New modalities for enhancing cultural heritage experience. The enabling role of digital technologies[1]

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Abstract

***Purpose of the paper**: Starting from an overview of current trends, the aim of the present study is to identify models of cultural heritage enhancement in terms of consumer enjoyment from a new temporal and cognitive perspective.*

***Methodology**: The paper starts with a theoretical-conceptual analysis inherent to the main evolutionary stages of cultural heritage enhancement. It follows with the reporting of findings based on the Scenario Based Design (SBD) method relative to industrial research and experimental development in the context of the FIBAC project.*

***Findings**: The research evidences the empirical nature of the theoretical analysis carried out, identifying key elements relative to the visitor's experiential dimension and highlighting innovative modalities of cultural experience.*

***Research limits**: The focus of the research addresses empirical evidence resulting from a specific scenario, however to enable the generalization of the findings in terms of validity and reliability, a more widespread analysis would be necessary.*

***Practical implications**: The logic underlying the experimental element of the project envisages the full involvement and participation of the visitors and represents a stimulus for exalting the managerial potential of cultural institutions (in particular museums) from the perspective of service management.*

***Originality of the paper**: This lies in the resorting to SBD methodology, relative to the development of customized technologies in the specific context of the cultural heritage experience, above all from an interdisciplinary point of view. Furthermore, given the state of the art, the study represents the first concrete experience carried out within the museum context.*

Key words: scenario based design; digital technologies; cultural enhancement; value co-creation

1. Introduction

As direct promoters of culture, museums are characterized by a communicative function that goes beyond the aspects of a purely

[1] This work has been benefited by the results obtained from the industrial research and the experimental development carried out in the project FIBAC "Innovative Exploitation of Arts and Culture" (Cod. PON01_02705). The project was funded by the Ministry of Education, University and Research as part of the National Operational Program "Research and Competitiveness PONREC 2007-2013".

conservative nature of the cultural goods exalting, instead, the immaterial value dimension of the exploitation and diffusion of culture. Digital technologies, multimedia and Internet have enabled museums to approach the wider public (Bonacini, 2011). Social networks have now become valid tools in supporting the modern transformation of the museums into creative laboratories for the promotion, marketing and communication of the cultural offer as a whole.

Therefore, museums are no longer characterized as physical places but through Information and Communication Technologies (ICTs) have become networks of services which from a user's perspective, start well before the actual visit and end much later (well after that). The visit itself is completely reinvented and shaped through the ways of using modern, dynamic and very engaging technology (Canina *et al.,* 2008).

Our paper, using Scenario Based Design (SBD) methodology, presents the results of the research and the development activities carried out under the project FIBAC "Innovative Exploitation of Arts and Culture". The validity of SBD was confirmed for tourism in general (McCabe *et al.*, 2012) with relevant strategic and managerial implications, as well as being widely used in the fields of ICTs.

The results of the project, currently being tested at specific cultural institutions (mainly museums) of the Campania Region, show empirical evidence of the potential of innovative technologies with reference to fruition and enhancement of the cultural heritage of a given place. In other words, with the support of the SBD methodology, content and assets can not only be compared, but also aggregated within various locations, with the possibility for users to plan online their visit to the museum, to have information support localized during the visit and to retrace their virtual route once the visit has ended.

2. Purpose and structure

Tracing trends in the evolution of the model of cultural consumption regarding to visitors of museums and other institutions responsible for the enhancement of cultural heritage, our study highlights how mobile and digital technologies play an important, if not decisive, role in the process of generating experimental cognitive dimensions and insights.

In particular, after a literature review addressing the issue of the enhancement of cultural heritage, the paper highlights the shift from a traditional model, focused on a passive role of the visitor, to the innovative ways and highly interactive experiences with the support of digital and mobile technologies. The proposed analysis, of an exploratory and mainly theoretical-conceptual nature, makes specific use of the experience of industrial research conducted within the FIBAC project.

The filter is twofold: on the one hand the technology is put in relation to space, time and content; on the other hand the relationship visitor-museum is analyzed suggesting potential scenarios of interaction that involve multiple actors in the definition of the overall value proposition, where technologies play the role of enabling tools and drivers of change.

Finally, considerations are drawn in conceptual terms, in the light of the results from the theoretical analysis and empirical research, relative to the effect that cultural institutions should seize opportunities related to innovative ways of use, supported by new technologies.

3. Theoretical background

3.1 Evolutionary trends in the model of museum visits

Access to cultural resources is a far reaching phenomenon that relates to a large number of cultural institutions with a broad target, exponentially increasing the complexity of the relationship between cultural product and its public. In fact, cultural tourism has gradually changed from an elitist phenomenon to that of a widespread mass, involving growing and differentiated segments of the population (Battilani, 2009). At the same time, the expansion of the variety and variability of consumer behavior has been evidenced and the opportunities and forms of enjoyment of leisure multiplied (Pencarelli and Forlani, 2002).

When specifically referred to the museum sector, the model of traditional visits is often based on the passive enjoyment of content. However, taking into account their changing expectations, visitors can now be classified on the basis of whether they are (Spallazzo, 2013):

- just curious, prompted by vast cultural interests and looking for serious content but with slight mediation;
- keen to discuss constructively with the institutions and to play an active role during the visit;
- keen to participate in the life of the institution by taking a proactive role, i.e. able to intervene in the content of use with the purpose of improving it in view of subsequent fruitions.

In the light of the studies that have affected the entire tourism sector in which there has been a transition from need to demand (Brunetti, 1999), the act of consumption qualifies as an experience because the consumer responds primarily to psychological needs (Di Vittorio, 2011). Pine and Gilmore (2000), maintain that the main features of the experience consist of uniqueness and personalization. Experiences, in fact, rather than purchases because they are deeply linked to what happens to personal identity while choosing a particular service, enjoying it as it is and, even later, when telling others about it.

The interest in aspects that influence the processes of enjoyment taking place in museums has grown hand in hand with the shift to a perspective of strategic analysis (Franch, 2010; Solima, 2013), the latter being more focused on acquiring significant information on demand and, in particular, on how to use and experience the visit. In particular, the experience becomes, in a supply-museum, a scope of analysis relevant to strategic leadership (Kawashima, 1999). The focus is addressed to the ways in which visitor stays in museums develop, involving issues such as guidance, traffic flows within the spaces, the mode of acquisition of information, the fatigue associated with the experience of the visit.

The analysis of the characteristics of museum visitors and, more particularly, use of it, has gained increasing international significance. However, the Italian context denotes widespread delay (Aguiari and Amici, 1995; Santagata, 1999; Solima, 2000; Solima and Bollo, 2002; Sacco and Trimarchi, 2003; Bollo, 2004) and a specific corpus of study in this respect has been developed in more recent times (Solima, 2013). Mainstream national literature also points out how often investigation into museum demand is conducted by means of unsystematic and sporadic surveys on users, rarely producing a real influence on decision-making of the museum. In international literature, however, the analysis of demand has undergone profound changes over time, shifting from a simple analysis tool to a real support to the strategic planning of cultural organizations (Bradford, 1994; McLean, 1995; Tobelem, 1997; Kotler and Kotler, 2000; Gilmore and Rentschler, 2002). It is to be hoped that national museums will be in a position to offer a product that guarantees the visitor a memorable worthwhile experience, blending education and entertainment, never indulging the "vulgarizing of content" but pursuing "quality, diversity, uniqueness, prerogatives of the Italian cultural heritage, a legacy of excellence, widespread and plural" (Donato *et al.*, 2010, p. 77).

Therefore, both the analysis of visitor enjoyment and the resulting strategic and operational decision making on the part of museum stakeholders will provide relevant information on demand and supply and foster a virtuous informative/educational circle. The dual perspective of analysis, if carried out in a strategic manner, will have a positive impact on the quality of the service offered (quality performance) and, consequently, customer satisfaction (quality of experience) (Solima, 2013).

3.2 Innovative technologies to improve user experience for museum visitors

Digital and, in particular, mobile technologies are currently considered as indispensable tools for the implementation of the strategies for the enhancement of cultural heritage (Tallon, 2008). As pointed out, Italian museums, although lagging behind American and some illustrious European museums, are slowly taking on a more entrepreneurial perspective whereby new technologies could represent a fundamental support to their "revival" not only in informative and advertising terms but also for their intrinsic ability to attract new visitors concurring with other museum institutions or leisure activities.

Interactivity, connectivity, tracking, feedback and social media characterize the technological evolution which museums and cultural institutions could leverage; however, these features require full exploitation in terms of a new mindset that considers not so much the technology itself but rather innovative ways to use its potential and how to enable further integration of these modes with technological capabilities (Spallazzo, 2013). In this regard, it should be emphasized that most of the empirical evidence shows a high concentration in finding solutions for resolving issues related to technological inadequacies by users such as access methods to the portals of cultural organizations and/or interface systems (O'Connor, 2008). Similarly, at European level, many research projects

(Brown and Perry, 2001; Kenteris *et al.*, 2009) are oriented to detecting the economic and technological potential of new platforms while failing to define appropriate user-oriented cultural content. Recently, the literature has stressed, however, the need for a "user-oriented" approach (Brown and Chalmers, 2003; Goh *et al.*, 2009) based on the proposition of value-added services from the user's perspective, showing an appropriate co-evolution of "personal mobile" technology and the "business model" of the actors in the sector (Buhalis and Law, 2008).

In particular, with the aim to improve and enhance cultural use through mobile technologies, focus is on the one hand to detect the changed use of places and cultural resources and, on the other hand to enhance the relational dimension of the visit.

Regarding the former, the inherent characteristics of mobile devices such as location and connectivity are to enable the new dynamics of using and learning. Location Based Services (Brown, 2010; Chang *et al.*, 2014) especially are able to customize content and activities based on actual user-location. Through geo-located services, places are crowded with information, that is deposited virtually on the map, defining a mixed view in which the contingent reality, can be added to and offering users text, images, sounds, videos, activities that belong to the digital world (Bruno and Pollichino, 2011; Ceconello, 2012; Solima, 2009).

The latter aims to outline the pattern of relations facilitated and augmented by digital technologies in which reference is expanded and extended to the relationship between:

- institutions involved in the definition of the value of the museum offer;
- visitors and content enjoyed during the visit;
- visitors and visitors.

Enhancement of cultural fruition with the overlap of information to places through mobile technology devices with connectivity to the web and its content and services, include tools commonly referred to as Web 2.0, enable visitors to participate in the life of the institution, to make comments and preferences, to discuss, share and even create the content (Tallon, 2013). Those who were once merely visitors, or simply the recipients of a cultural product are now able to play a new role, that of creators, or better, co-creators of content related to that specific cultural product. The value added by mobile technology is a real opportunity to perform these activities in real time during the visit[2]. Not surprisingly, an increasing number of cultural institutions use social networks to open a preferential channel of communication with their visitors, establishing a direct and more engaging relation. In the meantime, the potential for learning and knowledge has increased and at the same time new and multiple relations are being established between the actors, the institutions with their own cultural assets, the service providers of technology and, not least, the visitors and the potential visitors.

Networking (and relations relative to cultural works) is certainly not an end in itself; museums should aim to expand the opportunities offered to

[2] For example, a visitor of the Pinacoteca of Brera with his device, enjoying the Tintoretto, can submit a question on a forum of art lovers, potentially receiving suggestions in real time by users all over the world.

users, changing in fact the relation between visitors and goods. In addition, the further relational model between visitors, enabled by digital technology, fosters not only the ability to exchange/share comments, opinions, etc., but also, above all, the creation of new content, new knowledge. This indirect, social relationship mediated by the network and the digital device has the advantage of bringing together different users on the basis of cultural content and of spreading a sense of social belonging with the awareness of being surrounded by other people with common interests. Blogs, social networks, online communities are media that recently, more than others, have enabled the inversion of typical flows of information between users and the actors involved. After a decade of tourism 1.0[3], the visitor of the museum can exploit new functionalities and enjoy new sites and applications that can be co-created with active involvement of users/visitors.

3.3 Innovative use and enabling technologies

With the advent of new models that highlight memorable experiences for the consumer (Pine and Gilmore, 2000; Schmitt, 1999; Hetzel, 2002; La Salle and Britton, 2003) even in studies focusing on the enhancement of cultural heritage, the traditional model based on the passive role of the visitor has given way to new approaches in which visitors take a proactive role, becoming co-creators of their own experience (Carù and Cova, 2007; Dalli and Romans, 2007; Cerquetti, 2010; 2014). The pervasiveness of the web 2.0 tool, as well as offering users the service of technology, enhances to the full cultural resources. The consumption of the visit experience generates value especially when it is made transferable to other potential visitors. The postmodern consumer is motivated by emotional factors, in search of pleasant and engaging shopping and consumer experiences (Fabris, 2003). Consumers, in an attempt to satisfy their needs and desires, no longer devoted exclusively to the maximization of the purchase, but constantly in search of experience and leadership in choice become "consumAttore"[4] (Di Vittorio, 2011, p. 149), within a social space in which they live and continuously weave relations. In fact, such perceived value does not depend exclusively on the quality of the service but on the magnitude and intensity of the ties that can be established through the use of the service. Defined as "linking value" (Cova, 2010, p. 39), the relationships and ties acquire greater importance than the service used.

To meet the challenges introduced by the social customer, cultural institutions and museums in particular, should abandon the model that puts them at the center and which considers the consumer as a passive entity, to make room for a new conception of parity, where they become one of the potential players in the network, tending to deal constantly with ever more active and proactive target consumers in order to operate and

[3] That is, the presence on the web of services sold online, but still related to static site without interaction.

[4] "ConsumAttore" translates the notion of the prosumer (Tapscott and Williams, 2006; Ritzer *et al.,* 2012). In the marketing management perspective, a deepening of the notion is analyzed by Mencarelli *et al.*, 2010.

evolve the experience based on the continuous feedback/impulses received (Solis, 2010).

4. Methodology

Our analysis of the literature evidences that new trends in cultural consumption are in place, in particular with regard to the content of the overall experiential enjoyment. Hence there lays the need for institutions/ cultural organizations to adopt a strategic focus on the proposition of value-added services and to consider the user/visitor an active part of the enhancement process. In this direction, the digital and mobile technologies represent an opportunity to seize as they foster new dynamics of enjoyment and learning aimed to reinforce interactivity. This implies an inevitably multidisciplinary analysis approach with consequent opportunities/issues relative to theories and applications of a different conceptual matrix.

Specifically, it is believed that this paper may help to answer the following research question:

- What are the ways in which digital technologies enable the enhancement of the experiential dimension linked to the demand for culture?

In this perspective, the research was carried out using a qualitative approach based on Scenario Based Design (SBD) methodology (Carroll, 1995) which - although originally intended for developers of personalized technologies, such as hand computers and interactive learning systems - it was, in particular, experimented in the recreational-creative field (Strömberg *et al.*, 2002) with the aim of identifying innovative ways of learning and involvement and, not least, of enhancing the interactivity in visits to museums (Hall *et al.*, 2001).

The methodology is also part of a broad perspective System User Centered Design (Norman and Draper, 1986) and Design Research Based (Design-Based Research Collective, 2003) in which *software* developers, experts and potential users work together to imagine and design the future of the systems of human technology (people interacting with technologies) which are then defined through an iterative cycle of implementation and user testing. In contrast to the previous methods based on abstract descriptions of the technology and its use, SBD starts with writing short narrative descriptions of technology interacting on how people imagine the future. In fact, system designers, in continuous consultation with potential users, usually write every story or scenario from the point of view of a typical user, describing events that include the social context, interactions with technology, resources, constraints and any additional information that emerges. The goal is to produce convincing narrative information illustrating user goals, activities and context. The scenario user frames a bridge of value both for designers - who have greater cognition of the social and contextual factors that are relevant in the development of new technology - and the entire network of actors, facilitating the procedures for use of the service. Finally, the scenario becomes a "design object" (McCabe *et al.*, 2012) that

can be continuously reshaped, in terms of extension or revision, thanks to its embedded technology.

The specific reasons that suggest our use of SBD methodology are the following:

- effective balance between methodology and innovative technology enablers;
- user-centred where the role shifts from that of mere user to "ConsumAttore", expression of the ability to actively influence the cultural offer through: co-production of content; cultural preferences or otherwise; specific objectives;
- cyclical approach of the museum experience, which does not begin and end with the visit in itself but considers in an integrated manner the preparatory moments to a visit i.e. pre-visit (to customize the best cultural experience) and post-visit (aimed at extending the cultural offer beyond the physical boundaries of the museum).

For the above mentioned reasons, it was considered that SBD would be more appropriate and opportune to validate the research question through an experimental design.

In sum, a method was set up by means of which it is possible to achieve both the content personalization, based on the actual needs of the user/visitor, and the establishing of multiple links/relations among the actors involved in the cultural enjoyment tout court.

5. Findings

5.1 Brief description of the project

The project FIBAC was funded by the Ministry of Education, University and Research (MIUR) within the National Operational Programme "Research and Competitiveness PONREC 2007-2013"[5]. The general purpose of the project was to define, implement, test and validate methodologies, techniques and prototype solutions for the innovative use of cultural heritage in real and virtual contexts.

From a methodological point of view, the aim is embodied in the study and definition of innovative processes of mediation of cultural heritage (reproduction, upgrading, remodeling, incorporation) rethought as a space in which new architectural flows alternate. Using SBD methodology and placed within the theoretical framework of Cultural Remediation (Bolter and Grusin, 1999), the project, re-positions the traditional polarization between immediacy and hyper-mediation interfaces and access to cultural goods. The emphasis is on the process of integration and enhancement between conventional devices and the forms of representation and experience of the new digital media. Based on the proposals by McLuhan (1964), the idea of defining an adaptive experiential path to overcome the boundaries between action and contemplation as part of the enjoyment of culture and art, is calling into question the notions of hermeneutic

[5] For more details see www.ponrec.it/open-data/progetti/scheda-progetto?ProgettoID=5236

circularity and cultural re-mediation that are core to the debate on new media.

The goal can be traced to the definition of a system powered by a technological platform for the dynamic generation of personalized routes within museums, art galleries and other cultural and artistic sites, virtual or real. The prototype was designed for the delivery of personalized and customized information to enable enhancement in terms of experiential enjoyment of the cultural resources of the museum sites and works of art contained in them. This responds to the need for redefining the relation between the museum and visitors, increasingly user-centered and attentive to past experiences and values of which the users are bearers.

At present, the project has defined and articulated specific prototype services both for the construction and the management of user templates and for the generation of museum routes while the design and development of customized illustrations relating to specific works of art are in progress. In particular, two prototypes are envisaged: the first addressed to non-virtual museums, the second conceived for the enjoyment of cultural goods in virtual contexts.

As concerns findings, the project presents many innovative and distinctive features confirmed by the empirical results of the survey carried out as part of the project activities and targeted at a limited but representative sample of Italian museum sites. It highlights, in particular, that the current solutions available on the market are mainly based on the use of ICT (3d rendering engines, pda, video and audio guides) which, however, cannot radically change the experience of the visitor, let alone make it unique and customized. In fact, despite the limitations of the data collected, fruition remains basically in a passive nature and the visitor contemplates the work of art in a passive manner. The project FIBAC has changed this approach by highlighting the centrality of the visitor's experience and enjoyment by means of ICTs which have, in any case, a key role as an enabler. In a broader perspective, the project aims to have an impact on the shortcomings of the Italian system relative to the exploitation and use of cultural heritage, which is an important strategic asset. The project aims at effective innovation to enrich the museum-visitor relationship and fruition of the cultural goods in a more interactive and adaptive manner. The experience must be such so as to ensure a "dialogue" between the visitor and the museum by removing the current boundary between action and contemplation.

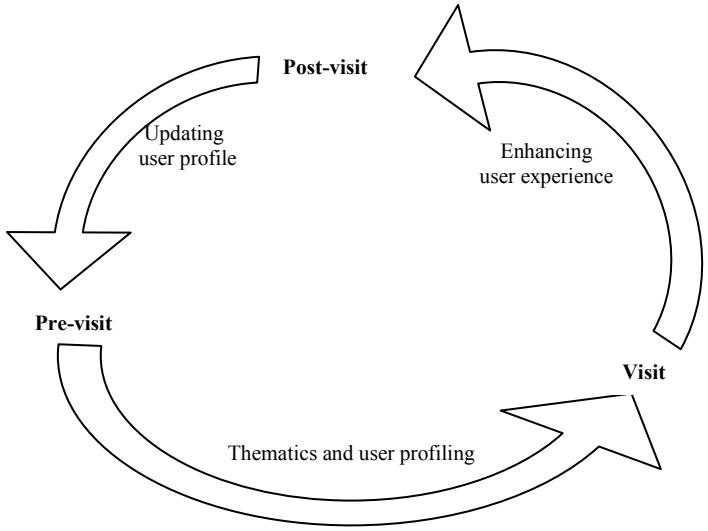
The project furthermore, involves the active collaboration of universities, public research centers and small and medium size enterprises operating both in museums and in other sectors not strictly linked to the development of the cultural and monumental goods. Such collaboration within a systemic vision, would have an extremely positive impact on territory attractiveness.

5.2 The Scenario tested

The context in which the prototype was developed and experimented was specific museum sites in the Campania Region. The scenario, divided into three phases, involved effective users who provided adequate feedback and information useful for future industrialization and the marketing

of the prototype. Figure 1 gives an overview of the experience object of experimentation. The scenario highlights and enhances the contemplative experience in a cyclical and non-sequential key. The cultural experience, in fact, begins with a pre-visit phase mainly devoted at gathering information on objectives, preferences and interests of the user in order to create a user/museum visitor profile. Subsequently, based on the information acquired, the system enables the creation of personalized paths and customized themes that combine, on the basis of cultural preferences or otherwise, the content of artistic cultural goods with new content and/or non-cultural goods. During the visit, pathways and content of the experience are continually updated in order to render visitors aware of the knowledge they have acquired in a process of active involvement. The post-visit phase, finally, suggests and recommends both cultural content - provided by other institutions to push the user to carry out new visits and experiences - and ludic-creative content based on the information that the system embedded. The cycle ends with an update of the user profile, to prepare the visitor for new experiences.

Fig. 1: The overall Scenario



Source: our elaboration

In the following paragraphs, will be deepened the phases in which is articulated the overall scenario.

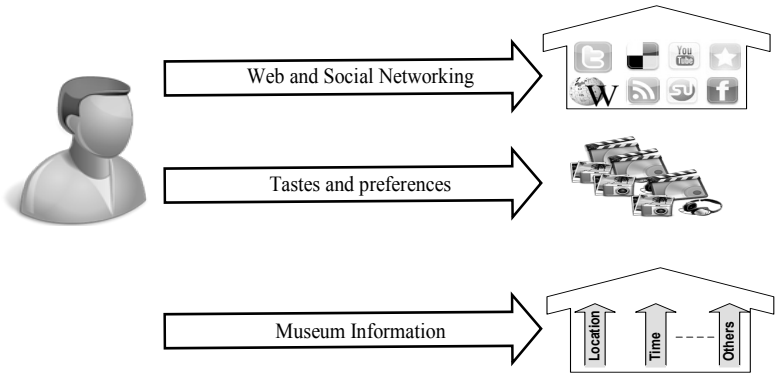
5.2.1 The Pre-visit phase

In the pre-visit phase, users, prior to entering the museum site, access the FIBAC portal platform by means of their user device (PC, tablet, smartphone) to plan their visit. Access can be gained by inserting social media (Facebook, Twitter, etc.) log-in credentials. The system is then able

to retrieve preliminary information concerning the social profile of the user. Next, the user is asked to supplement the information in the "Personal Profile" default by specifying their cultural interests or other information.

The purpose of the pre-visit is not merely for user profiling, but also to facilitate enjoyment for future visitors making them familiar with the site through a full immersion experience that emulates the galleries and museum exhibits. Thus, users can create their own customized path indicating the objective of their visit and enhancing their level of knowledge of the categories of art identified by the portal. Visitors already in the pre-visit phase, can interact, comment and express preferences. Clearly, even at this stage, the system with its function of cognitive mapping of an individual subject is able to capture a variety of information, useful for customizing the real visit phase.

Fig. 2: The pre-visit



Source: our elaboration

5.2.2 The real visit phase

Based on the cognitive information acquired and with the support of the technical creation of thematic routes, the system generates a customized path that connects the various concepts in defining the objective of the visit and, simultaneously, is able to adapt in real time the implicit and explicit feedback related to the elements of previous knowledge of the user received during the pre-visit phase.

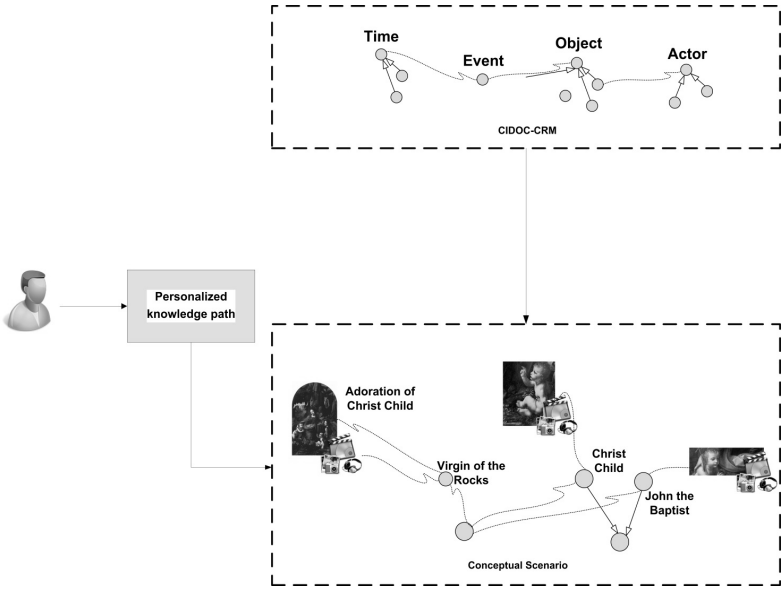
Entering the museum, the user through a mobile device (e.g. tablet or smartphone) will be able to foster the knowledge content related to selected art works and cultural resources, settled on the site. In particular, at this stage the focus is on the ways in which the visitor spends his time in the museum that can be influenced by the following elements: time and attention devoted to the works; movement within the museum spaces; methods of acquiring information; involvement associated with the visit experience.

More precisely, two complementary ways of fruition were tested.

The first, traditional cultural re-mediation, based on the logic of hyper-mediation and immediacy (Bolter and Grusin, 1999) communicates

the cultural resource in a customized way. The visitor is provided with details about: events, actors, places and other concepts in a work of art emphasizing the elements that may be correlated to their expressed personal preferences and cognitive background. Figure 3 illustrates - with specific reference to a work of art, i.e., the Virgin of the Rocks - the visitor experience highlighting the correlation between the concepts of the event depicted in the work (the adoration of the Christ Child by John the Baptist) and the actors portrayed (John the Baptist and Christ Child). The aim is to encourage active visitor participation and, therefore, involvement able to foster a thorough understanding of the artworks.

Fig. 3: The cultural re-mediation mode



Source: our elaboration

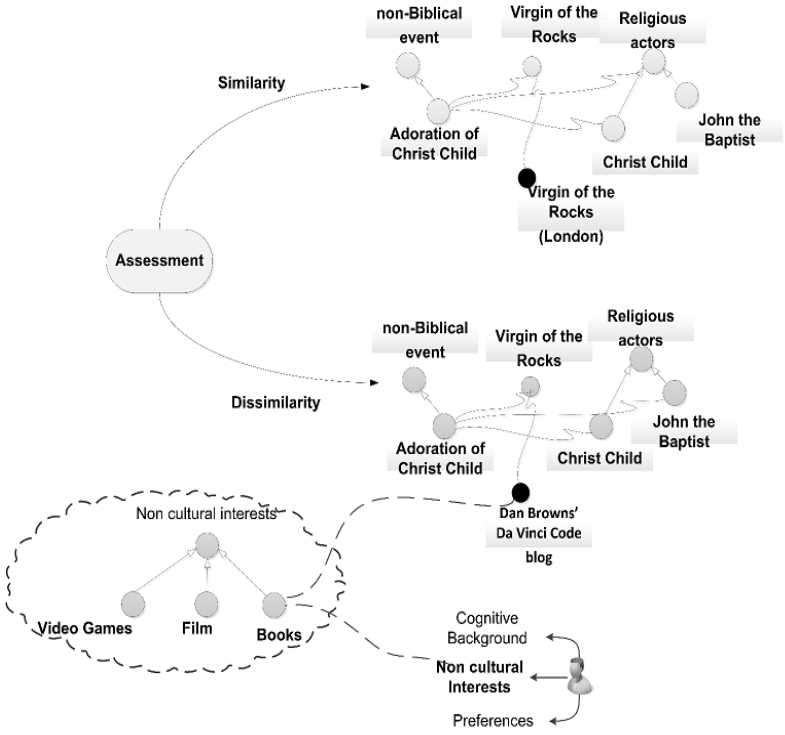
The second, additional mediation or ad-mediation (See Figure 4), captures the visitor's attention by supplementing or providing new meaning to the cultural resource enjoyed through the addition and correlation of new knowledge and knowledge generated through the previous mode. Involvement is enabled thanks to the FIBAC seamless user interaction system by mobile, that also makes constant assessment of the experience and enjoyment of the cultural resource.

Two conceptual logics underpin the ad-mediation mode:

- similarity is characterized both by a context and content continuity, related to the main fruition, and the correlation continuity, related to the above mentioned concepts and contents. With regard to the specific work of the Virgin of the Rocks, the system provides supplementary knowledge recalling the contents of further versions of the work on display in other museums or sites and correlates content related to the event and the actors portrayed;

- dissimilarity highlights the ability to relate concepts and contents of the artwork with further knowledge related to non-cultural contexts (books, movies, sports, various events, etc.). This is the case of the effect of the "Da Vinci Code" exploited by the Louvre to engage visitors who, having read the book, actively participate in the museum visit. Again with reference to the work of art above, the system retrieves the information regarding the visitor interests by enabling non-cultural connections and correlations with the content of the Virgin of the Rocks.

Fig. 4: The cultural ad-mediation mode



Source: our elaboration

5.2.3 The post-visit phase

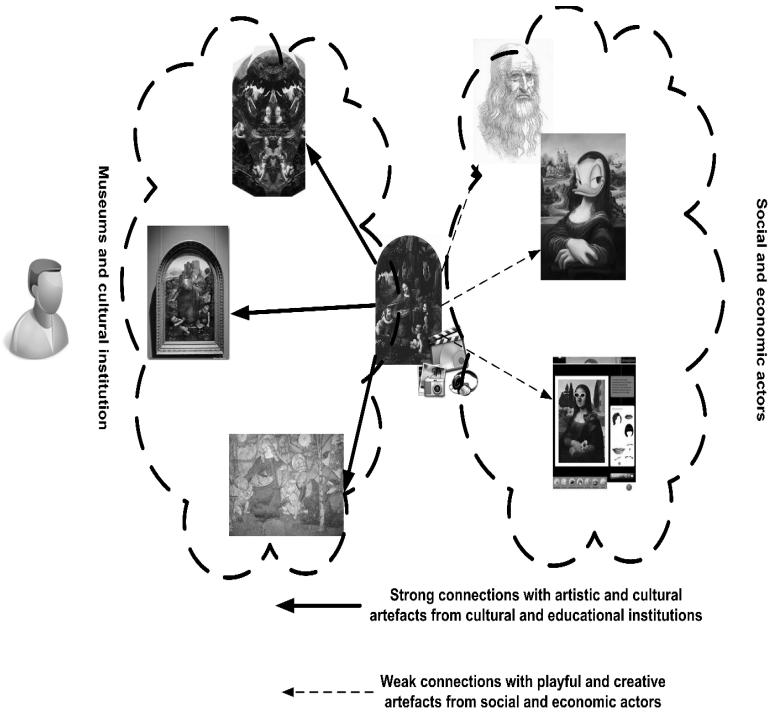
The idea on which the post-visit phase roots is not to limit user's experience to a single visit, but to expand it afterwards his/her stay in the museum, offering further and associated experiences. The connections the system detects can either be weak and/or strong.

In the first case, post-visit phase is oriented to inspire specific connections between lived and possible further experiences that can also be replicated in other museums. Consequently, the system makes the user able to receive several recommendations related to other cultural organizations' offering or provided by temporary or permanent exhibitions related to

works characterized by contents similar to those fruited during the visit. In particular, Figure 5 shows the links that the system can create through recommendation systems techniques, such as those strong connections that the lived experience has with the other cultural works collected in other museums.

In the former case, the platform, having also updated user profiles based on the information captured during the visit, is able to offer experiences that can be indexed although not strictly related to a previous experience of visiting the museum. The reference is to offer proposals such as theater performances related to the thematic content that the users received during their visit, visits to places represented in the more popular works of art, or even watching related movies and documentaries. The links, in this case, are depicted in Figure 5 as less stringent connections but, in any way, relevant in terms of value generation.

Fig. 5: The post-visit



Source: our elaboration

The description of the scenario, structured in three phases, highlights how the system enables the acquiring of knowledge from several and heterogeneous sources interacting with different actors on the basis of the specific contents to propose to the user. More precisely, interaction is enabled on the basis of the specific content proposed during the pre-visit in order to capture information from the web and social networks connected to the system user profiling process. In addition, other types of

data are retrieved from the information that the user releases to the system depending on choices made for the definition of the pathway and the remote use of the virtual visit mode from PCs. Finally, during the post-visit phase, the system accesses data and information from other museum sites in order to propose new experiences which have similar content and at the same time gain more information from other providers of cultural services linked in a weaker sense, to the experience already enjoyed by the user.

6. Conclusions and research limits

In the light of the enhancement and dissemination of culture, the analysis of the fruition mode of museum used by visitors has strategic significance for cultural institutions and for socio-economic actors. Co-evolution should, therefore, involve actors from different value chains or sectors convergent towards the goal of a more effective user experience. In this direction, the creation of cultural value is obtained through the ability to correlate cultural content to content not directly related to a work of art, i.e. external to cultural institutions. In a broader perspective, the increasing value involves both technology providers by developing solutions suggestive of similar cultural works and/or recommending additional exposure in other halls of the museum, or in other museums and other socio-economic actors outside the traditional chain of cultural goods (for example, manufacturers of adaptive multimedia guides that offer additional content).

From a visitor's perspective, enhancement - linked to the enjoyment of cultural goods in the widest sense, tested through the design experience described - introduces interesting challenges in terms of creating experiences that can:

- adapt to visitor needs and preferences dynamically expressed;
- evolve, on the basis of visitor decisions and actions, reshaped in line with changes of visitor objectives and preferences;
- be shared with other users and visitors in real time;
- be shaped according to the intangible assets of the network of actors involved in the cultural offer (museums, technology services provider, etc.).

The result is a primarily composite supply model, generated by the developing system of resources contributed by the various actors involved in the process of value building of the work of art. Moreover, the model can be adapted to the objectives and preferences of the individual user and, also correlated with other cultural offerings and content (cultural and otherwise) on the basis of visitor approval. In sum, the supply model is powered through a continuous balance between cultural knowhow and specific interests thus creating multiple fruition modes on the basis of the various visitor perspectives.

In a dynamic vision, the model feeds processes of value co-creation thanks to a continuous customized content achieved by means of user interaction at various phases with the scenario of events that include social, psychological and, especially, cognitive and emotional circumstances, in a progressive enrichment of value in use (Barile *et al.*, 2012).

The main research limit is referred to the tested design configured, on a scientific level, and is merely a starting point for future studies and empirical evidence. The results of the project represent a valuable support in terms of empirical evidence to the claims by theoretical studies. In this direction, the extension of the test in an empirical context could improve the analysis perspective, taking into account new elements that could help enhance the cultural offer and the additional mechanisms that are important for the visitor's enjoyment. In fact, the empirical evidence proposal has focused on the conceptualization of a specific scenario; however, to allow the generalization of the results, in terms of validity and reliability, extension of the exploration would be appropriate.

7. Theoretical and managerial implications

SBD methodology offers interesting insights for further study in the field of cultural enhancement and, potentially, is presented as an effective method for the study concerning the progressive involvement of potential actors in identifying strategic and operational solutions for improving the immaterial dimension of cultural value.

From a theoretical point of view, the main implication consists in having laid the foundation for an interdisciplinary approach relative to development and innovation on the basis of different analytical perspectives. From the contribution of different scientific fields, and through SBD methodology, knowledge potentially relating to problems and aspects mainly of a technological nature, has been expanded relatively to detect the impact that ICT issues have on choices of a managerial nature. In this perspective, the paper contributes to the scientific debate on the need to identify effective and innovative forms of cooperation and integration for the development of knowledge and its implementation by means of producing actionable knowledge through scientific activity "addressed to problem solving that organizations are facing" (Golinelli, 2011, p. 12).

From a managerial point of view, the current challenge involving cultural institutions can be read from a dual perspective: on the one hand, characterized by the ability to offer museum experiences that introduce new dimensions of time and cognition; on the other hand, by the ability to collaborate with different actors for the organized enhancement of cultural heritage of a specific territory. Both prerequisites are essential for innovation in a service management perspective.

As a result, the underlying logic of the tested design, based on the full involvement of the visitor, is a stimulus for cultural institutions to focus on innovative ways to enhance visitor enjoyment in a experiential dimension. In fact, in terms of supply and according to the relational museum-visitor perspective, the results show that visitor experience can influence the level of customer satisfaction and the related benefits gained, both of which affect subsequent processes of cultural consumption and propensity to repeat the visit. To this end, it is necessary to activate more intense connections/ties not only with cultural institutions, but also with actors belonging to the territorial system in order to set up complex experiences

(which enrich the culture in its various forms) being based on technical/technological/cultural/touristic resources characterized by a higher level of attractiveness. In a dynamic vision, interdependence between actors tends to facilitate the transfer and circulation of knowledge fostering processes of continuous learning from interaction with a view to learning by cooperation (Pencarelli and Splendiani, 2011). Even with regard to this aspect, the model tested in FIBAC configures a technology hub aimed at centralizing and facilitating the possible connections to a network helping to bring patterns of systemic and highly territorial connotations especially when referring to the post-visit phase visitors/customers, downstream of their experience, receive recommendations on cultural elements or otherwise offered by other actors either as suppliers of cultural services, creative players, or prosumers. Thus content featuring multimedia elements in the additional display of works of art, monuments, archaeological sites, places, contributes to fascinating the customer embracing a philosophy of edutainment and learning by consuming, avoiding self-referential content without losing sight of historical and territorial dimensions (Bonacini, 2014).

In this direction, the hope is that the FIBAC platform will act as a catalyst for public actors in the implementation of effective policy intervention aimed at enhancing the territorial system in its cultural dimension. In particular, the platform ennobles the concept of democracy/cultural inclusion, encouraging participation and the creation of culture according to a bottom-up approach ensuring that "all" entities of a territorial system can participate in the active creating of culture. The platform could help respond to cultural policy models based on the development of access and on the socio-economic development of the local contexts, in the direction of spreading the right to culture and to justify, even at economic sustainability, the existence, preservation, but also enhancement of a territory's cultural heritage.

References

AGUIARI R., AMICI B. (1995), *I visitatori dei musei di Roma*, Sipi, Roma.

BARILE S., MONTELLA M., SAVIANO M. (2012), "A service based systems view of cultural heritage", *Journal of Business Market Management*, vol. 5, n. 2, pp. 106-136, http://nbn-resolving.de/urn:nbn:de:0114-jbm-v5i2.166.

BATTILANI P. (2009), *Vacanze di pochi vacanze di tutti. L'evoluzione del turismo europeo*, Il Mulino, Bologna.

BOLLO A. (2004), *Il museo e la conoscenza del pubblico: gli studi sui visitatori*, Eros Merli, Milano.

BOLTER J.D., GRUSIN R. (1999), *Remediation: Understanding New Media*, MIT Press Cambridge.

BONACINI E. (2011), *Nuove tecnologie per la fruizione e valorizzazione del patrimonio culturale*, Aracne, Roma.

BONACINI E. (2014), "La realtà aumentata e le app culturali in Italia: storie da un matrimonio in mobilità", *Il Capitale Culturale,* vol. IX, pp. 89-121.

BRADFORD H. (1994), "A new framework for museum marketing", in Moore K., (a cura di), *Museums Management*, Routledge, London.

BROWN B., CHALMERS M. (2003), "Tourism and mobile technology", in Kari K., Eija H.K. (eds), *Proceedings of the eighth European conference on computer supported cooperative work*, Sept. 14-18, Helsinki, Finland, New York, Kluwer Academic Press, pp. 335-354.

BROWN B., PERRY M. (2001), "Of maps and guidebooks: Designing geographical technologies", A*CM SIGGROUP Bulletin*, vol. 22, n. 3, pp. 28-32.

BROWN E. (2010), "Introduction to location-based mobile learning", in Brown E. (a cura di), *Education in the Wild: contextual and location-based mobile learning in action. A report from the STELLAR Alpine Rendez-Vous workshop series*, UK University of Nottingham, Nottingham, pp. 7-9.

BRUNETTI F. (1999), *Il turismo sulla via della qualità*, Cedam, Padova.

BRUNO A., POLLICHINO G.B. (2011), "Sperimentare una nuova metodologia di analisi comportamentale durante le visite nei musei", *Palazzo Madama. Studi e Notizie*, n. 0/1, pp. 209-213.

BUHALIS D., LAW R. (2008), "Progress in information technology and tourism management: 20 years on and 10 years after the internet. The state of eTourism research", *Tourism Management*, vol. 29, n. 4, pp. 609-623.

CANINA M., CELINO I., FRUMENTO E., PAGANI A., SIMEONI, N. (2008), "Beni culturali: lo sviluppo del settore passa dall'ICT", *Beltel*, vol. 130, pp. 8-13.

CARROLL J.M. (1995), *Scenario-based design: Envisioning work and technology in system development*, Wiley, New York.

CARÙ A., COVA B. (2007), *Consuming experiences* (a cura di), Routledge, London.

CECONELLO M. (2012), "Mobile technologies: new ways to access tourism, culture and cities", *Tafter Journal*, n. 52, october, http://www.tafterjournal.it/2012/10/01/mobile-technologies-new-ways-to-access-tourism-culture-andcities/

CERQUETTI M. (2010), "Strategie di branding del cultural heritage nella prospettiva esperienziale", *Sinergie*, n. 82, pp. 123-142.

CERQUETTI M. (2014), *Marketing museale e creazione di valore: strategie per l'innovazione dei musei italiani*, Franco Angeli, Milano.

CHANG K.E., CHANG C.T., HOU H.T, SUNG Y.T., CHAO H.L., LEE C.M. (2014), "Development and behavioral pattern analysis of a mobile guide system with augmented reality for painting appreciation instruction in an art museum", *Computers and Education*, vol. 71, pp. 185-197.

COVA B. (2010), *Il marketing tribale. Legame, comunità, autenticità come valori del Marketing Mediterraneo*, Milano, Il Sole 24 ore.

DALLI D., ROMANI S. (2007), "Consumption experiences and product meanings: pasta for young Italian consumers", in Carù A., Cova B. (eds), *Consuming experience*, Oxon, Routledge.

DESIGN-BASED RESEARCH COLLECTIVE (2003), "Design-based research: An emerging paradigm for educational inquiry", *Educational Researcher*, vol. 32, n. 1, pp. 5-8.

DI VITTORIO A. (2011), "Turismo 2.0: Le community on line dei viaggiatori e la condivisione dell'esperienza turistica", *Mercati e Competitività*, n. 4, pp.147-167.

DONATO F., VISSER TRAVAGLI A.M. (2010), *Il museo oltre la crisi - Dialogo fra museologia e management*, Mondadori, Electa per le Belle Arti, Milano.

FABRIS G. (2003), *Il nuovo consumatore: verso il postmoderno*, Franco Angeli, Milano.

FABRIS G. (2008), *Societing. Il marketing nella società postmoderna*, Egea, Milano.

FRANCH M. (2010), "Le frontiere manageriali per la valorizzazione della cultura e dell'arte", *Sinergie*, n. 82, pp. 95-107.

GILMORE A., RENTSCHLER R. (2002), "Changes in museum management. A custodial or marketing emphasis?, *Journal of Management Development*, vol. 21, n. 10, pp. 745-760.

GOH D.H., ANG R.P., CHUA A.Y.K., LEE C.K. (2009), "A factor analytic approach towards determining mobile tourism services", *Proceedings of the 11th international conference on electronic commerce*, Aug 12-15, Taipei, Taiwan, New York, ACM Press, pp. 152-159.

GOLINELLI G.M. (2011), "Il Management tra ricerca, insegnamento e impresa", *Sinergie*, n. 86, pp. 11-15.

HALL T., CIOLFI L., BANNON L., FRASER M., BENFORD S., BOWERS J., GREENHALGH C., HELLSTROM S.O., IZADI S., SCHNADELBACH H. (2002), "The visitor as virtual archaeologist: Explorations in mixed reality technology to enhance educational and social interaction in the museum", *Proceedings of VAST01 virtual reality, archaeology and cultural heritage*, Glyfada, Nr. Athens, Greece, Nov 28-30, 2001, pp. 91-96, ACM Press,New York.

HETZEL P. (2002), *Planète conso: Marketing espérientiel et nouveaux univers de consummation*, Editions d'Organisation, Paris.

KAWASHIMA N. (1999), "Knowing the public. A review of Museum Marketing Literature and Research", *Museum Management and Curatorship*, vol. 17, n. 1, pp. 21-39.

KENTERIS M., GAVALAS D., ECONOMOU E. (2009), "An innovative mobile electronic tourist guide application", *Personal and Ubiquitous Computing*, vol. 13, pp. 103-118.

KOTLER N., KOTLER P. (2000), "Can museums be all things to all people? Missions, goals, and marketing's role", *Museums management and Curatorship*, vol. 18, n. 3, pp. 271-287.

LA SALLE D., BRITTON T.A. (2003), *Priceless: Turning Ordinary Products into Extraordinary Experiences*, Boston, Harvard Business School Press.

McCABE S., SHARPLES M., FOSTER C. (2012), "Stakeholder engagement in the design of scenarios of technology-enhanced tourism services", *Tourism Management Perspectives*, vol. 4, pp. 36-44.

McLEAN F. (1995), "Future directions for marketing in museum", *The European Journal of Cultural Policy,* vol. 1, n. 2, pp. 355-368.

McLUHAN M. (1964), *Understanding Media: The Extensions of Man*, MIT Press Cambridge.

MENCARELLI R., MARTEAUX S., PULH M. (2010), "Museums, consumers, and on-site experiences", *Marketing Intelligence and Planning*, vol. 28, n. 3, pp. 330-348.

NORMAN D.A., DRAPER S. (1986), *User centered system design: New perspectives on human-computer interaction*, Hillsdale, Lawrence Erlbaum Associates, NJ.

O'CONNOR P. (2008), "Managing hospitality information technology in Europe: Issues, challenges and priorities", *Journal of Hospitality Marketing and Management*, vol. 17, n. 1, pp. 59-77.

PENCARELLI T., FORLANI F. (2002), "Il marketing dei distretti turistici. Sistemi vitali dell'economia delle esperienze", *Sinergie*, n. 58, pp. 231-277.

PENCARELLI T., SPLENDIANI S. (2011), "Le reti museali come sistemi capaci di generare valore: verso un approccio manageriale e di marketing", *Il capitale culturale*, vol. II, pp. 227-252.

PINE J.B., GILMORE J.H. (2000), "L'economia delle esperienze. Oltre il servizio", Hoepli, Milano (ed. orig.: *The Experience Economy*, Harvard Business School Press, Boston, 1999).

RITZER G., DEAN P., JURGENSON N. (2012), "The Coming of Age of the Prosumer", *American Behavioral Scientist*, vol. 56, n. 4, pp. 379-398.

SACCO P.L., TRIMARCHI M. (2003), *Il museo invisibile*, Osservatorio Impresa e Cultura, Milano.

SANTAGATA W. (1999), *Il pubblico invisibile. Indagine sui non-utenti dei musei*, Rapporto per Regione Piemonte e Comune di Torino.

SCHMITT B.H. (1999), *Experential Marketing*, The Free Press, New York.

SOLIMA L. (2000), *Il pubblico dei musei. Indagine sulla comunicazione nei musei statali italiani*, Gangemi, Roma.

SOLIMA L. (2009), "Nuove tecnologie per nuovi musei. Dai social network alle soluzioni RFID", *Tafter Journal*, n. 10, dicembre 2008 - gennaio 2009, http://www.tafterjournal.it/2008/12/22/nuove-tecnologie-per-nuovi-musei-dai-social-network-alle-soluzioni-rfid/

SOLIMA L. (2013), "Fatti, più che parole. L'indagine osservante e l'analisi del comportamento di fruizione del visitatore museale", *Mercati e Competitività*, n. 4, pp. 103-125.

SOLIMA L., BOLLO A. (2002), *I musei e le imprese. Indagine sui servizi aggiuntivi nei musei statali*, Electa, Napoli.

SOLIS B. (2010), *Engage! The complete guide for brands and businesses to build, cultivate, and measure success in the new web*, John Wiley & Sons, Hoboken, New Jersey.

SPALLAZZO D. (2013), "Musei, fruizione culturale e tecnologie mobili. Luoghi, persone, storie", *Storicamente. Rivista del Dipartimento di Storia Culture Civiltà*, n. 9, pp.1-7.

STRÖMBERG H., VÄÄTÄNEN A., RÄTY V. (2002), "A group game played in interactive virtual space: Design and evaluation", *Proceedings of the 4th conference on designing interactive systems: Processes, practices, methods, and techniques*, (DIS'02), London, UK, Jun 25-28, pp. 56-63, ACM Press, New York.

TALLON L. (2008), *Digital technologies and the museum experience*, Altamira Press, Lanham.

TALLON L. (2013), *Mobile Strategy in 2013: an analysis of the annual Museums and Mobile survey*, http://www.museumsmobile.com/wp-content/uploads/2013/07/MMSurvey-2013-report-V2.pdf

TAPSCOTT D., WILLIAMS A.D. (2006), *Wikinomics: How Mass Collaboration Changes Everything*, Portfolio, New York.

TOBELEM J-M. (1997), "The marketing approach in museums", *Museums management and Curatorship*, vol. 16, n. 4, pp. 337-354.

VARGO S.L., LUSCH R.F. (2004), "Evolving to a New Dominant Logic for Marketing", *Journal of Marketing*, n. 68, pp. 1-17.

Internet site

http://www.ponrec.it/open-data/progetti/scheda-progetto?ProgettoID=5236

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