

# Digitally-Augmented Exhibitions to Foster a Participatory Culture in Cultural Heritage Sites

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**Abstract.** Improving the visitors experience has become a priority in many museums that aim at establishing a stronger relationship with their visitors. Developing engaging museum exhibits could benefit from being inscribed in the participatory culture framework. In this paper we introduce a co-design workshop where cultural heritage professionals and students identified social interaction as a key feature of an enhanced experience with cultural objects. Encouraged by this finding, we developed a technological platform that makes it possible to support social storytelling and interaction in the domain of cultural heritage, providing a technological platform to support a more participatory culture.

**Keywords:** Augmented reality; participatory culture; digital cultural heritage.

## 1 Introduction

Improving the visitors experience has become a priority in many museums that aim at establishing a stronger relationship with their visitors [1]. Many technologies have been explored as a way to support more rewarding experiences in cultural heritage sites, among them gamification, virtual, augmented and mixed reality [2, 3]. All of them try to engage visitors in activities that make use of different senses and abilities to promote a higher engagement. Developing engaging museum exhibits could benefit from being inscribed in the participatory culture framework, since it affords “[...] *relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing creations, and some type of informal mentorship whereby experienced participants pass along knowledge to novices*” [4]. In a hyperconnected society most people are engaged in different forms of participation, from affiliation through social media, to collaborative problem solving or even to creative expression. One of the domains that opens up many possibilities to explore such participatory culture is cultural heritage, which has been traditionally dominated by an authoritative knowledge transmission, where the producers (the experts or curators) provide adequate interpretations to the receivers (the visitors). In such model, curators conceive the exhibition as a one-flow process where they convey the meaning to the visitors. More open approaches recognize the active role that visitors might play in the construction of that meaning by providing higher levels of participation and engagement: for instance, allowing both professional and unprofessional to tell stories activates a process of value creation that

otherwise would remain unuttered and find in participatory models the ground for its expression [5].

In this paper we describe a technological platform that makes it possible to enable a participatory culture in the museum by supporting social storytelling and interaction around cultural heritage objects. The platform development was inspired by a workshop run with cultural heritage professionals, visitors and students who identified social interaction as a key feature of an enhanced experience with culture.

## 2 Enhancing the visitor's experience

According to Csikszentmihalyi and his theory of flow [6], a cultural exhibition promotes a higher engagement and impact in the visitor when it links with his personal enduring interests instead of the more ephemeral situational interest. Personal interests refer to values and long-term motives of persons and they are intrinsically motivating, that's why they enable 'flow' experiences that provoke emotional or intellectual changes in the visitor. In the era of the Internet of Things, the meSch EU project<sup>1</sup> explores how smart objects integration in cultural heritage sites can support such enriched experiences. Smart objects introduce the concept of physicality that is a powerful mechanism to enable tangible thinking, that is, the ability to think by means of corporal actions and the physical manipulation of objects that can be augmented with digital information or properties [7]. Combining the benefits of tangible and augmented spaces can be exploited to support richer experiences that create more meaningful links with visitor's previous experiences, knowledge and motivations. As part of this exploratory endeavor, we carried out a workshop to go deeper into the personal and group perception of the concept of enriched experiences with cultural heritage. Though the findings of the study might not have statistically significance given the size of the sample, they reaffirm what has already been stated in the literature and also pointed out the relevance of adding social participation as a main feature. Next paragraphs summarize this study, whose results inspired the design of the Social Display Environment described in the following section.

### 2.1 Co-design workshop preparation

A key requirement of this exploratory workshop was to be able to recruit a heterogeneous and non predetermined group of users of cultural heritage, so we could gather different points of view. With this purpose an open call was launched on social networks. The final group consisted of 16 people aged between 20 and 50 years, with different backgrounds, experiences and professional horizons including the following profiles: curators and cultural heritage professionals, including cultural managers and innovators; art and humanities students; other professionals related with cultural heritage (journalists and teachers) and visitors.

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<sup>1</sup> mesch-project.eu

The goal of the workshop was to contribute in the definition of an abstract concept: the ‘enriched experience’. This is a challenging activity, especially for people who are not used to externalize their opinions, feelings and expectations. Even if you know what an enriched experience is for you, wording it in a precise way is not trivial. Taking this as a basic assumption, the workshop was designed as a practical and situated activity in which participants had to recreate a scenario of a digital enriched experience in the context of a specific exhibition. We selected the works by Halil Altindere displayed at Centro de Arte 2 de Mayo (CA2M) in Móstoles, Madrid since the material exhibited invited to reflection and discussion. Such an open exhibition made a perfect context to think about enriched experiences with cultural heritage.

## **2.2 Co-design process**

Since the museum is 20 mn far from Madrid downtown, participants were collected in the city and introduced to the workshop goals and dynamics before taking the bus to the exhibition. They were invited to start discussing informally what they valued from cultural digital heritage experiences and the role of technology on their way to the museum. After visiting the exhibition, participants were organized in heterogeneous groups of 5-6 people to ideate a digital experience in a separate working room. They were provided with material to craft their ideas (notebooks, markers, crayons and so on) and were also invited to record their own embodied narratives or use any other media they needed to create their stories about an enriched experience, that we called ‘encounter’, with the exhibition. After one hour of work they were invited to share their encounters with the others by performing them in the exhibition area. Eight researchers collected information, opinions and comments during the whole process. Performances in the museum were also recorded to enable further analysis. Finally, each participant recorded a short video describing what an encounter was from her personal perspective.

## **2.3 Workshop findings**

Most of the participants defined the encounter as the result of an action of mutual interchange between all the parts involved. Two features were repeatedly highlighted: ‘immersive’ and ‘social’. Participants pointed out the relevance of involving motivation and different senses in an activity as a way of better understanding the exhibit, which is consistent with the factors that, according to Csikszentmihalyi, promote intrinsic motivation: contextual stimuli that attract initially the attention and more personal stimuli (sensorial, intellectual and emotional) that promote interest [6]. Similarly, most of them valued social interaction as a key feature to provoke higher engagement; to move from the concept of visit to the encounter. An encounter is not an individual activity, but the result of interacting with other visitors, with those who are visiting the exhibition at the same moment and, more importantly, with those who visited it or will visit it at a different moment.

### 3 The Social Display Environment: promoting social interaction through storytelling

The Social Display Environment (SDE), whose first version design and evaluation was described in [8], is a prototype that aims at enriching the visitors experience by relying upon two main sources of motivation: physicality and social interaction. The process of interacting with the SDE is represented in Fig. 1.



Fig. 1. The SDE in action

On the one hand, the SDE relies upon the value that having physical contact with objects adds to the whole experience. Thus, visitors are offered with a set of physical objects (see the “Cultural Decoy” box in Fig. 1) so that they can interact with them. In our previous experiences [8] we have realized that this kind of stimuli helps to create stronger personal links with the objects. For example, for the military hat in the figure, some visitors were playing with it, wearing it and then they browsed the web to find out pictures of real people wearing such hat. When the museum pieces cannot be touched, replicas similar to those used currently in museums to support visually impaired visitors can be used.

The SDE (see box 3, “Social Display” in the figure) consist of a transparent window equipped with a RFID reader platform to place objects and a video camera on top of it. When an object is placed inside the transparent window, a number of narratives generated for such object are displayed. The visitor can then interact with the narratives whilst still watching the object (see Fig. 2) so that her attention is not diverted for the real focus: the cultural object. In this way, the second main feature of the SDE, social participation, comes to the scene. Narratives take the form of short videos created whether by the curator or by the visitors, so that we can support collective production of knowledge. Visitors can interact with the narratives watching them, voting them and commenting them. They can also add their own narratives to the object (see box 2 “Creativity space” in Fig. 1) since the platform has its own video camera that can be

used both record a story about an object on display or to comment an existing story, so interaction among visitors is also supported. If the visitor does not want to talk or interact in front of the window, she can open a web version in her mobile device by scanning a QR code above the physical object. This option also allows to continue the participatory experience outside the museum.



**Fig. 2.** Using a mobile device to create content

## 4 Discussion and conclusions

In this paper we have described a platform that tries to increase social participation in the context of museums. Though the authoritative stories created by curators have an undeniable value, this hierarchical model does not satisfy the expectations of all visitors and indeed museums have been looking for different ways to attract and, particularly, retain visitors. One of the issues that might be taken into account to provide richer experiences is the fact that the cultural process is inherently social and based on the co-production of knowledge. Promoting a more active and proactive attitude in visitors might help then to create stronger links with them. The prototype described in this paper has been evaluated in some pilot and controlled experiments, one of which is reported in [8]. The results are encouraging but not conclusive enough as to help other researchers to envision how and why to engage visitors in participatory models like the one discussed here. We are currently working with a museum to have a permanent SDE exhibition in a real setting to be able to collect more data on the utility and possibilities this model opens up from the point of view of the interaction and relationship with visitors.

## 5 Acknowledgments

meSch is funded by EC FP7 'ICT for access to cultural resources' (ICT Call 9: FP7-ICT-2011-9) under the Grant Agreement 600851.

## References

1. Dindler, C. & Iversen, O.S. (2009): Motivation in the museum - Mediating between Everyday Engagement and Cultural Heritage, The Nordes Conference, Oslo, august 2009.
2. Hall, T. Ciolfi, L., Bannon, L., M., Fraser, Benford, S., Bowers, J. Greenhalgh, C., - Hellström, S., Izadi, S., Schnädelbach, H. and Flintham, M. (2001). The visitor as virtual archaeologist: explorations in mixed reality technology to enhance educational and social interaction in the museum. In Proceedings of the 2001 conference on Virtual reality, archeology, and cultural heritage (VAST '01). ACM, New York, NY, USA, 91-96.
3. Ardito, C., Costabile, M.F., Lanzilotti, R. (2009). Enhancing user experience while gaming in archaeological parks with cellular phones, Proceedings of the 8th International Conference on Interaction Design and Children, June 03-05, 2009, Como, Italy
4. Jenkins, H., Purushotma, R., Weigel, M., Clinton, K. and Robison, A.J. (2009). Confronting the challenges of Participatory Culture: Media Education for the 21st Century. John D. and Catherine T. MacArthur Foundation Reports on Digital Media and Learning. MIT Press.
5. Calcagno, M. and Biscaro, C. (2012). Designing the Interactions in the Museum: Learning from Palazzo Strozzi. *Int. Studies of Mgt. & Org.*, vol. 42, no. 2, pp. 43–56.
6. Csikszentmihalyi, M., & Hermanson, K. (1995). Intrinsic motivation in museums: Why does one want to learn?. In J. H. Falk & L. D. Dierking (Eds.), *Public institutions for personal learning: Establishing a research agenda* (pp. 66--77). Washington D.C.: American Association of Museums.
7. Ishii, H. and Ullmer, B. (1977). Tangible Bits: Towards Seamless Interfaces between People, Bits and Atoms. *Proc. of CHI '97*, March 22-27.
8. Bellucci, A., Díaz, P., and Aedo, I. (2014). Digitally augmented narratives for physical artifacts. *AVI 2014*: 229-232