The Challenges of Digital Museum

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Richard Yu-Chang Li
School of Information and Communication Technology, Griffith University, Australia

Alan Wee-Chung Liew
School of Information and Communication Technology, Griffith University, Australia

INTRODUCTION

From time immemorial, traditional museum exhibits have always been limited to leading the audience into showrooms to view the physical collections. However, due to the limitations of factors such as exhibition space, venues, and schedules, the total numbers of direct contacts with exhibits is in the minority. For instance, the National Palace Museum (NPM) of Taiwan, which contains more than 650,000 domestic and foreign antiquities, has continuously increased its collections by purchasing or accepting donations of artefacts. The entire collections would take over 30 years to exhibit if each exposition is run for three months at a time (Chou, 2010). In this situation, a museum would seem like an antiquity warehouse, where is inapproachable and distant. Moreover, since antiquities belong to all citizens, the traditional museum has a predicament which owners cannot freely acquire information about their properties. According to the statutes of International Council of Museum (ICOM) (2007):

A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, research, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment. (p.2)

Hence, an important role of a museum is to make its heritages become a part of our life, much like the functions of a library. Based on this aspiration, the digital curation of a museum has become a common pursue in both the academic and public sectors.

In this article, we focus on the aspect of user experience and describe strategies that help to enhance a visitor's on-site experience in a museum through digital technology. We discuss the development of digital curation in cultural expression applications, such as museums and art galleries, focusing on the user experience perspective, and illustrate how the use of technology can increase the communication and interaction between viewers and collections in museums and art galleries. We point out the gaps of current development, and discuss direction for further research.

BACKGROUND

The Development of Digital Curation and Museum Digitization

The museum digitization movement has been ongoing for over a decade since the beginning of the 21st century. The term "digital curation" first emerged in an academic seminar convened by the Digital Preservation Coalition and the British National Space Centre in London on 2001 to discuss the improvement of the Open Archival Information System Reference Model (OAIS) standard and the knowledge sharing of digital curation in various fields (Constantopoulos & Dallas, 2008). Through decades of effort, the huge advancement of information technology has turned the digitization process to become more progressive and diversified. Accordingly, the virtual museum has become a platform where museum connect with their clients outside the museum building. Middleton and Lee (2007) suggest that the factor of connection in museums is more important than the collections. In order to make a link between visitors and collections, many well-known museums have committed to create a virtual environment by either putting the digitized information onto their web pages or pre-recording

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their tour guide through portable devices, such as the Collection Database (Compass) of The British Museum (Loverance, 1998); the virtual museum of The Louvre on the iPhone and iPad (LeVitus, 2010); and The Metropolitan Museum of Art's Timeline of Art History (*The Metropolitan Museum of Art annual report for the Year 2010-2011*, 2011). The common feature of these efforts is that the information can be received by the visitors quicker and easier without time and space limitation.

Although the development of museum seems to benefit from the application of digital technology, digitization of the museum has also brought with it some disadvantages. For example, the physical museum is becoming more isolated and functionless without visitors participation; meanwhile, the audiences are also losing the opportunities for sharing and communicating their viewpoint with others. From the user's point of view, the digital museum is not to replace the traditional museum; rather, the digital information should complement the physical museum. Scott (2007) has found from her interview survey that the traditional value of museum has been unintentionally eroded in the process of museum digitization. She argued that the physical museum has an irreplaceable status in people's minds. Hence, the aim of museum digitization should be focus on filling the gap of the physical museum.

According to Coulter-Smith (2006), the constitutions of social communication and art collections have been hampered by the operating patterns of galleries for a long time. Cultural institutions should function as a learning environment (Falk & Dierking, 2000). As museum experience should be done on physical place with real objects, the enhancement of user experience in the physical museum, such as how to improve the communication by considering the interactive factors has attracted much effort.

THE CHALLENGES OF MUSEUM USERS' EXPERIENCE

Technology and societal impact play a complementary role to each other in museum digitization. The value and function of cultural heritage is realized through knowledge sharing and exchange of idea. Hence, the focus of the digital museum should be on the visitor's experience rather than the technology itself. However, without the aids of advanced technology, such goal cannot be materialized effectively. Therefore, the challenges involved in the creation of digital museums can be divided into two dimensions: the use of technologies and the enhancement of user experience. In the past, the technical dimension has been the primary focus. Issues ranging from the imaging and digitization of artefacts to data management have been extensively researched (Cameron, 2010; Carrozzino et al., 2008; Kellogg Smith, 2006; Wei, 2010). However, due to the low visibility of its impact and the difficulty in quantifying its outcomes, the factors of user experience have largely been ignored in the development of digital museum (Hornecker & Nicol, 2011). It is true that a successful digital museum requires good technology; it is also true that the success cannot come without considering the important aspect of effectively sharing cultural heritage. There are, however, very few studies on the later, particularly on the area of user experience.

Although the research on user experience in museum digitization has encountered several difficulties from previous discussion, it has gradually been considered as an indispensable factor by academic researchers and curators in museum digitization in recent years. According to Beer (1987), museum visitors spend less than one minute on each collection on-site. Thus, how to captivate visitors by extending the time of art appreciation and enhancing their knowledge by adopting various strategies has become a new branch of research in digital curation. As Gurian (1995) pointed out, the physical museum will be blended with technological element in the near future. Some research results have also suggested that the museum experience can be boosted by an interactive and immersive environment (Wang, Stash, & Sambeek, 2009). Consequently, it can be expected that the traditional method of masterworks' description will be replaced by other methods that enhance the sensory impact and the real experience of the visitors. Based on this concept, the discussion of user experience can therefore be divided to several aspects, the facets of visualization, personalization, interaction with education. These key elements may offer visitors with a valuable experience and help improving communication between visitors, curators, and museums.