MODULE 1

THE F-MU.S.EU.M. MODEL for COMMUNICATION AND VIRTUAL MUSEUMS: PRINCIPLES, TECHNIQUES and PRACTICES of BUILDING a VIRTUAL MUSEUM

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Module 1 is articulated in several sections

Section 1 is devoted to explain the F-MU.S.EU.M. Model, a training best practice developed by the F-MU.S.EU.M. transnational project within the frame of the LLP program – Leonardo da Vinci sub-program. We present the structure and methodology to develop skills and competences to transfer and apply the F-MU.S.EU.M. Model to a wide range of museums, dissimilar in dimension, context, focus of the collection, history, and public/private entity.

Section 2 introduces and illustrates the new museums’ professional roles and competences, with particular regard to professionals dealing with the ITC, virtual museum technologies, and digital contexts. They are not only webmasters and technicians, but also content experts, curators, communicators, and managers. Such professionals can:
• give a major contribution to the public image and appeal of the museum,
• provide new services and resources; for example, internet provides opportunities for museums to develop new services based on remote enquiry-answering services, virtual reality, and museum valorization
• make the new services available for a world-wide audience.
Well skilled professionals and new tailored training opportunities are needed, to manage and exploit the above-mentioned potentialities.

There are distinct skills in a number of fields, from education to documentation, from design to marketing, from communication to managerial tasks.

Museums staff has to be aware of these opportunities and increase its skills and competences mainly in education, analysis, documentation, as well as information services, computing, design, and marketing.

Consistently, section 2 will explore the universe of the museum professionals involved in creating, running, and maintaining a Virtual Museum. Their roles and the needed skills will be explained in detail.
Sections 3-6 will focus on the following profiles:

- Manager/Project Leader for Virtual Museums (including financial aspects),
- Content expert for Virtual Museums,
- Computing Expert for Virtual Museums,
- Web Master for Virtual Museums.

These profiles aggregate:

- **Four major functions**: Project leader of a multi-disciplinary team, Content expert, Design expert, Web expert.

- **Seven support functions**: Finance, Communication; Photography; E-learning; Web design, Web development, Web management.

Such profiles can be trained based on the F-MU.S.EU.M. Model.
SECTION 0. SOME INFORMATION CONCERNING EURO INNOVANET

The Museum professionals project has been designed and is implemented by transferring the innovative best practices of the F-MU.S.EU.M. project.

EURO INNOVANET has the copyright of the F-MU.S.EU.M. project and the innovative best practices created, developed, implemented, and promoted.

EURO INNOVANET is a research and consultancy private institute based in Rome.

It is specialized in studies and surveys on socio-economic and cultural innovation, in particular: social economy, museums, emerging professions, job creation, new forms of entrepreneurship, and local development. It is also a centre for the promotion of approaches and practices to support innovative policy decision-making.
EURO INNOVANET accomplishes its tasks through the scientific and professional experience accumulated by its senior researchers who have international and interdisciplinary background, and through consultant associates.

The institute serves public and private agencies, ministries, local authorities and other research centres.

It cooperates with international partners, national and local authorities, universities, museums, and social partners.
SECTION 1
THE F-MU.S.EU.M. MODEL

1. How the F-MU.S.EU.M. model is built

2. Our approach to virtual museums

3. Core features of the model. The F-MUSEUM portal for virtual museums, a way to access your e-learning tools

4. The Virtual Museum of the European roots as your main learning tool delivered online
Are Museums dead personae for the European culture and economy?

The Study published by the European Commission “The economy of culture in Europe” considers public Museums within the not-economic and not-profitable sector.

A museum can generate employment and business only for what concerns its real, physical existence, mainly when it renovates the building (See the Guggenheim Museum in Bilbao)

Is it a too negative vision?
Inefficient infrastructure, absence of standards in arranging museums, lack of collaboration between the specialized entities that can offer together complete services to tourists (tourism agencies, transport companies, hotels, restaurants, tradesmen, cultural centers, etc.)

This framework is creating INCONSISTENT CULTURAL TOURISM
However, problems are also inside museums.

This is the usual reaction of “hurt” museums staff to the gust of Information and Communication Technology, audience pressure, necessary return to investment, profitability.

Lucas Faydherbe, Malines
On the other side, at European level we are in...

Supported by European, national, regional and local public funds, digitization has progressed, particularly in the domain of heritage (e.g. digital libraries, museum collections).

The European Work Plan for Culture (2015-2018) addresses key challenges faced by cultural organizations and small and medium sized enterprises in the creative sector at national and EU level in the context of globalisation and digitisation.

Among the priorities of the Work Plan (WP) for Culture 2015-2018 of the European Commission:

– Accessible and inclusive culture;
– Cultural heritage;
– Cultural and creative sectors: creative economy and innovation.
The next suggested discussion is on the theme of Promoting access to culture via digital means: policies and strategies for audience development.

Is the virtual museum online a possible answer?

F-MU.S.EU.M. intended to explore the possibility to mobilize innovative synergies between cultural heritage / historical and archaeological museums and internet + digital multimedia devices as to generate social-economic benefits able to trigger local economic development.

F-MU.S.EU.M. was a transnational initiative within the LLP program – Leonardo da Vinci sub-program.

F-MU.S.EU.M. project was addressed to museums, Institutions, and citizens. It focused on innovative didactic and learning methods aimed at fostering the widest access to Information and Communication Technologies (ICT) in museum institutions.
43 institutions, among which 38 national and regional museums from several European countries have been involved into the FMU.S.EU.M. European Network.

→ In Austria, the Naturhistorisches Museum.

→ In Bulgaria, the National Museum of History, the Arheologiceski Muzej in Sofia, the Regional History Museum of Kyustendil, the Arheologiceski Muzej in Vratsa, the Arheologiceski Muzej in Nova Zagora, the Regional Museum of History in Veliko Tarnovo, the Regional Museum of History in Rousse, the Arheologiceski Muzej in Stara Zagora, the Arheologiceski Muzej in Pazardzhik, the Muzej in Dobrich (Durankulak), the Arheologiceski Muzej in Plovdiv, the Arheologiceski Muzej in Kyustendil, the Arheologiceski Muzej in Peshtera, the Arheologiceski Muzej in Kardjaly, Razgrad Abritus Museum.

→ In Germany, the Museum für Vor- und Frühgeschichte in Berlin.
→ In Greece, the National Archaeological Museum of Athens, the Archaeological Museum of Thessaloniki.

→ In Hungary, the Budapesti Történeti Múzeum.

→ In Italy, the Museo Nazionale Preistorico ed Etnografico L. Pigorini, Musei Civici of Pitigliano, Museo Rittatore Vonwiller at Farnese, Museo preistoria e Protostoria di Manciano.

→ In Romania, the Muzeul Național de Istorie a României, the Banat Museum of Timisoara, the Muzeul Național Brukenthal in Sibiu, the Muzeul Național de Istorie a Transilvaniei in Cluj-Napoca, Muzeul Național al Unirii in Alba Iulia, the Muzeul de Istorie a Moldovei Iași (Complexul Muzeal Național Moldova Iași), the Corvin's Castle Museum in Hunedoara, the Arad Museum, the Deva Dacian and Roman Civilisations Museum, the Muzeul Dunării de Jos Calarasi, the Muzeul Judetean Teleorman in Alexandria, the Muzeul de Arheologie Oltenita in Oltentia, Secuies Saint Gheorghe.
F-MUSEUM partners
F-MU.S.E.U.M. project has achieved learning results by developing a number of far-reaching and innovative concepts that can be applied also by the museum partners and the museum network involved in the Museum Professionals project:

1. Developing each museum partner as a Learning Organization: in relation to the learning process in the target museums and to the sharing of this process with the staff

2. Creating a Learning Community: with reference to the horizontal transnational network (made of seven countries), among the professionals working in the partner museums

3. Networking within a Learning Region: each museum partner is involved in the network of local institutions and stakeholders as a key actor of the local cultural capital. Playing this role allows any museum to be included in planning and promoting services according to the development of cultural tourism.
A key aspect of the *F-MU.S.EU.M.* initiative that can be borrowed by the Turkish museum network is directional learning, intended as the **sum of learning achievements** by which each museum **creates new assets** and **adapts itself** over time in the framework of its reference values and cultural paradigms.

Consistently, the learning process promoted by the project was mostly arranged to take place within the work environment of the **users** and not in a traditional classroom. All the involved professionals were facilitated by the museum partners in taking advantage of **e-learning** opportunities, and to exploit them within their own job context, time, and their real-world experience.
## 2. Our approach to virtual museums

Virtual museums are only one of the possible e-services delivered by museum institutions.

<table>
<thead>
<tr>
<th>Virtual Museum</th>
<th>Process questions related to academic researches or to school projects, students' works, etc</th>
<th>On-line sale of scientific publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-line reservations for using museum space for events</td>
<td>Games and other on-line activities for kids</td>
<td>On-line sale of post cards, souvenirs</td>
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<tr>
<td>Tourism related services</td>
<td>Virtual walk in the museum</td>
<td>Online reservations and ticketing</td>
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Digital technologies were once seen as the future of computation. Now they are transforming communication.

Museums were virtualized gradually starting in the 1970s, when they have developed projects of museographic databanks to computerize their inventories.

A new phase started in the 1980s with the use of Videotex, the precursor of the multimedia Internet, together with microfilm viewers, and then with the first videodisks (precursors of CD-Rom).
The use of images 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 labels identifying the objects and the outdated explanatory panels. It supplied information which now could be more detailed or changed, if desired, on a support which is reusable and replaceable without losing the information (projections, flat screens).

Archaeological, historical sites and monuments were reconstructed starting with the visible remains by using the technology of Virtual Reality.

Then the virtual information went beyond the real object in order to respect all the requirements for a correct conservation (Cabinet des Dessins for over 150,000 drawings 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, when the object can no longer be displayed, it is replaced by a virtual facsimile.
The virtual museums within this context

The virtual museum is the result of the conjunction of the traditional concept of a museum with the multimedia computer and Internet communication technology.

The term “Virtual Museum” has been coined in 1991 by Tsichritzis and Gibbs, in their paper Virtual Museums and Virtual Realities. After this first conceptualization, a large number of definitions have been proposed.

We have selected the following ones in order to establish our – practical and not theoretical - approach to the realization of virtual museums:

A. Lewis (1996) defines the Virtual Museum as “a collection of digitally recorded images, sound files, text documents, and other data of historical, scientific, or cultural interest that are accessed through electronic media. A virtual museum does not house actual objects and therefore lacks the permanence and unique qualities of a museum in the institutional definition of the term ”.
B. Schweibenz (1998) considers a Virtual Museum as “a logically related collection of digital objects composed in a variety of media, and, because of its capacity to provide connectedness and various points of access, it lends itself to transcending traditional methods of communicating and interacting with the visitors being flexible toward their needs and interests; it has no real place or space, its objects and the related information can be disseminated all over the world”

C. Hoptman (1992) writes: “The concept of the Virtual Museum demonstrates how limitations imposed by the traditional method of organizing and presenting information can be overcome in the context of museum visits. In a nutshell, the Virtual Museum provides multiple levels, perspectives, and dimensions of information about a particular topic: it provides not only multimedia (print, visual images through photographs, illustrations or video, and audio), but, more important, it provides information that has not been filtered out through these traditional methods”
D. MacDonalds and Alsford (1994) state: “The virtual museum then is much more than the electronic dimension of any given institution... The immediate challenge is for museums - reservoirs of vast and largely unused amounts of knowledge about history - to convert their information resources to digital format. In the present absence of powerful networks that are multimedia-capable (Internet being very limited in that regard), there has been a tendency for institutions to focus on individual, stand-alone products, such as videodiscs or CD-ROMs, without attention to a longer-term strategy of building digital archives as the raw resource for ongoing product development or service provision.”

E. Forte (2000) defines a Virtual Museum as an informatic environment characterized by a graphic-visual interface and by an ipermesimal and interactive structure, which should propose a reconstruction and a re-contextualization of cultural goods, at a virtual level.
F. According to F. Djindjian (2007), ”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”. 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.
Some operative concepts concerning web exhibitions and 3D virtual reality to trigger the discussion

The virtual museum on-line is one of the main forms through which a museum becomes a place of leisure and education proposing a collection of digital resources accessible through computerized tools (digital and web technologies).

The virtual museum on-line represents a multimedia experience. Being a computer environment, it is characterized by a leading graphic-visual interface as well as a hypermedia and interactive structure that allows for a reconstruction, a re-contextualization and diverse topical pathways of cultural goods, by virtually acting on them.

Audience communicates with every object, find or datum and becomes an integral part of a connected system.
Reflecting on the above-mentioned authors, we can summarize that a Virtual Museum could be recognized as an added value compared to the physical museum, if it has the following qualities:

1. Virtual reality based: established upon some virtual reality applications
2. Computer graphics and 3D enchantments
3. Information oriented, strong attitude towards increased information
4. Using a hypertext structure in order to preserve the information supplied by the included contents
5. Highly accessible and friendly
6. Based on indexes and a metadata base
7. Augmented culture
8. Deep cognitive impact
9. Transforming users into interpreters
10. Global dimension of potential audience
11. Tailored for a wide public and for different segments of the audience
12. Tourist attraction
13. Delivering new high quality services online
The ideal museum as a virtual museum
Sloping down from heaven of potentialities to the actual museum web sites...

- Presence of **ICT gaps** (in terms of **competences, knowledge and abilities**) within museums in the field of Internet in general and virtual reality in particular.
  → Web sites, if directly generated by museums, are static and a boring provisions of listed artefacts.

- The more active museums rely on **external experts**, who are mainly unqualified and unconcerned for cultural heritage.

- **Specular inadequacy** of museum and external expert to collaborate → loop.

- **Effects** of this loop (source: F-MU.S.EU.M. SWOT analysis):
  - high costs
  - expropriation of museum contents
  - pure replicas in HTML of actual collections
  - low value added in terms of additional information compared to the original museum
  - web pages not updated.
BUT why spend resources and efforts to realize a Virtual Museum?

- Attract public to the physical museum
  - Increase paid and free services offered by the museum
  - Attract sponsors and donors
  - Create a network among other museums
  - Educate wide public
  - Attract volunteers
Your goals of the virtual museum impact on the groups you should have a priority connection

- **Attract public to the physical museum**
  - Groups: media, tourists, students, parents, teachers, school and University managers

- **Increase paid and free services offered by the museum**
  - Groups: Universities, schools, tourists, parents and children

- **Attract sponsors and donors**
  - Groups: media, business companies, individual donors

- **Attract volunteers**
  - Groups: high school and University students; e-net users
COLLECTIVE EXERCISE:
Museum operators - Students

a. WHY TO REALIZE A VIRTUAL MUSEUM IN YOUR MUSEUM (museum operator), OR IN TURKISH MUSEUMS YOU KNOW WELL (student)?

b. THE KEY FEATURES OF THE IDEAL VIRTUAL MUSEUM YOU THINK OF

c. THE KEY FEATURES OF THE VIRTUAL MUSEUM YOU COULD REALISTICALLY REALIZE IN YOUR MUSEUM (museum operator), OR IN TURKISH MUSEUMS YOU KNOW WELL (student)

d. WHAT DO YOU realistically EXPECT TO ACHIEVE THROUGH YOUR VIRTUAL MUSEUM?
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Trying to “think different”…

How to migrate high motivated museum institutions to virtual museums online, even if they are affected by inadequate ICT competences, low Web presence and lack of financial resources?

How to create a methodology in building such virtual Web exhibitions according to which the participant museums are actually protagonists?

Through which means does such an experience be developed without any expensive software or hardware?

How to concretize the idea that even a frugal virtual museum online should not be just a clone of the real world, but a tool to perform expositive and educational functions?

Can the method of learning by doing be effective? How can a museum institution learn on how to deal with the Web and virtual reality while creating a virtual museum online?

How to generate an international learning community able to develop capacity building in Web exhibitions and 3D virtual reality within museums?
It is the “Virtual museum of the European roots”, realized by the F-MU.S.EU.M. network, delivered on Internet and conceived as an e-service.

It displays and explores in 3D prehistoric artifacts from 38 partner museums…

It illustrates and documents that a major civilisation flourished in prehistoric times in Southeastern Europe (TURKEY INCLUDED), having the Danube as its backbone.

It offers visitors the opportunity to surf on and across several different waves of information in 4 languages (English as well as languages of the participating countries).
3. Core features of the model. The F-MUSEUM portal for virtual museums to access your e-learning tools

www.europeanvirtualmuseum.net
F-MU.S.EU.M. provides access to “Virtual Museum of European roots”

It has been realized through digital environments and 3-D images so as to give visibility to the most remarkable artifacts from the collections of the partner museums.

The “Virtual Museum of European roots” is available in 4 languages. Thematic routes design a unique experience of a friendly, highly accessible visit of the Virtual Museum. Visitors can choose objects, themes, language and criteria which they want to base on their virtual journey.

Touristic-cultural itineraries created on purpose have been established from the linkage to the artifacts from the collection of the “Virtual Museum of European roots”.

Concerning the contents of the Virtual museum, they evidence the common European ancient matrix since prehistoric times, guiding visitors to discover our shared European cultural heritage.
The Virtual Museum has been realised through digital environments and 3-D images so as to give visibility to a few of the most remarkable artefacts included in the collections of the Museums involved in the project. To these artefacts have been linked thematic routes and touristic-cultural itineraries created on purpose. The overall resources valorised by this innovative product, demonstrate the common ancient matrix on which Europe is founded since prehistoric times, guiding visitors to the discovery of our shared European cultural heritage. The various thematic routes available design a unique experience of a friendly, highly accessible visit of the Virtual Museum. Visitors are made free to choose objects, themes, language and criteria on which they want to base their virtual journey.
Four e-learning pathways related to the key-competences for Virtual Museums targeted at four key professionals

The e-courses are in English, Bulgarian, Italian, and Rumanian.

They are meant to be exploited by:

- Managers for Virtual Museums
- Content Experts for Virtual Museums (in our case the archaeologist)
- Web Masters and designer for Virtual Museums
- Communication Experts for Virtual Museums.
According to the research carried out at European level by the F-MU.S.EU.M. project, the courseware for the Museum Communicator is of great importance.

It stresses the urgent need to train professional figures capable to communicate the innovative contents and achievements of the produced Virtual Museum to specific targets of users, as well as networking with stakeholders at local level (Municipality, tourism agencies, transport companies, hotels, restaurants, tradesmen, cultural centers, etc.).

These sensitive tasks make the elaboration of consistent and purpose-built training methodologies and techniques key to success.
- Training Laboratories are accessible within the networks of partner museums and beneficiary Institutions
Courseware and training laboratories are available in the restricted area of the F-MU.S.E.U.M. portal.

This tool gives to user museums all needed know-how to manage the section Reserved Area in order to create and implement one's own virtual exhibition while learning how to create and implement a virtual exhibition = learning by doing method.

It explains and accompanies in detail all stages of the management of data.
- Remote Supervision and constant distance tutorship
- **Individual further in depth learning** is available through the use of Lecture Notes
- Opportunities are offered for interaction and exchange of in-presence experiences (internally to the organization of the user) and at distance experiences (in the network of partner museums and beneficiary Institutions).
The F-Museum portal (www.europeanvirtualmuseum.net) is a space where users have the chance:

a) to learn how to realize a virtual museum
b) to explore it as a innovative opportunity for the valorization of the museum collection and related cultural heritage
c) to take advantage of new hints for scientific communication.

At the same time, the F-Museum portal is conceived as a “meeting and exchange point” for a community (partner and beneficiary museums), by supporting through reserved areas:

a) the valorization of a shared cultural heritage towards a wide range of targets (scientific and not scientific ones)
b) the exploitation of a new modality (digital)
c) the fostering of transfer of knowledge within the learning community by giving to all the partners the opportunity to experiment and adopt technologically advanced training practices
d) the sharing of information, data, ideas and experiences
e) most of all, the valorization of the cultural heritage through a channel for wide communication and with sharing potentialities.
Workshop events

Es. Virtual projection at the National museum Brukenthal.
- **CD-Rom** containing the tools for training purposes
Contents of the CD-Rom / 1:

• The F-MU.S.EU.M. Model focuses on a "on the job" learning methodology tailored to the acquisition of skills and competences for the creation and management of Virtual Museums: from the production of the textual contents to the shooting of 3D photos; from imputing into the database to the on-line uploading of the textual and multimedia data; from the testing phases to the publication and management of the information.

• The F-MU.S.EU.M. learning laboratories to provide skills and competences needed to run the “Virtual Museum of the European Roots” established by the project. They are tailored to the Manager for Virtual Museum, the Web Master for Virtual Museums, the Content Expert for Virtual Museums, and the Communicator for Virtual Museums. The laboratories are realized according to the Learning Model and are available in English, Bulgarian, Italian, and Romanian.
Contents of the CD-Rom / 2:

- Lecture notes (in English, Bulgarian, Italian, and Romanian) for self-learning. They are devoted to the four key professionals: the Manager for Virtual Museums, the Web Master for Virtual Museums, the Content Expert for Virtual Museums, and the Communicator for Virtual Museums.

- A selection of 3D rotating pictures and complete descriptions of masterpieces from the "Virtual Museum of European Roots" (about 400 artifacts).

- N. 10 research reports investigating the link among museums, local economic development, and new technologies of virtual reality. They explore:
  ✓ the organization of new channels for cultural fruition,
  ✓ the set up of new and economically advantageous services (also on-line),
  ✓ the establishment of more effective proposals for cultural-touristic supply at local level.
A book, *Routes and itineraries from the Virtual Museum of the European Roots*

It collects thematic routes and tourist itineraries, also available online, associated to manageable key-points of the F-MU.S.EU.M. Learning Model.

**Sixteen thematic routes** guide visitors to discover “the actuality of prehistoric cultures”: from the ancient cults to the invention of wine, from the start of agriculture to the planning of the first “condominiums”, from the primitive luxury trade to the first writing systems.

**Five tourist cultural itineraries** follow paths of millenniums among art, archaeology and nature in Bulgaria, Italy and Romania.
ROUTES AND ITINERARIES

from the Virtual Museum of the European Roots

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Sofia
2009
The original idea of the exhibition is to disseminate to a wide audience the acknowledgment that prehistoric people developed high communicative skills and were able to store and transmit complex messages.

An effective system of communication worked by the means of ritualistic markings; emblematic decorations; magic-religious symbols; divinity insignia; accountancy annotations; calendars; sky maps; personal and family identification marks; lineage recognition or community affiliation identifiers and a rudimentary script.
Prehistoric people – masters of communication

5300 BCE: Sacred signs on three incised plates consecrating a female ancestor

6000 BCE: A mythogram representing Sun-Moon intercourse

www.europeanvirtualmuseum.net
In order to overcome the language barrier and to make the inscribed findings of Romanian and Bulgarian Neolithic and Copper Age available, the University Lucian Blaga Sibiu – IPCTE and the Animi Foundation have instituted a grant for young scholars to collect and translate in English articles and part of the books on communication in prehistory.
A résumé of the learning tools offered by the F-MU.S.EU.M. project:

- The “Virtual Museum of European roots”
- Four courses delivered online for four key professionals in creating and managing Virtual Museums
- Training Laboratories
- Remote Supervision and constant distance tutorship
- Lecture Notes for individual in depth learning
- Opportunities for interaction and exchange of in-presence experiences and at distance experiences
- Workshop events
- The CD-Rom with the tools for training
- The book, *Routes and itineraries from the Virtual Museum of the European Roots*
- The exhibition *Prehistoric people, Masters in Communication*
- A grant for young scholars
The portal answers the strategic goal to develop and circulate the digital culture within museum institutions.

In particular:
- to promote **computer literacy and “digital inclusion”**;
- to disseminate **ICT culture** within museums;
- to develop **new didactic contents and new teaching methods**, by exploiting digital technologies;
- to promote **virtual reality innovation** within museums;
- to foster the use of technologies among museologists, cultural operators and the wider audience.

In conclusion, the F-M.U.S.E.U.M. portal is a digital platform aimed at creating a **virtual Think Thank** for computer literacy and digital approach in museums.
The proposed model is a successful way to manage Web exhibitions and 3D virtual reality having museums as protagonists.

It is an ambitiously realistic approach developed after a SWOT analysis aimed at pointing out the know-how of the associated museums to migrate to a Virtual Museum: ICT skills, Web competences and financial resources were quite low.

This is the usual situation of the European archaeological museums.

Our model of Virtual museum explores the Prehistoric European roots. However, it is applicable to any subject: art, science, ethnography, medicine...
4. The Virtual museum of the European roots as your main learning tool delivered online
Five challenges of the Virtual museum of the European roots as a learning tool

I. A Cultural challenge/goal for a wide audience: documenting how the European matrix is founded upon a common ancient matrix with a hub in the Neolithic and Copper Age of Southeastern Europe (Turkey included).

II. A Cultural challenge/goal for “initiates” to conservation management and for scholars: making collections that are normally inaccessible accessible.

III. Exploiting the augmented comprehension and appeal of 3D view.

IV. Experimenting a narrative model of museum as the main fruition option for the visitor.

V. Having the associated museums as protagonists.
The exceptional virtual collection of the Virtual Museum of the European Roots records how the European identity was built over millennia and is founded upon a common ancient matrix with a hub in the Neolithic and Copper Age of Southeastern Europe (Turkey included). Since prehistory, Europe is the fruit of the absence of rigid boundaries, continuous migrations, wide interactions, and a plurality of cultural imprints. Several millennia ago, this continuous mix was a source of conflicts, compromises and stratifications between different populations and languages, divergent cultures and economies. But at the same time, it formed the basis of the present European originality: the cultural wealth and age depth of the "Old Continent".

The Virtual museum of the European roots disseminates to a wide audience the acknowledgment that this common prehistoric background - extending from Turkey to France, from Ukraine to Cyprus - is partly still alive and goes beyond the current borders, political disputes, and ethnic conflicts.

We call it the Danube civilization, because it flourished from c. 6400 to c. 3500-3300 BCE having the Danube valley and its hinterland as the spine.
This web exhibition in 3D Virtual Reality is a powerful tool for the preservation of objects that are delicate and fragile or that should stay locked being state patrimony. In addition, often collections are quite invisible even when available. It is due to bad enlighten showcases, dirty and opaque glasses, farness from the eyes of the visitor, etc.

Our virtual museum exceeds the limits imposed by the storage conditions, i.e. it makes the whole collection totally accessible.

Collections are accessible not only to a wide audience, but also to scholars and researchers as well as to students (masters, doctorates, graduate students). Providing high quality 3D images, information directly from sources, and contextualization through multimedia exploitation, our virtual museum allows for a deep study even to pieces that are available with difficulties or unapproachable (due to geographical distances, structural fragility, inaccessibility being included into the state treasure, lack of personnel to ensure access to storerooms, etc.).
Artefact’s name: The neolithic sanctuary fromRefsa.

Object type: Other

Chronology: 7,000 – 5,500 BC

Museum: Sanat Museum

Period: Middle neolithic

WHERE IS IT AND MAIN CHARACTERISTICS

Departments

Inventory numbers

Artefact’s name: The neolithic sanctuary fromRefsa.
**Artefact's name:** Prisoners (man and woman)

**Object Type:** Human figurine

**Chronology:** 2,000 - 8 bc

**Museum of:** Musei Civici di Pitigliano

**Period:** Nebuchadnezzar

The statuette depicts two people, a man and a woman, with their hands tied up behind their backs.

**WHERE IS IT AND MAIN CHARACTERISTICS**

- **Departments:** National Archaeological Museum of Florence
- **Inventory number:**
- **Artefact's name:** Prisoners (man and woman)
- **Material:** Lead
Three-dimensional representation of objects invites, induces and allows the viewer into fuller, deeper, proxemic relationships.

3D view encourages the spectator to find out, to zoom close-up and inside, to move around-the-back-and-see-for-himself what is behind, to glimpse what is below, and what is above... And to move back again.

Walking around, the viewer establishes a radically different relationship with the artifact he is looking at than when he engages a two-dimensional representation and has only one viewpoint from which to see a single, fixed representation. Accumulating numerous different views, nothing is hidden or left out. This cognitive process provokes the spectator to build up, to assemble, and to collect an understanding of the object being observed.

The 3D visual experience triggers the spectator to shift from asking questions about what this object is, to interpretative investigation. Which are its physical characteristics? How did it work in people's lives? What did it do and why was it successful in doing what it did? Which were the reactions that it evoked? How did people perceive and utilize it? The comprehension that emerges from 3D view is complex, multi-part, and never banal.
MOVIE Berlin golden hat IIc 6068
The three-dimensionality of the Berlin Golden Hat from Hallstatt A-B period (held at the Museum for Pre- and Early History) is one of the fundaments for a better understanding of it.

The 3D view makes noticeable that it is not just an imposing headdress of a chieftain or a priest with highly decorative discs, rings and concentrically circles.

In addition, one can fully comprehend that it is a masterpiece made by a specialized gold-smith in embossed work.

More significantly, one can discover that it is a lunar-solar calendar established 3000 years ago and based on 1739 symbols systematically arranged along 19 horizontal registers.
The Venus of Willendorf does not want to stand in upright position, but asks to accommodate in your hand.

Amulet – conceived to be manipulated - oestrogens not fatness - Magic support for pregnancy
IV - Experimenting a narrative model of museum as the main fruition option for the visitor

The Virtual Museum has been realised through digital environments and 3-D images so as to give visibility to a few of the most remarkable artefacts included in the collections of the Museums involved in the project. To these artefacts have been linked thematic routes and touristic-cultural itineraries created on purpose. The overall resources valorised by this innovative product, demonstrate the common ancient matrix on which Europe is founded since prehistoric times, guiding visitors to the discovery of our shared European cultural heritage. The various thematic routes available design a unique experience of a friendly, highly accessible visit of the Virtual Museum. Visitors are made free to choose objects, themes, language and criteria on which they want to base their virtual journey.
The Virtual museum of the European roots offers visitors the opportunity to surf on and across several different waves of information in *4 languages* (English as well as languages of the participating countries).

It is a network system that offers any visitor dedicated paths supporting the individual knowledge through the potentialities of the centralized database. Therefore, the visitor proceeds following the rules of the mental process that works through the association of ideas.

Consistently, the fruition model of the Virtual museum of the European roots is essentially a narrative model, since it is not exclusively focused on the conservation and preservation of artifacts as the traditional model of museum is.

The Virtual museum of the European roots is tailored to a wide public, narrating appealing stories for a non-specialist virtual audience and transforming users into interpreters of the European prehistory staring from finds never seen in that way or that are otherwise inaccessible.
Its **interactive and hypermedia nature** is suitable for giving users all contextual information, facilitating the historical comprehension of a find or an issue.

Accordingly, **users can explore the main issues related to Prehistoric Europe through a wide range of thematic routes**. Finds have not been confined in the physical world, are inter-related with each other and are linked to **touristic-cultural itineraries**. It is possible, for example, to aggregate similar artifacts that are actually located in different places. It is possible to create infinite matching and combinations after topics. Themes can be linked and the same object can be inserted and explored in different routes.

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**Individual explorative paths**
a) Chronological voyage
b) Geographical travelling
c) Single museum journey
d) From museum to museum surfing

![Virtual Museum Image](image-url)

The Virtual Museum has been realized through digital environments and 3D images, allowing accessibility to a large number of the most representative artworks located in the collections of the museums involved in the project. These artworks have been linked through thematic routes and touristic-cultural itineraries created ad hoc. The overall resources involved in this innovative project demonstrate the common cultural memory of Western Europe in various times, presenting visitors to the diversity of our shared European cultural heritage. The various thematic routes available offer a unique experience of a friendly, highly accessible visit to the virtual museum, creating a sense of travel across different times, spaces, and cultures, allowing visitors to live their virtual journey.

<table>
<thead>
<tr>
<th>Partner Museum</th>
<th>Visitor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National Museum</strong></td>
<td><strong>Visitor Area</strong></td>
</tr>
<tr>
<td>**Regional History Museum of **</td>
<td><strong>Visitor Area</strong></td>
</tr>
<tr>
<td><strong>Archaeological Museum</strong></td>
<td><strong>Visitor Area</strong></td>
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<tr>
<td>**The Altes Museum of Art and **</td>
<td><strong>Visitor Area</strong></td>
</tr>
<tr>
<td>**Museum of the - and **</td>
<td><strong>Visitor Area</strong></td>
</tr>
<tr>
<td><strong>National Historical Museum</strong></td>
<td><strong>Visitor Area</strong></td>
</tr>
</tbody>
</table>

![Virtual Museum Interface](image-url)
e) Object type inquiry

The Virtual Museum has been realised through digital environments and 3-D images so as to give visibility to a few of the most remarkable artefacts included in the collections of the Museums involved in the project. To these artefacts have been linked thematic routes and touristic-cultural itineraries created on purpose. The overall resources valorised by this innovative product, demonstrate the common ancient matrix on which Europe is founded since prehistoric times, guiding visitors to the discovery of our shared European cultural heritage. The various thematic routes available design a unique experience of a friendly, highly accessible visit of the Virtual Museum. Visitors are made free to choose objects, themes, language and criteria on which they want to base their virtual journey.

Search by

<table>
<thead>
<tr>
<th>Chronology</th>
<th>Geographic zone</th>
<th>Objects</th>
<th>Museums</th>
<th>Routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human figurine</td>
<td>Tool</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal figurine</td>
<td>Weapon</td>
<td></td>
<td></td>
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<tr>
<td>Vessel/Anphora</td>
<td>Jewellery</td>
<td></td>
<td></td>
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<tr>
<td>Amulet</td>
<td>Other</td>
<td></td>
<td></td>
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</tbody>
</table>
f) Thematic routes exploration
Thematic Routes =
What do the associated museums have in common?
Which is the legacy of the Danube civilization?

- Civilisation, gift from the river
- Trade and early exchanges in prehistoric societies
- The religious places
- Cult and religion in the earliest human societies
- Thermal baths and sacred water places in ancient times
- Fashion in prehistoric times
- Ancient wine regions: The savior of a drink-food for Gods
- Agriculture in prehistoric times
- Clay house models
- The beginning of metallurgy
- Communication in Neolithic and Copper Age, from symbols to writing
- The modern way of making music in Prehistory
- Sport and role games in prehistoric times
- The Hidden Roots of Europe: Thracians, Dacians and Etruscan
- Ritual connected to the burning of the old year
- How to build up an exhibition.
The Routes have been conceived and narrated working in cooperation with the partnership. They are structured in:

- Text description
- 2D and 3D images of the related items (with the possibility to enlarge them)
- Videos, drawings, interviews...

In the left menu:

- Deepening →
- Active images of the objects linked to this route →
Thematic surfing is associated to touristic-cultural itineraries that start from museums to explore the territory.

Example of downloadable and printable touristic-cultural itinerary with related GIS map.
From the 6500 years old temple reconstructed in the museum of Timisoara with original materials to the wooden Churches just now restored in the mountain area of Banat.

Banat: From the Sanctuaries to the wooden Churches

Along the course of history the spiritual places, either grounds for primitive adoration and obeisance towards the deity or sanctuaries and churches, have played a main social role in the human culture and civilization. Regardless of the adopted form these represented the materialization of the expression of the necessity of human cultural groups to believe in the existence of a supreme force – one or more gods – that coordinates the daily events and the power of influencing this force through different methods – laying of offerings, magical rituals, and sacrifices etc. – in the favor of their community’s welfare.

In Banat, as well as in other countless places of the world, this role of the spiritual places has continued from the ancient times, adopting the most spectacular forms – from a prehistoric sanctuary to a church (built in popular traditional technique). The most relevant examples of maintaining and transmitting certain well defined traditions in the creation of these spiritual spaces, and not only, are the Neolithic sanctuary from Parța – spiritual centre of a strong community, and the wooden churches from the mountain area of north-east Banat.

At Jupânești, the wooden church under the patronage of Cuvioasa Paraschiva (Piava Paraschiva) can be found on a hill that overtops the centre of the village. From the architectural point of view this monument is one of the most successfully made and well preserved wooden churches from Banat – the structure is made of few boulders on which there are massive wooden logs carved on each side. Inside over the original painting a layer of white lime has been applied. The cult objects include some cult books and other old liturgical objects.

XVIIth century we have the church from Românești, under the patronage of Nașterea Sfântului Ioan Botezătorul (Birth of Saint John the Baptist). Founded at the end of the XVIIth
In addition, users can complete the information through multimedia exploitation: 3D and not 3D photos, videos, texts, and drawings.
Any artifact is not only viewed in 3D, but has a complete identity card with photo details and textual information.
Multimedia deepening for interpretation and contextualization

VIDEO INTERVIEW WITH THE ARCHAEOLOGIST
FMUSEUM video production

- 3D photo making process
- Lunisolar calendar on a 6800 years old checkerboard
- A mignon “celestial globe” depicting constellations 7000 years ago
- A Calendar on a prehistoric astronomical building
- An amazing ancient burial ritual
- Kyustendil Regional History Museum
V - Having the associated museums as protagonists

Through a reserved area, each museum can create its section of the Virtual Museum of the European Roots uploading new contributions (images, texts, videos, etc.) concerning its collection and then updating the information.

The F-MU.S.EU.M. network is aimed at giving to any associated museum institution all necessary knowledge and skills to create and implement its own virtual exhibition provided on the Web.
The heart of the Virtual museum of the European roots that makes the associated museums protagonists

The **Content Management System (CMS)** is the “meeting point” among training experience, networking, communication and technology.

**It is source of:**
- A dedicated database which organizes information directly uploaded in the system by each partner.
- A platform to insert contents in a uniform way and to guarantee the output communication according to standardized patterns.
- A reserved uploading and updating area that is accessible – in different languages - by each associated museum through password.
- An operational and cultural forum where each museum contributes to implement the project, following the principles of a “social group network”.

Management of the information by each museum through the Reserved Area

F-MUSEUM Implementation: guide to data uploading

VIRTUAL MUSEUM - HOMEPAGE

This is the first page of our system of data uploading. On the left side of the Home page is a Menu articulated in 10 different sections:

- Identity card
- File transfer (ftp area)
- Documents
- News
- Work Area
- Address Book
- Mailing List
- Credits
- My Museum
The Identity Card aimed at illustrating any object is the starting point: through it the virtual museum is created.

WHERE IT IS AND MAIN CHARACTERISTICS (e.g. material, method of manufacture, decoration type, etc.)

STATE (preservation, restauration, completeness)

DIMENSIONS (length, height, diameter, thickness, weight, width)

PERIOD OF USE (e.g. époque, culture, phase, etc.)

DISCOVERY (e.g. country, district, etc.)

DEEPENINGS (e.g. morphology of the object, decoration, analogies, interpretation, bibliography, etc.)

THE VIEWPOINT OF THE VISITOR

The object is visualizable in 3D
The Identity card sheet has to be filled through the Reserved Area for any artifact to be shown in the Virtual museum. It is structured as follows:

- **WHERE IT IS**
- **MAIN FEATURES**
- **STATE**
- **DIMENSIONS**
- **PERIOD OF USE**
- **DISCOVERY**
- **ANALYSES AND DETERMINATIONS**
- **IN-DEPTH ANALYSIS**
- **THEMATIC ROUTE**
- **COMMENTS**
- **FILLED IN BY**

**The possibilities:** to prepare data, fill up Access forms, upload papers, insert 2D and 3D images, and check the output.
F-MU.S.EU.M courses online and training laboratories for four key professionals – through the Restricted Area –

The F-MU.S.EU.M. network gives to any associated museum all necessary knowledge and skills to manage the section “Reserved Area” in order to create and implement its own virtual exhibition provided on the Web.

For this purpose, the F-MU.S.EU.M. portal joints the Virtual Museum of the European Roots with four training courses and related tools, guidelines, exercises, and tests. They are addressed to experts engaged in acquiring skills and knowledge requested to create, manage and utilize virtual museums delivered online and in particular to develop - through a reserved area - its section of the Virtual Museum of the European Roots.

The tool explains and accompanies in detail all stages of the management of data operated by museum partners.
1. Manager for Virtual Museums
2. Content expert for Virtual Museums (in our case the archaeologist)
3. Webmaster and designer for Virtual Museums
4. Communication Experts for Virtual Museums
I HAVE ILLUSTRATED OBJECTIVES, FEATURES AND NETWORK OF THE VIRTUAL MUSEUM OF THE EUROPEAN ROOTS.

NOW YOU HAVE TO SUGGEST A VIRTUAL MUSEUM TO BE ESTABLISHED IN YOUR MUSEUM (museum operator) OR IN A TURKISH MUSEUM YOU KNOW WELL (student):

A. WHICH ARE THE MAIN OBJECTIVES (the same of the previous exercise?) AND KEY TOPICS OF YOUR VIRTUAL MUSEUM?

B. WHICH IS THE PILLAR OF YOUR VIRTUAL ARCHITECTURE?
   A virtual and interactive exhibition of the objects?
   A virtual and interactive reconstruction of an environment?
   On-line learning courses?
   Games?
   Any other idea?

C. WHICH ARE THE OTHER TURKISH AND NOT TURKISH MUSEUMS YOU WANT TO INVOLVE IN REALIZING YOUR VIRTUAL MUSEUM?