by the advice and guidance offered by the research team pivoting around the journal «Archeologia e Calcolatori», which has always been fostering new ways of research and development.

The aim of the study, innovatively carried out in an interdisciplinary area combining arts and management, was to observe which kinds of initiatives, which contexts and which specific IT tools prove to be more useful or impactful for the purposes of Audience Development and how it would be possible to correctly evaluate their effectiveness. Audience Development is defined by the Audience Agency as «a planned, organization-wide approach to extending the range and nature of relationships with the public. It helps a cultural organization to achieve its mission, balancing social purpose, financial sustainability and creative ambitions» (Torreggiani, Pfrommer 2014; see also https://www.theaudienceagency.org/insight/guide-to-audience-development-planning). In other words, it encompasses a series of strategies, philosophies and activities to enhance the quality of the relationship between organizations and audiences (Fig. 1).

Whereas the evolution of digital tools and techniques of analysis is helping archaeologists to progressively enhance the quality of the results obtained from their research, there is still room for investigation to understand if a similar level of innovation in the use of IT tools has been reached for the purposes of Audience Development too.

2. Brief literature review

The complexity and broadness of the literature review was in line with the twofold nature of the research core topic and was motivated by the need to merge two different perspectives. More specifically, the managerial and
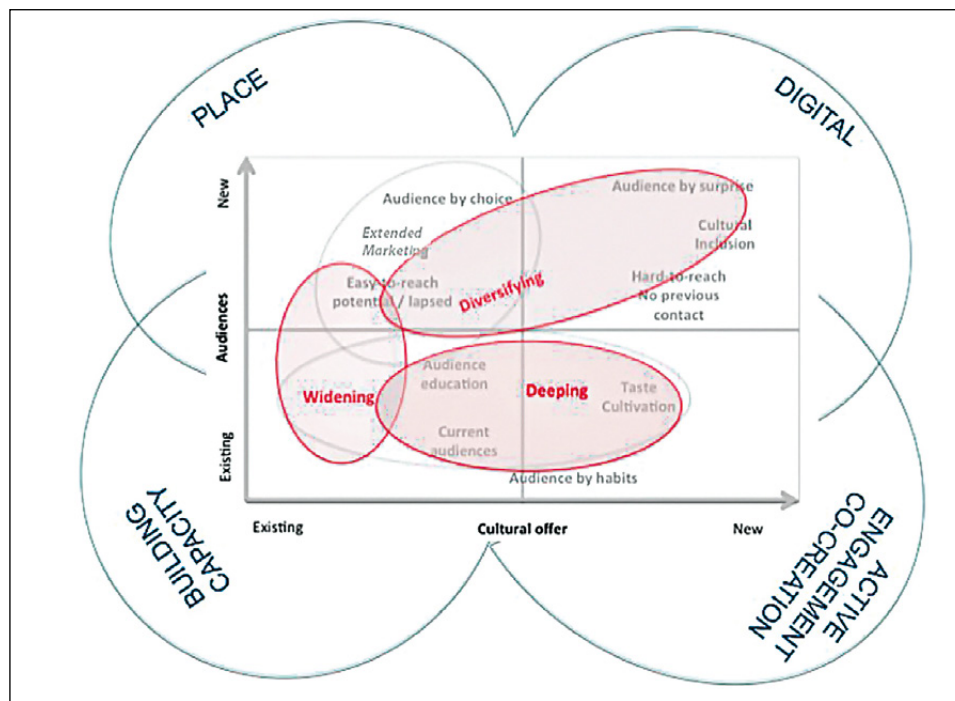
Fig. 1 – Audience Development: assets and strategies (from Bollo *et al.* 2017).

economic approach was applied to the analysis of information and case studies connected to the archaeological field in order to examine the role of Audience Development strategies in this domain. It is not surprising that the body of literature related to this topic is varied and dispersed, as it is linked to a constantly evolving field of research.

The first part of the literature review of the above-mentioned dissertation focused on the role that ICT is playing in the cultural and heritage management sector.

As stated by Ross Parry (2010), in the cultural sector there was an original suspicion and an evident reluctance towards the new technologies, which used to appear as expensive and high-risk investments that could not actually be integrated in the reality of institutions, organizations and museums. Surprisingly, the impact of the new media within the cultural environment has been progressively growing over the last two decades, by offering a flexible, creative and empowering support for many purposes: from preservation, collection and research to exhibition and communication. Audience Development is one of the new frontiers of IT applications in the cultural sector:

this new trend of evolution was thoroughly investigated and described, from a more general perspective, by the 2017 European Commission's "Final Report – Study on Audience Development: How to place audiences at the centre of cultural organisations" (Bollo *et al*. 2017), whose results were also more recently examined in the book "Audience Development: mettere i pubblici al centro delle organizzazioni culturali" (Da Milano, Gariboldi 2019).

The Italian context was instead at the core of the second part of the literature review; the international and especially European experience provided some basis for comparison and best practice strategies.

The official report about the 2014-2018 activities presented by MiBACT (http://www.beniculturali.it/4anni) takes stock of the results obtained and of the steps taken over in the past four years for the Italian cultural sector, in order to provide the citizens and the political authorities with a comprehensive overview. Along with more general considerations regarding cultural policies, fiscal measures and the details of the 2014 reform (D.M. 23/12/2014), the document also includes some paragraphs where there is specific reference to the role that the digital innovation is gradually starting to play in this sector. There are actually many ICT applications that cultural, and also archaeological, institutions have had the chance to leverage on for different projects. However, what usually seems to lack is a systematic analysis of the strategic premises that are behind them and of the objectives to meet as well as a real measurement of the results achieved by implementing them.

According to a report presented by Mu.SA (Museum Sector Alliance: http://www.project-musa.eu/it/) and to the CNR "Relazione sulla ricerca e l'innovazione in Italia" (*Relazione sulla ricerca* 2019), in Italy, the overall scenario seems quite uneven and discontinuous, the amount of funds available for these investments is limited and there is not a coordinated and strategic plan at a national level conceived to spread and integrate IT tools and systems in all cultural institutions (Silvaggi *et al*. 2018). This is partly due to the vast and fragmented nature of the Italian cultural network, to the existence of numerous entities based in many areas of the national territory, with different management approaches. Private or public institutions coexist, huge ones or very small ones, managed by municipalities, by churches, by the State or by private entities. In other words, a lot of many small, isolated, not inter-connected entities (ISTAT 2017) operate without a broader vision aiming to involve all the cultural actors that are part of the same network or geographical area. Furthermore, apparently, there is not a real openness towards the introduction of technologies and computer applications, as, according to the data provided by ISTAT in 2016, only 0,8% of Italian cultural institutions would invest in digital innovation in case of a 10% increase of their budget (ISTAT 2016).

The vast majority of Italian museums and cultural entities do not own high-quality technological devices and multimedia tools, such as video

projectors, Virtual Reality installations, tablets and smartphones, Wi-Fi, etc.; moreover, the evaluation processes aimed to assess the impact of the implementation of similar projects are often overlooked (e.g. surveys, questionnaires about visitors' feedback). Additionally, websites, blogs, newsletters are just partially used to communicate with the audiences and, even if social media management has been improving a lot over the last two years, thanks to the cultural sector's reform of 2014 (D.M. 23/12/2014), the level of engagement obtained through these channels is not as significant as it could be expected. In fact, according to PILAAR BIRCH (2013) and FERNANDES (2018), in order to measure impact and engagement on social media, and therefore to define the Return on Investment (ROI), it is possible to look at some specific key performance indicators: presence on different platforms, engagement rate (which accounts for the number of likes, retweets, comments, etc. per view or contact) and the 'anecdotal feedback' based on sentiment (LO BLUNDO, MARRAS 2016). Analytics about users are available on YouTube, Twitter, Facebook and Instagram and they help assess the level of reach of official pages and accounts as well as get an insight into the audiences' demographics, per country and period of time. Google Analytics similarly allows social media managers and content creators to check for the level of website traffic.

Going back to the general considerations regarding the Italian scenario, the reports provided by Mu.SA and Osservatorio Innovazione Digitale nei Beni e Attività Culturali (https://www.osservatori.net/it_it), one of the Osservatori Digital Innovation that are part of School of Management del Politecnico di Milano, allow us to identify the most problematic factors that hinder the integration process of the digital innovation. These critical aspects can be easily listed: lack of adequate digital skills and competences, little effort in data collection and analysis about the audiences, cultural offer not in line with the customers' desires, poor long-term planning, obstacles in the implementation phase and inaccurate measurement and evaluation of results.

A parallel was drawn with UK, which has a long-standing tradition in this field and was one the first countries to introduce educational programs in museums. According to the report produced by Nesta and Arts Council England (*Digital Culture 2017*: http://www.artscouncil.org.uk/digital-culture-2017), almost all institutions assess the positive impact of IT solutions on their business models, on operations, on revenue generation (through online ticketing, donations) and on interaction/communication with diverse and younger audiences. However, there seems to be a fall in marketing-related applications (direct email, SEO, social media) and no improvement in data analysis and customers' profiling. A growth trend is registered in online ticketing and in other areas linked to business models, in paid search and online display advertising, in simulcast/livestream performances, in mobile-optimized presence and in the digitization of museums' collections.

With focus being shifted to archaeology, it is possible to follow the historical path of the evolution of IT applications for the purposes of communication, education and promotion, as clearly explained by Maria Pia GUERMANDI (2019) during a recent conference held at the Accademia Nazionale dei Lincei (MOSCATI, ORLANDI 2019). Virtual museums (ANTINUCCI 2007a, 2007b), encyclopaedias (MALATESTA, MILELLA 2013), digital platforms and social media (D'EREDITÀ *et al.* 2016; FALCONE, D'EREDITÀ 2018), video applications (DEMETRESCU *et al.* 2016) and archaeogames (MEGALE 2018) are today the main tools to engage the general public and communicate with the audiences. All these applications are supposed to make them more aware of the value and meaning of objects and remains, to create useful channels to reach younger and non-professional individuals, to diversify the audiences, to launch crowdfunding campaigns, to build narratives through a storytelling approach (DAL MASO 2018) in order to experiment new languages[1].

A study was carried out, between 2013 and 2018, in the context of NEARCH project (http://www.nearch.eu/); it was coordinated by the French National Institute for Preventive Archaeological Research (Inrap) and financed by the European Commission (NEARCH 2018); the aim of the study was to investigate how contemporary archaeology is perceived today and what kind of participation it encourages. According to the results of the enquiry, in Italy, although the value of archaeology is widely recognized, it is strongly anchored to the dimension of past and tradition. Changing perspective and opening up to new opportunities and *stimula* is the watchword in order to promote the archaeological heritage in a new, original, innovative and audience-oriented way.

Events like the exhibition *Archaeology&ME*, organized in Rome between December 2016 and April 2017, as a part of the NEARCH project, aimed to shed light on how archaeology was perceived by the audiences (MARX, NURRA, SALAS ROSSENBACH 2017) and about the potential new strategies to promote it. These kinds of projects helped stimulate in Italy shared discussions about "Public Archaeology" and "Community Archaeology" (BONACCHI 2009, VANNINI 2012). 2012 was the year of the first Italian Congress on Public Archaeology (DE FALCO, LAZZERINI 2012).

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[1] For example, a bottom-up strategy was chosen for the initiative "#InvasioniDigitali" (https://www.invasionidigitali.it/), whose first edition was in 2013. During planned invasions in different locations, all visitors and participants took pictures of monuments and artworks in specific venues and then posted and shared them. One of the main goals was to make the members of the audiences real UGC (User Generated Content) creators. The motto of the whole project was "Culture has no borders" and actually, starting from the second edition of 2014, also countries of other continents were involved. A website is still used to organize each invasion and to create a sort of diary with information about the previous editions. In Italy, Sicily particularly benefited from the chance offered by "#InvasioniDigitali" to increase the level of visibility of its rich archaeological heritage.

3. Scope and results of ISMA internship

During the three-months internship at ISMA, a series of activities was specifically designed in order to enrich the research conducted for my Master's thesis:

1) Analysis of the database of the scholarly journal «Archeologia e Calcolatori», with a special focus on the articles related to data dissemination and education in archaeology as well as VR and multimedia projects. This phase was very important in order to define a framework of clear premises for the study and to select the most effective techniques to answer the research questions.

2) Field observation of the implementation of on-site multimedia projects, namely visit of archaeological sites and museums where Audience Development initiatives pivoted on IT applications. One of the most interesting projects was chosen as case study and presented in the cultural itinerary for the Virtual Museum of Archaeological Computing: *Virtual journey at "Domus Romane di Palazzo Valentini"* (Pompili 2018).

3) Focus group interviews with high-school students taking part to Alternanza Scuola-Lavoro programs.

4) Depth interviews with experts and practitioners.

3.1 *The scholarly Journal «Archeologia e Calcolatori»: trends and topics*

Through an investigation conducted on the repository of the journal «Archeologia e Calcolatori», it was possible to get a first insight into the field of IT solutions employed to the advantage and benefit of both projects designed to foster promotion and communication of the archaeological heritage and Audience Development strategies. Two categories of the first articles' classification (Computer Typology) proposed by the journal (Moscati 1999) were selected: "Multimedia and web tools" and "Virtual Reality and 3D Modelling"; two categories of the second classification (Subject Field) were similarly identified: "Data dissemination and education" and "Cultural Resource Management". The evolution over time of these topics was examined (Figs. 2 and 3) and the main findings will be listed below:

– Regarding the computer typology, up until 2007 more studies were conducted on the applications of "Multimedia and web tools" to archaeology, while from 2008 the attention of experts and specialists moved to "Virtual Reality and 3D Modelling" and to the potential role that this tool could play either in the research phase or in communication and dissemination of the archaeological knowledge. In 2017 the entire second issue of that year was mainly devoted to ancient cities and to the recent studies carried out about "Virtual Reality and 3D Modelling" in archaeology.
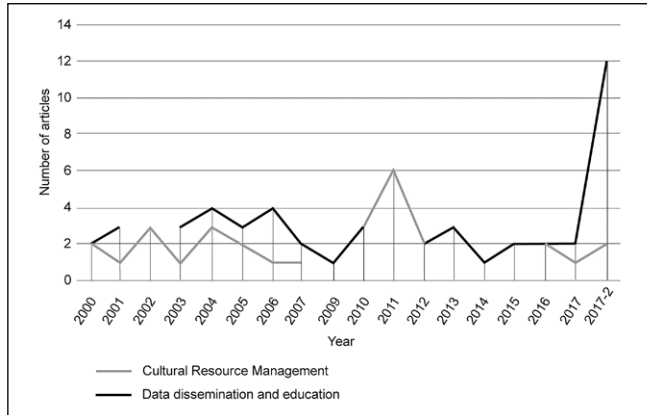
Fig. 2 – Line graph obtained from the digital repository of «Archeo-logia e Calcolatori»: distribution of articles on "Data dissemination and education" and "Cultural Resource Management" between 2000 and 2017.
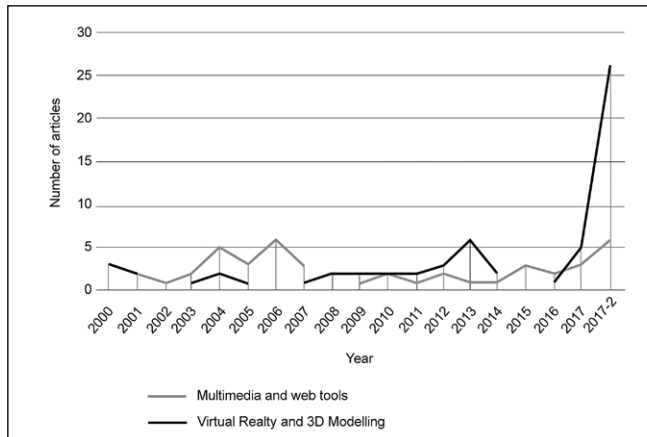

Fig. 3 – Line graph obtained from the digital repository of «Archeo-logia e Calcolatori»: distribution of articles on "Multimedia and web tools" and "Virtual Reality and 3D Modelling" between 2000 and 2017.

– A significant number of articles written by the authors of the journal was related to "Data dissemination and education". There was a peak of 6 arti-cles about "Cultural Resource Management" in the 2011 issue of the journal and a peak of 12 works linked to "Data dissemination and education" in the second issue of 2017.

– By cross-referencing the data of the two categories, it can be observed that there is a strong link between the purpose of promotion and education and the implementation of multimedia/digital projects. In fact, 43 out of the 49 articles about "Data dissemination and education", published between 2000 and 2017, are also related to the selected IT solutions ("Multimedia and web tools" and "Virtual Reality and 3D Modelling").

3.2 *Virtual journey at "Domus Romane di Palazzo Valentini"*

An interesting Audience Development project was designed around the remains of two big *domus* of the Imperial Age that Palazzo Valentini in Rome was built on. After the 2006-2010 restoration, IT technologies were introduced in order to provide the visitors with new tools to discover the history of the place. Piero Angela, Italian journalist and TV presenter, Paco Lanciano and Gaetano Capasso were directly involved in the initiative.

Through an integrated and synergic use of different media (texts, graphics, animations and sounds), buildings and objects come back to life and are shown to the audience as they looked at the time of the Imperial Age. Virtual images, videos, lightings and storytelling enrich the experience offered: while walking on a glass floor under which the remains are visible, people watch a virtual reconstruction video that is projected onto the walls all around them and listen to Piero Angela's recorded presentation.
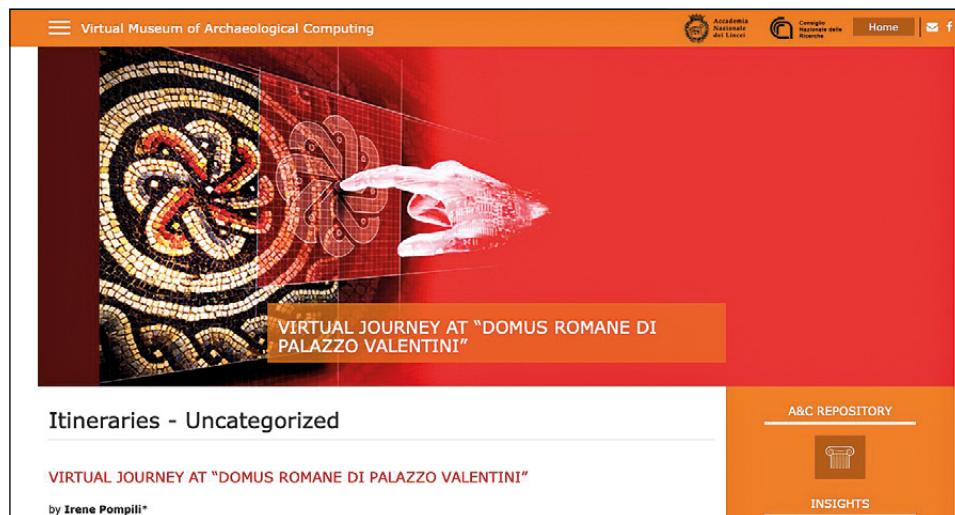

Fig. 4 – Homepage of the online itinerary dedicated to Virtual Journey at "Domus Romane in Palazzo Valentini" in the Virtual Museum of Archaeological Computing website.

Fig. 5 – "Father and Son – The Game" official logo.

This case study was selected to be published in the Virtual Museum of Archaeological Computing (Fig. 4) because of the innovative approach of its AD plan: thanks to the virtual journey, even non-expert audiences can more easily understand and appreciate the beauty and historical value of this archaeological site. The level of engagement on social media was analysed and offered some clues about the success of the initiative. For instance, on TripAdvisor the overall score is 4,5/5 and 95% of reviewers are very satisfied about the visit.

3.3 *Focus group interviews with high school students*

Focus group interviews were used to gain an understanding of how young audiences perceive digital applications like archaeogaming, VR installations and mobile apps in archaeological sites and museums. Two slightly different kinds of focus group were organized. The participants were the high school students of two classes taking part to the "Alternanza Scuola-Lavoro" (ASL) programs related to the field of digital innovation in support of communication and promotion in the cultural sector.

The first group (19 participants) consisted of a class from Liceo Ginnasio Statale "Francesco Vivona" (Rome) that was engaged in the ASL project focusing on archaeogaming at CNR-ISMA. They had to test and then informally evaluate the mobile apps of the video games "Father and Son – The Game" (http://www.fatherandsongame.com/) and "Mi Rasna – Io sono etrusco" (http://egameapps.com/mi-rasna/). They are among the most successful Italian archaeogames. "Father and Son" (Fig. 5) was produced and distributed by Museo Archeologico Nazionale di Napoli and obtained two million downloads in the first ten months (Giulierini 2018), while "Mi Rasna" (Fig. 6)

Fig. 6 – "Mi Rasna – Io sono Etrusco"
official logo.

was designed by Maurizio Amoroso, CEO of Entertainment Game Apps, Ltd. (Megale 2018).

The second group (30 participants) was composed of students from Liceo di Stato "E. Montale" (Rome) involved in the ASL program on cultural management coordinated by Eleusis Group.

This research phase was very useful in order to examine the young people's point of view. In fact, according to the students:

– The use of digital tools can help raise awareness and curiosity in archaeological sites and museums. In particular, VR and AR (Augmented Reality), multimedia projects, 3D or virtual reconstructions and interactive guides on mobile apps can significantly enrich the audiences' experience, enhancing the quality and customization of the visit. Well-designed ICT applications (e.g. *L'Ara Com'Era* at Museo dell'Ara Pacis in Rome was mentioned by the students) can offer new and more complete perspectives on objects, artifacts and buildings by making their meaning and history explicit and more understandable.
– Young people find it useful to receive advice about cultural initiatives from their communities or networks of friends on social media (especially Instagram and Facebook). Furthermore, they are often influenced by social media ads as well as by popular and viral multimedia contents available on these platforms.
– Surprisingly, the feedbacks about "Father and Son – The Game" and "Mi Rasna – Io sono etrusco" were somewhat controversial. In spite of the high technical quality of the video games, some critical aspects were mentioned about the structure of the story developed. For example, the students noticed that the MANN product looked more like an interactive virtual guide than a real video game.

3.4 *Depth interviews with experts and practitioners*

In addition to the fruitful and stimulating daily contact with ISMA research group, twelve depth interviews were conducted, on a one-on-one basis, with other experts and practitioners having direct experience in this field with the aim to obtain qualitative data that could help unveil key aspects of the issue at stake (Malhotra 2010). Twelve professionals were asked questions about the Audience Development strategies based on digital tools that they had adopted, about the goals to be achieved through them, about their effectiveness, their evaluation and also about the obstacles encountered to implement them. The vast majority of the respondents who were interviewed, between July and August 2018, has an archaeological background, has done research in public archaeology or has had direct experience in archaeological digital communication[2].

The most interesting considerations made by the experts will be briefly presented below:

– In very small archaeological sites and museums, blogs and social media are at the core of the digital strategies. Here, every Audience Development activity starts from a local, direct and off-line relationship with the communities, associations and institutions. Hence, the initiatives on social media, and video strategies in particular, may play a fundamental role to strengthen the bond within the community itself. The experience at the archaeological site of Vignale (Fig. 7), as presented and described by Enrico Zanini and Francesco Ripanti, offers an interesting example (Zanini, Ripanti 2012 and, lastly, Zanini 2018).

– On-site multimedia projects (VR, AR, mobile apps, projections, videos, etc.) are welcomed by the audiences whenever they enrich the experience of the visit, without taking visitors too far away from the direct contact with artifacts and remains. Mobile and device applications seem to be easier to understand than VR/AR installations; video games only work with very young audiences. Being based on high-quality technology, the introduction of these applications in museums and archaeological sites imply quite risky and expensive investments; thus, they need to be conceived on the basis of the actual needs and expectations of the audiences as well as of their social, economic and cultural background.

– The process of User Experience Design offers a good example of a step by step refinement of ICT applications through the assessment of their impact

Fig. 7 – Video shooting at the archaeological site of Vignale (from "Uomini e Cose a Vignale" website and blog: http://www.uominiecoseavignale.it).

Fig. 8 – Multimedia installation designed for the CEMEC project (from CNR-ITABC website: http://www.itabc.cnr.it/progetti/cemec).

on Audience Development. The design of ICT products can improve thanks to an on-going trial and error process; an evaluation is made after each implementation and is organized in three phases (observation of the audiences, interviews and "guided scenario"). For instance, CEMEC (Connecting Early Medieval European Collections) project (Fig. 8) of CNR-ITABC (Ferdani *et al.* 2018) was designed according to the perspective of the User Experience. – Building narratives and leveraging on a storytelling approach is key to create new languages by complementing online and offline activities. In other words, the creation of characters and stories is the special ingredient that, in all kinds of contexts from social media posts to videos to on-site installations,

is able to strengthen the emotional bond with visitors and followers. Antonia Falcone created Professione Archeologo (http://www.professionearcheologo. it/) in 2013: it was one of the first archaeological blogs in Italy and its goal was to share some aspects of the archaeologists' job through short stories and interesting anecdotes (Falcone, D'eredità 2018).

– The practitioners identified specific obstacles in the implementation of their projects: the limited amount of funds, the lack of professional figures with specific skills (in particular, experts in communication management) and of an *ad hoc* academic vocational training for archaeologists willing to develop an expertise in digital communication, the absence of a strategic long-term planning.

4. Conclusions and limitations

The results obtained have of course limitations in terms of scope and reliability, due to the lack of primary quantitative data about the actual feedback of the audiences and due to the risk of misinterpretation of all qualitative information obtained. Some secondary quantitative data regarding specific CNR-ITABC projects were taken into consideration for a sounder and more comprehensive analysis (Pagano *et al.* 2015; Ferdani *et al.* 2018). Nonetheless it was possible to propose some final considerations and to draw some interesting conclusions.

On the basis of the information collected and from an Audience Development perspective, the most successful and impactful digital initiatives for big institutions, in the archaeological field, seem to be on-site multimedia projects whereas social media and blogs are precious tools mainly for smaller archaeological sites and museums (Table 1). These findings are also in line with the results of experiments and evaluations conducted by previous studies, which demonstrated that digital tools like 3D and virtual reconstructions can positively influence the audiences' excitement and engagement (Di Giuseppantonio Di Franco *et al.* 2015; Pagano *et al.* 2015), especially when dealing with some categories (younger than 30, older than 60, women, people having technical background).

	Most effective tools	Goals	Other issues
Big archaeological sites and museums	On-site multimedia projects	Engage existing audiences more creatively	– ICT tools should enrich the direct experience with artifacts and remains; – User Experience Design plays a fundamental role.
Small archaeological sites and museums	Blogs and social media	Create a strong bond with the community (even members not already professionally linked to the archaeological field)	– AD activities always start from a local, direct and off-line dimension; – Limited amounts of funds available.

Tab. 1 – Final results and conclusions.

Storytelling is recognized as a key aspect of digital communication (Dal Maso 2018) at European level too. In this sense, it is worth mentioning two important European projects: CHESS project (Cultural Heritage Experiences through Socio-personal interactions and Storytelling: http://www.chessexperience. eu/), funded by the European Union and also implemented at the Acropolis Museum of Athens, and H2020 research project EMOTIVE-Storytelling for cultural heritage (https://www.emotiveproject.eu/) (Roussou *et al.* 2017).

The projects based on ICT tools need to be conceived on the basis of the above-mentioned User Experience Design process in order to support AD strategies. As the analysis of many case studies showed, it is not easy to attract diverse categories of the audience, who are not already somehow linked to history/archaeology because of job, personal interest or study. However, thanks to ICT applications, it is possible to offer new channels to introduce more creative, more personal, targeted and engaging strategies of interaction with existing audiences and with potential new ones, as the digital innovation is one of the most precious assets to foster social participation in the cultural field (Silvaggi *et al.* 2018).

Irene Pompili
Graduate Student
Università Commerciale Luigi Bocconi
irepompili108@gmail.com

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ABSTRACT

An internship at the CNR-ISMA was the starting point for the Master's Graduation thesis "Audience Development in Archaeology: Strategies Based on Digital Innovation" (Università Commerciale Luigi Bocconi). The three-month internship was linked to several different educational initiatives carried out by the Institute. A series of activities was designed expressly: namely, analysis of the database of the scholarly journal «Archeologia e Calcolatori», with a special focus on the articles related to data dissemination and education in archaeology, as well as Virtual Reality and multimedia projects; field observation of Audience Development initiatives in archaeology through on-site multimedia projects, presented in the cultural itinerary for the Virtual Museum of Archaeological Computing (Virtual Journey at "Domus Romane di Palazzo Valentini"); and finally focus-group interviews both with high-school students, taking part to the Alternanza Scuola-Lavoro (ASL) program, and with expert scholars.