Rethinking the Cultural Heritage Domain: Towards an Economy of the Virtual

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Abstract

This contribution represents a proposal to extend the CH research area towards disciplines able to provide a strong support in the creation of Value Added Services and so stimulate an interest in this domain from potential industrial and financial partners. The corollary is that CH (and, even more, VH) management should be considered as any other productive activity, and therefore deploy adequate organizational models and technological solutions for building (and managing) sound and well structured value chains. The "Libera Universita' degli Studi Sociali" (LUISS) in Rome and the CNR/ITABC (Institute of Technology Applied to Cultural Heritage) intend to propose, starting from a state-of-art analysis, the implementation of Business Process Re-engineering models and techniques in the CH/VH management. Projects clearly aimed at pointing out the ROI possibilities that could derive from this approach will surely provide better chances of raising funds for improving the quality of services, (and preservation) in sites, archives, museums, and exhibitions.

Introduction

The Cultural Heritage (CH) domain, in Italy as well as in Europe, has recently been interested by a deep rethinking of its intrinsic essence. The socio-economic context in which CH institutions were created has dramatically changed, and the pressure for undergoing a substantial restructuring is constantly increasing. Such restructuring, in order to produce results, should indeed affect most aspects of CH institutions: from the mission itself to inner organisational configuration, from human resources to customer relationship management, from technological solutions to marketing and promotion. This phenomenon is generated by two key factors: 1) the need to raise financial resources independently from public funds, and 2) the increasing request for high quality, value added, services from a more and more demanding cultural tourism.

As an answer to these issues, the present contribution aims at providing a theoretical reference framework for supporting the formulation of general standardised requirements on Cultural Heritage Information Systems (CHIS) development. A CHIS is intended as an integration of organisational models and technological solutions, customised for providing the various categories of CH institutions with a support for designing a sustainable evolutionary roadmap and a management model for facing the new challenges.

The final goal is represented by the transformation of cultural institutions in "state of art", networked organisations, here defined as Cultural Service Providers (CSP). The roadmap towards innovation will therefore proceed along three main streamlines: 1) Organisational models (designed for cultural institutions); 2) technological solutions (for supporting innovation and management activities); and 3) Knowledge management and dissemination (by means of a Domain Ontology).

Virtual Reality between Science and Art: Epistemology and New "Consume" of the Digital Culture

A very complex subject such as the case of the virtual reality, suggests several considerations from both a technological and epistemological perspective. The first depends strongly on the second which represents a fundamental base of discussion for interdisciplinary projects and for a correct interpretation of the aspects related to cybernetics and of all the applications in this field. According to Howard Rheingold (1991) we can imagine virtual reality like a magic window opened to other worlds, from the molecules to the mind. According to Wooley (1992) virtual reality is the technology used for creating a specific interface between human beings and digital images. Pierre Levy (1994) considers virtuality and actuality as two different ways of being: the Virtual is not the opposite of the Real but of the Actual. The Real is diluted in the Virtual and represents its conceptual thought, visual and abstract, but anyway communicative. The artificial world cannot simulate the Real, but it can increase it, decrease it, code it, interpret it. It is a common opinion that the search of photorealism is a primary goal of the virtual reality, but the Virtual does not aim at substituting the Real, but at changing its representation. The digital photoreality does not necessarily increase the perception, but simply fits the description and illusion of the reality to the artificial worlds. In the digital photoreality while an illusion of modelling the Real is created, at the same time a new context is created: the new Real.

Therefore, virtual reality can suggest new grammars of communication and inter-connection, directed to the exchange of information, events and behaviours, apart from principles of likelihood to the "true" or to the "presumable". The rules of meta-representation of the Virtual also concern the artistic thought: with regard to this, Arnheim writes that: "If we consider famous pictures of the past - Raphael's, Rembrandt's [...] - without a deep attention - they would have seen expressly precise copies of natures, landscapes, insides, still life, human beings. Was it probable that they knew presence

of totally abstract patterns and, as images, they meant something completely different"? (Arnheim 1972).

The same principle ruling construction and perception of abstract patterns, of sensible informative geometry, much different from the Real, can be found in the virtual reality applications and they represent a visual thought. Virtual Reality is itself symbolic, because it communicates through abstractions: "An image acts like a symbol when it figures things at a higher level of abstraction than the symbol itself is. According to the cybernetics of G. Bateson (1972), the learning is through difference, the perception acts only on the difference. Receiving, grabbing information means always and necessarily to receive news of difference, and perception of the difference is always limited from a threshold. Differences too slight or presented too slowly are not perceptible: they do not feed the perception. Science doesn't prove, it tries..." (Bateson 1972). According to the thought of Korzybski "the map is not the land", in the virtual reality the "map is the land". In the Virtual the "difference" represents the cognitive value of the artificial environment, of the logic of the learning; in the dynamic of events and interactive environments, a difference is created, it is the preamble of any cognitive acquisition. This is the "cybernetic transformation", the principal scientific aim of the virtual reality.

On the basis of these considerations and on the complexity of the concept of "Virtual" it is important to understand the epistemological content of the VR systems and applications in a revolutionary and key scenario of the digital world. Where is the information? In which way VR and different epistemological contents/representations can modify and suggest new consumes and learning of the cultural heritage (scientific, didactic, tourist, etc.)?

The conversion of a real world resource in digital information, augmented reality, interactive and perceptive act or process, increases the value of the resource as a purely physical object, disseminate it, spreads out its content and message. In this increase of value it is possible to identify the true economics of the virtual, of which we are maybe not yet fully aware but, nevertheless, we should evaluate its impact both in the society and the community: the capital resides in the information and communication, be it in the physical, direct fruition or in the virtual. The Virtual, because it puts together, multiplies and re-assembles new contexts, can add new cognitive and communication geometries thus opening up different and broader learning processes. The problem consists in the fact that very few are yet the spaces or environments designed for an advanced fruition-interaction with respect to so called linear didactic tools (books, audio guides, catalogues, panels, etc.) and, generally, these few seem to be destined only to restricted scientific communities and not to the public in a broader sense. For this reason it is justified the infrastructural need of Virtual Heritage Centres.

THE CURRENT SCENARIO

The first and, probably, hardest issue to be addressed is represented by a profound revision of the mission of CH institutions. In fact, traditionally, their task has always consisted in protecting the heritage from all possible dangers of being damaged, destroyed, stolen and so forth. At the time when interests towards antiquity arose, culture (just like sports, tourism and most of leisure activities) was enjoyed only by a limited elite. The socio-economic changes that took place from the 1960s, however, created the base for a mass access to CH resources. Not unlike what happened, for example, in tourism services, previous management models soon appeared unsuitable to deal with the requests posed by the new scenario. The CH domain however, mainly because it could always rely on public funds, has proven almost completely untouched from these new pressures until recently, when the international economic situation has made it necessary for governments to reduce the resources destined to cultural heritage.

Moreover, the recent diffusion of ICTs has created expectations in users, who find the average cultural institutions' communication generally old fashioned and sometimes even unintelligible. Meanwhile, the "digital revolution" is having a strong impact on CH domain and the number of activities concerning digitisation is rapidly increasing. In fact, the European Commission has fostered researches in this area by launching, on the 8th of December 1999, the eEurope initiative. A first offspring of the eEurope initiative has been the Lund meeting, organised on the 4th of April 2001 under the auspices of the Swedish Presidency for gathering representatives and experts from all European countries. The major outcome of the meeting was represented by the definition of the so called "Lund principles":

"Europe's cultural and scientific knowledge resources are a unique public asset forming the collective and evolving memory of our diverse societies and providing a knowledge basis for the development of our content industries in a sustainable knowledge society."[1]

The Lund meeting triggered a series of activities among which is important to quote the "Minerva" FP5 Network of Excellence[2] and the "DigiCULT" IST Support Measure.[3] Both of these resources provide a huge quantity of information concerning application of technologies, and more specifically digitisation activities[4], to the cultural heritage domain.

THEORETICAL BACKGROUND TO THE RESEARCH

The epistemological foundation of this contribution is derived from studies on cultural economics (Baumol and Bowen 1966), ontologies (Uschold and Gruninger 1996), and cybernetics.[5] In this paper an integration of these three fields of research, opportunely adapted to the characteristics of the CH domain, is proposed as a viable solution for the complex scenario outlined in the previous section.

[1] Cultural economics

The relationships between economics and culture have traditionally been of reciprocal suspect. In fact, as it always happens when two disciplines start interacting for addressing

new problems, in a first phase scholars just try to export their paradigms onto the other discipline forcing old models in totally unusual scenarios. Most of the times this approach does not work and it is necessary to wait until the second phase, when some scholars complete the "hybridation" process and more organic scientific outputs begin to appear. The first such output can be recognised in the seminal work by William Baumol and William Bowen (1966) that, after its publication in 1966, stimulated an increasing flow of papers and books on the subject. This work, however, was oriented more towards the performing arts, which present different characteristics compared to the cultural heritage. This sort of subtle distinctions represent the typical pitfall for economists trying to perform a straightforward application of standard economic models to a complex field such as the culture in general and the heritage in particular.

[2] Ontologies

The first step to be taken, in order to produce a usable and interoperable output, shall be represented by the construction of a Domain Ontology. Ontologies are defined as "a shared understanding of some domain of interest which may be used as a unifying framework" for "facilitating knowledge sharing and interoperability between independently developed subsystems" (Uschold and Gruninger 1996). In the CH domain, a valuable and extensive contribution has been provided by the International Committee for Documentation of the International Council of Museums (ICOM-CIDOC), and is represented by the CIDOC Conceptual Reference Model (CRM). This model provides definitions and a formal structure for describing the implicit and explicit concepts and relationships used in cultural heritage documentation:

"The CIDOC CRM is intended to provide a common language for domain experts and implementers to formulate requirements for cultural heritage information systems and to serve as a guide for good practice of conceptual modelling. In this way, it can provide the "semantic glue" needed to mediate between different sources of cultural heritage information, such as that published by museums, libraries and archives".[6]

[3] Cybernetics

The fruition of culture has a strong "addictive" nature. In fact, according to Throsby[7], the approach to culture is incremental and current fruition, if integrated with deeper knowledge, increases the wish to replicate it in the future. However, for activating this feedback process, it is necessary to accurately design clear and well segmented access paths to heritage and the integrative knowledge. Such strategy implies a sustainable entry level and a series of incremental loops aimed at stimulating the user's desire to go deeper and, at the same time, make him or her feel comfortable with the level of knowledge required by each phase of the cultural experience. The model underlying this strategy is derived from the cybernetic approach described in Gregory Bateson's "Steps to an Ecology of Mind" (Bateson 1972).

A VIABLE EVOLUTIONARY MODEL

The idea underlying the model proposed in this contribution has emerged during the course of two projects: 1) the FP5 "E-Culture Net" project[8] and 2) "TransICT", a research project financed by the Regione Lazio for guiding small and medium enterprises in the transition towards the Net Economy.[9] The proposed roadmap foresees the constitution of enabling structures, the Virtual Heritage Centres[10], for providing cultural institutions with the all the support needed in order to safely pursue the mentioned innovation process. This support should consider all "sensitive" areas, from training the staff to helping managers in achieving the "vision" required for reaching the target in terms of business models, organisational configuration and technological solutions. From a practical point of view, results are expected in the value production in terms of both knowledge dissemination and financial resources raising. The target scenario will activate a virtuous circle: increasing the quality of services would attract more visitors and, consequently, an interest from investors; on the other hand, more resources at disposal would provide chances for further improving knowledge dissemination capabilities, quality of services (on and off line), and the range of products available for customers.

OPERATIONAL STEPS

The re-engineering activity starts from an ontological analysis of the Cultural Heritage domain, providing a better accessibility to information, on a semantic base, for visitors/scholars and the basis for interoperability among the stakeholders composing the scenario. The following step consists in designing a set of basic business models for each of the various categories of memory institutions, to be further customised for meeting the needs of specific situations.

For the implementation of business models it is important to be aware of the substantial lack of accountability in Italian cultural institutions. In fact, according to Normanton, "to be accountable means (...) to give reasons and explanations of what one does" (Forte 2000). This condition is due to two key points which are far from being addressed: besides the already mentioned weakness in knowledge production, management and dissemination, it is also necessary to develop a "cultural" governance. Supervisory boards of cultural institutions should in fact empower their managers for allowing them, within the framework of the institution's mission and budgetary constraints, to freely make all the necessary strategic decisions (Zan 1999).

Besides operating at the micro level, it is also important to stimulate inter-organisational cooperation. The "Virtual Enterprise" model is proposed as a basis for building Digital Cultural Districts. Case studies are provided by the FP5 "Minerva" project[11] and a series of interviews with cultural institutions' managers.

1 See http://www.cordis.lu/ist/ka3/digicult/lund_principles.
htm

2 See http://www.minervaeurope.org

3 See http://www.digicult.info

4 See also http://www.minervaeurope.org/publications/glo-
balreport.htm

5 See http://cidoc.ics.forth.gr

6 See http://cidoc.ics.forth.gr

7 See http://www.transict.org

8 See http://www.mmi.unimaas.nl/eculturenet

9 See http://www.transict.org

10 See http://www.virtualheritage.net

11 See http://www.minervaeurope.org

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