Using ICT in Cultural Heritage, bless or mess? Stakeholders' and practitioners' view through the eCultValue project

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Abstract. The acquaintance of Museums and Cultural Heritage (CH) institutions with the digital age challenges is of no question a matter of survival. Nevertheless, the dialogue between CH and Information and Communication Technologies (ICT) do not always lead to a harmonious symbiosis. Moreover, the question of if and how ICT could add value to collections, museums and cultural sites and enhance access and communication between stakeholders and users/visitors is a critical open question from many perspectives. In this paper we discuss the main types, obstacles, and benefits of such collaborations, based on interviews held with both CH stakeholders and technology providers, done in the frame of the European project eCultValue.

Keywords: Cultural Heritage, European project, Museums, Digital Heritage

1 Introduction

Currently many significant research efforts, across Europe are dedicated to developing innovative Information & Communication Technology (ICT) solutions for preserving, accessing and enjoying Cultural Heritage (CH). The critical question, however, is how these technologies cater for the actual needs of CH community and reach end-users and visitors. Trying to give an answer to this question was the driving force behind the eCultValue project: Apart from documenting the state-of-the art, one of the main goals of eCultValue is to investigate and promote ways on how ICT will add value to CH sites, collections and institutions, taking into account the actual needs of the CH community. Focusing not only on technological aspects but also financial, cultural and societal requirements, the eCultValue performed a number of face-to-face interviews with both key CH Stakeholders and ICT providers from several European countries, in an effort to capture both, perception towards ICT use and real needs. In this paper we present the information obtained through the interview activity in the form of quantitative data, but we also highlight what has derived and qualitatively concluded during these meetings.

2   The interviews process

The results presented in this paper are the outcomes of semi-formal face-to-face interviews. This approach was chosen because it ensures a direct and effective communication between the two parties (interviewer and interviewee), it offers a lot of flexibility in the handling of replies and allows last minute adjustments. This type of contact has also the advantage that the answer of the interviewee is usually more spontaneous, an important aspect when the aim is to capture the real status and not a "polished" one. In cases where face-to-face approach was not always easy to achieve due to reasons of distance and of multiple commitments of the interviewees, the interviews were conducted via Skype.

Prior to the kick-off of the activity a set of guidelines had been drafted in order to ensure that a similar procedure would be followed in all cases, which was important to achieve comparable answers and results.

The consortium partner countries have been the starting point for reaching potential interviewees; consequently, the vast majority of interviewees (65%) come from Greece, Slovenia and France, and the other one third (35%) from United Kingdom, Belgium, Germany, Italy, Croatia, Azerbaijan, Netherlands, Spain, and Finland (Figure 1).
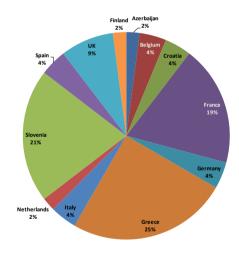

Figure 1-Countries of Interviewees

The consortium partners interviewed both, **stakeholder**s with purely CH background that have a high level awareness of ICT solutions and **technology providers** with either deep knowledge of the scene or CH background. As shown in Figure 2, the 65% of the respondents refers to CH stakeholders and the 35% to technology providers.
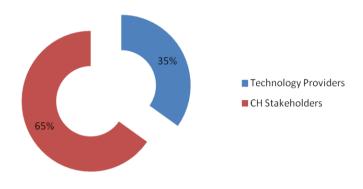
Figure 2-Interviewees Expertise

Interviewees work both for the **public sector** and the **private**, covering a wide range of institutions and fields such as museums in general (46%), national museums and galleries (11%) performing arts (6%), CH sites (6%), libraries (2%), IT development departments (8%), academia researchers (11%), private companies (4%) and other institutions (6%). The size and profile of the institutions vary from big to medium size traditional museums to small avant-garde galleries. Same holds for the interviewee's positions: they vary from free-lancers specialists, curators and IT developers, to archaeologists and university professors, and from digital heritage researchers to directors, and top managers of CH institutions.

In the following we present our main findings. For performing the analysis the questions had been clustered in a way that answers could deliver information on three main categories: (a) for what purposes is ICT used, (b) what the obstacles for the adoption are, and (c) what the perceived benefits are.

3   ICT for Cultural Heritage in use

The perception of what ICT implementation means, varies and represents different maturity levels for the adoption. It ranges from the most simplified one that considers ICT only as a vehicle for the enhancement of the communication strategy of the institution to the more sophisticated one, with the use of advanced tools for the enhancement of the visitors' experience. According to the interviewees, ICT has the following three main uses in CH environments:

Communication tools. The vast majority (73 %) of the CH stakeholders is using ICT solutions for communication purposes, both internally and for creating a dialogue with their audience. More specifically, the 80% of the organizations maintain an official website, which, in case of museums, contains **news** about events, exhibitions, locations, online magazines, videos and, in few examples, **online shops**, while nearly

half of these portals include **digital exhibitions**, and **virtual tours**. A considerate percentage, take advantage of the large amount of existing social media, such as Facebook, Twitter, Scribd, blogs, YouTube channels, not only to promote their exhibitions and events, but also for **interacting with visitors**, especially young, digital native users. This widespread use is also explained by the fact that these solutions are usually easy to be customized and used without very specific knowledge especially by younger generations who are already familiar with them and, most important, they are low or zero cost solutions.

Enhancing visitors' experience. The second purpose for using ICT, according to a large percentage (70%) of the interviewees, is for making their **visit more engaging**, **interactive**, **entertaining**, in other words a memorable and enjoyable experience.

Virtual environments (virtual reality systems·virtual guide applications, virtual exhibitions, virtual panoramas, 3D reconstructions), workstations (e.g., personal computer stations with games), serious games, multi-touch screens, information kiosks, QR codes, RFID systems, motion sensitive systems for sounds, augmented reality (AR) systems, podcasts, are only some of the applications mentioned by the interviewees. In addition, mobile devices, smart phones and tablets, as well as location based services tend to replace more traditional tools (like hand-held devices with audio or vision guided tours) and serve as interactive guides through the exhibitions. CH stakeholders believe that applications do not only provide information, but they can also **stretch and extend the visitors' sense of involvement** and give them the **opportunity to learn** while having an entertaining experience. Under this notion, of **edutainment** i.e., combining education and learning with an entertaining experience some museums apply a digital storytelling approach. In some cases, digital storytelling is driven by cutting-edge tools and methods such as augmented reality, branching narratives, personalization, and adaptivity to visitor behavior and actions.

Archiving and preservation. Finally, almost half of the representatives of the CH organizations, have collaborated with IT companies to develop internal collection management systems. These are designed for the needs of back-office staff and are supporting all processes within the organization. For museums, such repositories are essential for keeping track of all artifacts, their location in the building, their state and history and documentation e.g., photos of the objects. In this context, there is a widespread implementation and use of digital repositories where digital content and assets are stored and can be searched and retrieved for later use. As one interviewee, a digital heritage senior researcher, pointed out: *digital archiving is the basis, the first step a CH institution needs to consider, before building upon any other user-oriented applications for several purposes (communication, education, entertainment etc.).*

4 Obstacles in using ICT

A number of questions had been dedicated to the identification of the main impediments for the adoption of ICT solutions by CH organizations.

Survey respondents, both technology providers and CH stakeholders identify the **financial issue** as one of the main obstacles for adopting ICT tools. This type of barrier has, however, two aspects: the first one is connected with the lack of resources in terms of internal and external budget for this purpose, and the second one is related to the risk of investing in too high cost ICT solutions with no potential revenue stream. Furthermore, low funding as an issue is not only related to lack of money but also to lack of resources in general, including human resources, staff time and know-how. Cultural organizations require a wide evolving set of skills and capabilities in order to undertake digital technology processes.

In this context, **time management** is considered as a significant issue. Some stakeholders described the process of implementing, and managing the installation and usage of technology tools as extra load on institutions with already heavy schedules and pressure on employees.

Nevertheless, the **maintenance** and upkeep of the ICT tools and solutions after the development and implementation, the lack of long time technical support and the risk of incompatible technologies were mentioned as important type of barriers in a highly associated context. Stakeholders, especially, raised concerns about the fact that the majority of CH organizations do not have an ICT department in-house or technology experts to support the tools after the implementation and during the phases of maintenance and update.

Legal issues and issues related to **copy-rights** when it comes to open source content were also presented as major risks on behalf of both stakeholders and providers interviewees. In fact, stakeholders argued that making organizations' digitized content available online will make it vulnerable to third party abuse, and commercial exploitation out of their control. On the other hand, technology providers stressed the issue that a significant portion of CH representatives are, at least during the first approach, reluctant and conservative towards the adoption of advanced and complicated ICT solutions. Therefore, communication between technology providers and the CH experts poses a big challenge, as they very often do not share the same objectives and have their own different perspective. Nevertheless, both groups agreed that is not as big of an issue as it used to be in the past especially for young curators, librarians, and museologists, for whom the digital perspective has been part of their curricula (and everyday life) and who gladly welcome the adoption of ICT.

5 Benefits from using ICT

Despite the aforementioned obstacles, our work has shown that ICT has a critical role to play in CH organizations development efforts and enjoy increased acceptance. The most important benefits, based on the answers of both CH stakeholders and IT providers, are presented below:

Communication with the audience: One of the greatest benefits that both stakeholders and ICT providers ascribe to technology adoption is that it helps institutions foster a connection with regular or potential visitors. It, therefore, creates a concrete communication channel with them, having as main advantage the possibility to get effective feedback. In this context, new technologies promote a dialogue, build a real community, or even sub-communities based on mutual interests, and support a new way of interpretation. Interestingly, all interviewees were extremely positive about the value of social media and the benefits that digital technology grants in facilitating conversations between the audiences. As successfully pointed out by an interviewee: *"ICT gives voice to the visitors"*.

Accessibility, Publicity & Web Presence. The usage of ICT allows more users to access the institutions' content, beyond geographical boarders, users 'disabilities, and physical limitations. ICT contribute in promoting the work of institutions, making them broader known and building a public profile which is modern, dynamic, trustful, and in some cases more entertaining. Furthermore, interviewees argued that the adoption of new technologies in cultural sector facilitates and supports the development of research, because it improves the open access to the content for users from all over the world and, therefore, promotes the democratization of knowledge.

Attracting the audience / Profit: A high percentage of the interviewees admit that the use of ICT play a great role in increasing the recognisability of CH institutions. Social media for example, help in attracting new visitors, especially the younger audiences. Some of the CH stakeholders have noticed a valued increase of tickets and online sales after ICT implementation.

Providing better services to staff and users. ICT tools provide useful solutions for documentation, archiving and preservation, allowing institutions to adopt international standards in digitization and reinforce interoperability in the cultural heritage sector. In addition, several interviewees have reported the contribution of ICT in providing better services to institutions staff, users and visitors. Applications for digital cataloguing of collections, institutions' management systems and tools for automating every-day-work processes are some of the examples where ICT supported the "economy" of time and resources and decreased pressure on employees.

Enhancing visitors' experience and satisfaction. In direct relation to the above, the adoption of ICT creates big opportunities for museums to develop more engaging visitor experiences. Static, traditional way of exhibits presentation has been significantly transformed by adding creativity elements and ideas that encourage interactivity and improve visitors' participation and engagement. ICT solutions fulfill these requirements by enhancing the creation of immersive and enjoyable environments, where the user interacts through diverse sensory modalities. Besides, technologies could support and enrich the object and, as a result, supplement and revitalize the exhibition. The active, self-controlled and collaborative exploration of digital contents indirectly benefits learning, especially in the case of complex, abstract or non-visible phenomena. Many stakeholders mentioned visitors' satisfaction from

these exhibitions, emotional response and willingness to come back. These results were very intense in the case of exhibitions and applications addressed to children.

6 Common Patterns

The vast majority of CH stakeholders admit that although the process of adopting ICT was challenging and in some cases risky, it was definitely worth it and resulted in a number of important benefits for their institutions. An interesting point concerning CH stakeholders' is that in some cases they self-rated their usage of ICT higher than their awareness of available ICT tools, admitting the fact that although they use some basic tools, they are aware that there are many more ICT tools to learn and exploit.

Providers on the other hand, confirmed that in most cases of their collaborations, the stakeholders are aware of solutions available and open to their adoption, although they often can't match available technologies to their particular needs. In addition, there is high diversity on what stakeholders and providers consider by the term "technologies for ICT". As analyzed also above, stakeholders in their majority consider even the usage of basic tools such as web pages, blogs, and social media as real implementation of ICT.

An interesting finding of our discussions is that, although enhancing visitors' experience is one of the reasons why stakeholders, who have not yet adopted advanced ICT solutions (edutainment tools, virtual environments, storytelling, personalized user guides, etc.), would introduce and/or support ICT in their museum, when talking about benefits, very few mentioned this indeed as a potential outcome after their implementation. Interestingly, the ones who do use such applications mentioned as important benefit the visitors' satisfaction and the deeper understanding of the collections. Nevertheless, it seems like the majority of stakeholders interviewed are not completely aware or convinced of the beneficial use of ICT in adding value to the collections or objects, especially if the institution is more traditional and governed by older, more conservative people. Combining this, with the reluctance of some stakeholders to use complex ICT tools that do not serve their needs, although they realize that ICT provide better services, one may come to the conclusion that there is space for contextualisation and dissemination of available tools, so that stakeholder become aware of what can meet their own needs and match their own profile and identity. This fact is also reflected in the point that technology providers stated more obstacles than stakeholders. This is due to the fact that they have a much better understanding of advanced ICT solutions, what they could really offer and what are the difficulties for their implementation. They therefore realize that ICT is not always a one-size-to fit-all solution.

7 Conclusions

Although lack of resources seemed to be the main impediment for adopting ICT, both stakeholders and technology providers proposed several solutions that can contribute to the more effective and economic adoption of ICT. One of these solutions proposed, is to have an ICT department or trained IT personnel within the museum.

Many interviewees stressed the need to **build communities and networks**. Organizing and attending workshops, seminars and events is a good way to disseminate knowledge and exchange experiences with other stakeholders, providers and discuss potential solutions. Presenting similar cases, sharing ideas and thoughts within these networks will support re-use of practices, knowledge dissemination, and ideally discussions on methodologies and good-practices. Lessons-learnt documentations, evaluation reports and feedbacks, use-case scenarios and best-practices can play an essential role to the fluent adoption of ICT.

Concerning the issue of using inappropriate technologies for their needs, in addition to the above, interviewees propose user-centred design and clear identification of each institution's priorities. Using **Open Source** solutions and collaborations with other institutions such as Universities' research departments were proposed as low cost solutions, when there is inadequate funding. Last but not least, there is need for support from decisions makers' side and the governments not only in the form of money, but also with providing flexible funding schemes, decreasing bureaucracy and establishing strategies that promote innovation and creativity.

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