

## THE VIRTUAL MUSEUM: AN INTRODUCTION

### 1. INTRODUCTION

The word “museum” first appeared in 1732; its etymology means “the temple of the Muses”, from the Greek *Mouseion*, which indicated the centre of scientific studies of the Ptolemys in Alexandria. In the 19<sup>th</sup> century, the museum materialized the need to show objects coming from great private collections (paintings, sculptures, art objects and archaeological artefacts) in order to create an encyclopaedic knowledge covering progressively all the cultural fields (fine arts, ancient civilizations, ethnography, natural history, etc.) and to spread this knowledge gradually to the largest number of people within the 19<sup>th</sup> century context of the political evolution of the European states.

The virtual museum is the result of the conjunction of the traditional concept of a museum with the multimedia computer and communication technology of the Internet. The virtual museum is dematerializing the object for the benefit of providing much more information on the object: the image in all its manifestations (2D, 3D, details, physico-chemical analyses, facsimiles, etc.) and the knowledge of the image (intrinsic information on the object, extrinsic information on the context of the object, historiographical information, reference information, etc.). It dematerializes the museum itself by making possible a “remote visit”.

### 2. FROM THE MUSEUM TO THE VIRTUAL MUSEUM

Museums were virtualized gradually starting in the 1970s when museums have developed projects of museographic databanks to computerize their inventories, then, in the 1980s by using Videotex, which was the precursor of the multimedia Internet of the 1990s, together with microfilm viewers, and then with the first videodisks (precursors of the CD-Rom). The use of the image appears gradually and completes the museum tour with audio commentary, interactive screens, and multimedia consultation rooms.

At first, virtual information was used to complete the presentation of the objects. It replaced the obsolete and inadequate labels identifying the objects and the outdated explanatory panels. It supplied information which could be more detailed if desired, or modified, on a support which was reusable and replaceable without losing the information (projections, flat screens).

Archaeological sites are reconstructed starting with the visible remains using the technology of Virtual Reality (the main archaeological sites and, in particular, the Greek and Roman cities around the Mediterranean sea).

Then the virtual information goes beyond the real object in order to respect all the requirements for a correct conservation (Cabinet des Dessins of the Louvre Museum) or for a presentation which does not saturate the public (from the accumulation of objects to the presentation of exceptional pieces).

In extreme cases, where the object can no longer be visited, it is replaced by a facsimile, as it was the case for the prehistoric caves (Lascaux II, Musée de la Grotte Chauvet, Musée de Tarascon sur Ariège, etc.).

The virtual museum, consequently, can be visited at a distance, thanks to Internet technology, and offer the possibility of seeing a part of the collections presented to the public and different kinds of services; in this way it becomes a true commercial tool for the promotion and sale of the site-related products. On a computer level, the virtual museum is a portal which offers a particularly wide variety of functions and services (see below sections 5 and 6).

### 3. FROM THE VIRTUAL MUSEUM TO THE MUSEUM OF MUSEUMS

Internet technology supplies an additional dimension, that of virtually clustering museums that may be distant thousands of kilometres from each other, connected by a common factor:

- The city (Virtual Museum of Naples; Virtual Museum of the city of San Francisco).
- The region (Virtual Museum of the towns of Savoy).
- The country (Virtual Museum of Canada).
- A particular theme (Virtual Museum of school museums, etc.).

### 4. FROM THE VIRTUAL MUSEUM TO THE IMAGINARY MUSEUM

The next stage leads to the total abstraction of the object. The museum exists only through the intermediary of an Internet site and the products derived from it (CD-Rom, books, etc.). It may deal with:

- A universal theme which is independent of collections and countries (Virtual Museum of the Olympic Games, Virtual Museum of Dictionaries, Virtual Museum of French Protestantism, Virtual Museum of Japanese Arts, Virtual Museum of IEEE-History of Electricity, Virtual Museum of Typography).
- A scientific subject (Virtual Museum of Maritime Archaeology, Virtual Museum of Bacteria, The Palaeontology Portal).
- The life and influence of an individual (Virtual Museum of Antoine Poidebard, Virtual Museum of Don Quixote).
- A scientific research program («Les carnets de l'Archéologie», the site for French archaeological operations financed by the French Ministry of Foreign Affairs).

## 5. THE PORTAL FUNCTIONS OF A VIRTUAL MUSEUM

The creation of an Internet portal allows the implementation of the services, most of them standard services, which can be easily adopted for the site of a virtual museum:

- Entrance, a multi-language service describing the ramifications of the services offered by the portal.
- On-line catalogue.
- Search for a collection of objects using a retrieval request.
- Layout of the museum.
- Layout of the galleries, location of accesses, facilities and services.
- Opening schedule of the museum.
- Entrance fees, discounts, passes.
- Reservations.
- Access for the handicapped people.
- Personalized visits:
  - Special purpose visits (particular time or subject)
  - Thematic visits
- Optimization of visits (time and spatial distribution of groups).
- Conferences (themes, schedules, rates, etc.).
- Management of the conference schedules.
- On-line museum shop (catalogues, books, exhibition, related products, etc.).
- Mediatheque.
- Messages of visitors to the portal.
- Announcements (events).
- Announcements (exhibitions).
- Communication:
  - Discussion forum
  - E-learning
  - Interactive games
- Sponsorship.
- Connections with other virtual museums.
- Membership.

## 6. VIRTUAL FUNCTIONS OF THE VIRTUAL MUSEUM

The virtual functions of the virtual museum refer to the virtualisation of the objects and the visits:

- Gallery of images:
  - Selection of the most representative objects in the museum
- Virtual visit:

A virtual visit is an unguided tour (by Virtual Reality) through the rooms of the museum to discover the objects on display

- Guided tours:
  - Choice of guided tours by theme
- Visualization of objects in 3D:
  - 360° view of the objects with details
- The information which accompanies the objects or the exhibition galleries:
  - Detailed information files.

## 7. THE FUNCTIONS OF THE IMAGINARY MUSEUM

Virtual museums which are not associated with real museums represent the most creative part of the concept of the virtual museum:

- Thematic (single subject) Museum.
- Personal Museum, Children's Museum, Museum for the Handicapped, etc.
- Virtual exhibitions.
- Events connected to cultural or scientific exhibitions. Projects and programs for conservation of the cultural heritage.

They translate into a source of information the reality of a cultural project, the success of which is directly connected to the consultation of the site by Internet users. Financial profitability of this type of project is dependant on grants, sponsors, licensed products, and, in some cases, advertising appearing on the site.

## 8. COMPUTER TECHNOLOGY FOR THE VIRTUAL MUSEUMS

Virtual museums are employing Internet technology, extensive use of multimedia, and Virtual Reality technology. The main material and logical components of the virtual museum are:

- An Internet portal with all of its functions.
- A databank with 2D and 3D images.
- The virtual reality of the real museum.
- An on-line booking software.
- An on-line payment system.
- The application and allocation of the service by an Internet provider.

## 9. ADVERTISING A VIRTUAL MUSEUM ON THE INTERNET

The success of a virtual museum, as for all Internet services, is directly related to the ease with which the site can be found or directly connected to.

Techniques for obtaining this are now well known:

- Referencing.
- Connections to other frequently used Internet services.
- Advertising campaign.
- Internet users fidelity program.

## 10. CONCLUSIONS

Virtual museums represent a remarkable opportunity for the diffusion of knowledge as a natural complement to the centres of knowledge represented by real museums.

In comparison to the costs of exploiting a museum, the costs of a virtual museum are minor to the degree that the museum holds the copyrights for the images of the objects in their collections. The technology for the creation of a virtual museum belongs more to the world of communications than to the world of computers or telecommunications.

The success of a virtual museum, which is measured by the number of visits to the site, is related to its functional dynamics (new events and permanent enhancements, interaction with the public). The virtual museum, based on an attitude of diffusion of information towards the general public, represents a fundamental complement to the real museum, based on the attitude of conservation and restoration of the collection.

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## REFERENCES

Some examples of virtual museums:

Virtual museum of “Les carnets de l’Archéologie”: [http://www.diplomatie.gouv.fr/fr/actions-france\\_830/archeologie\\_1058/musee-virtuel-empire-perse\\_15132/index.html](http://www.diplomatie.gouv.fr/fr/actions-france_830/archeologie_1058/musee-virtuel-empire-perse_15132/index.html)

Virtual museum of Naples: <http://museovirtuale.remuna.org/>

Virtual museum of French Protestantism: <http://www.museeprotestant.org/>

Virtual museum of Maritime Archaeology: <http://www.abc.se/~pa/uwa/hot.htm>

Virtual museum of Canada: <http://www.virtualmuseum.ca/>

Virtual museum of Dictionaries: <http://www.u-cergy.fr/dictionnaires/>

Virtual museum of Antoine Poidebard: <http://www.usj.edu.lb/poidebard/>

Virtual museum of Prehistory (Museum of Nemours): <http://www.ac-creteil.fr/svt/nemours/locales.htm>

Virtual museum of Japanese Arts: <http://web-japan.org/museum/>

Virtual museum of IEEE (History of Electricity): <http://ieee-virtual-museum.org/>

Virtual museum of the city of San Francisco: <http://sfmuseum.org/>

Musée du Louvre: <http://www.louvre.fr/llv/commun/home.jsp>

Virtual museum of the Olympic Games: <http://minbar.cs.dartmouth.edu/greecom/olympics/>

Virtual museum of Don Quixote: <http://www.donquijote.org/museum/>

Virtual museum of the Chinese Cultural Revolution: <http://www.cnd.org/CR/>

Virtual museum of Bacteria: <http://www.bacteriamuseum.org/>

Virtual museum of Typography: <http://www.abc-typography.com/>

The Paleontology Portal: <http://www.paleoportal.org/>

## ABSTRACT

For several years now the concept of virtual museum has had an important role among the means being used for the diffusion of cultural information, as it offers an important extension to the traditional museum. In this paper we briefly discuss the concepts of the applications of virtual museums, by studying the transformation of a real museum into a virtual museum. We also introduce the two new concepts of “the museum of museums” and that of “the imaginary museum”. We define the portal functions and the virtual functions of a real museum, and then the functions of the “museum of museums” and of the “imaginary museum”. We also briefly summarize the technical Internet context implied in the realization of a virtual museum and its main operating principles.