



LLP-LDV/TOI/07/IT/016



**F- M U. S. EU. M.**  
**(Form Multimedia System for a European Museum)**

**ACTIONS AIMED TO IMPLEMENT THE  
TRANSFERABILITY OF THE MU.S.EU.M. PROTOTYPE  
RESPECT TO NINE EUROPEAN MUSEUMS**

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**Leonardo Da Vinci Programme  
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**F- MU.S.EU.M. Project**

**Responsible author:  
EURO INNOVANET (Rome)**

**Co-authors:**

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**To: F- MU.S.EU.M. Consortium**

The F- MU.S.EU.M Consortium:

1. EURO INNOVANET SRL, Rome, Italy
2. Cultura Animi Foundation, Sofia, Bulgaria
3. Regional History Museum "Academician Jordan Ivanov", Kyustenil, Bulgaria
4. Musei Civici di Pitigliano (Museo Civico Archeologico Della Civiltà Etrusca, Museo Archeologico all'aperto "A. Manzi"), Italy
5. TRUST Tecnologie e Risorse Umane per Sviluppo e Trasferimento, Rome, Italy
6. City Of Rome - Dept. XIV for Local Development, Training and Employment Policies, Rome, Italy
7. Universitatea Lucian Blaga Sibiu- Ipcte, Sibiu, Romania
8. Banat Museum, Timisoara, Romania

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**Actions aimed to implement the  
transferability of the MU.S.EU.M.  
prototype respect to nine European  
museums**

## **Executive Summary**

*This Report aims to point out the action to be undertaken in order to adapt the prototype of Virtual Museum realized within the MU.S.EU.M. project, available at the address [www.europeanvirtualmuseum.it](http://www.europeanvirtualmuseum.it), and to realize a transfer actions of the learning model created by MU.S.EU.M. and already experimented by seven European Virtual Museums of national level.*

*Keeping into consideration the results of the research activity carried out during the phase 2 of the F-MU.S.EU.M. Project, devoted to the analysis of nature and extent of the European Virtual Museum offer, of New and specific professional roles needed to build a Virtual Museum as well as a SWOT analysis of the Partner Museums of the F-MU.S.EU.M. Project and the study on best practices in creating Virtual Museums, this Report points about several actions aimed to implement the MU.S.EU.M. model and transfer its methodology and results to nine European local Museums of little dimension.*

# 1. EUROPE, MUSEUMS AND ICTS: THE OUTPUTS OF A RESEARCH REPORT ON CHARACTERISTICS, NATURE AND EXTENT OF EUROPEAN VIRTUAL MUSEUMS

A deep research activity is the specific background inspiring and orienting this transfer action, starting with the analysis of the Situation in Europe for what concerns the Virtual Museum offer, passing through the study of the professional roles needed not only to create, but also to develop and manage a Virtual Museum.

The third remarkable Research report was devoted to the analysis, done with SWOT method, of the characteristics of the three partner Museums as well as the six beneficiaries Museum of the F-MU.S.EU.M. project.

More in detail, the first Research Report produced within the phase 2 of the project F-MU.S.EU.M., titled "*Beyond the traditional museum. Character, profile and extent of European Virtual Museums*", gives a clear idea of the European situation for what concerns nature and extent of the Virtual Museum offer in Europe.

The report highlight the importance of cultural sector in Europe for the economic and tourist development, as well as the importance of ICT technologies for today's Museums.

The research underlined as it is possible to find in the IT:

- **Homepages of Museum** and cultural institutions closely referred to a physical museum Museums' web sites
- **On-line exhibitions**
- **Sites** with some virtual reconstruction of some specific topics
- **Networks of museums** putting their collection together
- **Inventories and databases** related to items stored in the museums.

All these products are becoming more and more relevant for European Museums. The use of Virtual reality is rather low; a major use of VR would improve the quality of the offer to the public and make a major contribution to the public image and face of the museum, providing new services and resource, and making them available for a world-wide audience.

The Report also explored the universe of the economy of culture in Europe, pointing out the relevant contribution that the Cultural sectors can bring to European economy, creating new challenges and opportunities (also in terms of new professional possibilities) for Museums and, in general, for cultural institutions.

- The share of independent workers is more than twice as high in the cultural sector than that of total employment
- The sector records 17% of temporary workers, compared with 13.3% in total employment
- The share of part-time workers is higher than in total employment
- The share of workers with side-jobs is much than in total employment
- 1.171 million of people were employed in the sector of cultural tourism
- The distribution by gender and age differs little between cultural employment and total employment

## **2. NEW PROFESSIONAL ROLES NEEDED TO BUILD A EUROPEAN VIRTUAL MUSEUM**

To realize a good Virtual product, a team of specific professionals is needed, as shown in the Second Research Report realized within the F-MU.S.EU.M. project, titled “*New and specific Professional roles between actual and Virtual Museums*”.

The new reality of the Virtual Museums, which are becoming more and more important in Europe, requests specific skills in many fields, from education to documentation, from design to marketing, communication as well as publications.

On line information channels, especially Internet, and the multimedia allowing an interactive participation to museum visitors are bringing a deep transformation in the cultural heritage domain. As consequence the necessity of an urgent redefinition, revision and updating of the skills of existing professionals is arising, especially for those managing and working within public museums.

There is a widening gap between web based knowledge and training potentialities for cultural consumers and the existing professional skills in public museums.

Museums staff should be aware of these new possibilities and increase their skills in education, interpretation, documentation, as well as information services, computing, design, marketing and publications.

The internet may provide opportunities for museums to develop new services based on remote enquiry-answering services, Virtual Reality and new services.

To manage and effectively use these possibilities, well skilled professionals and new training opportunities are needed.

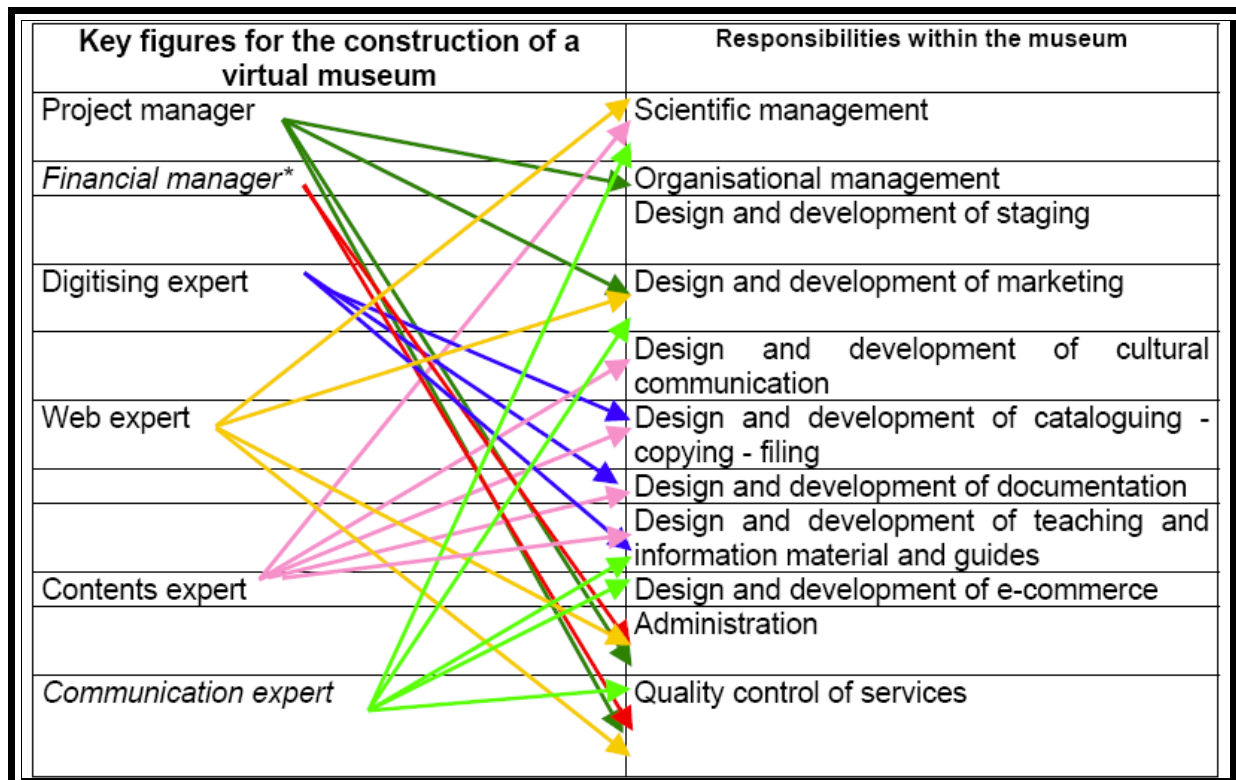
It is to be underlined, in particular, the relevance of specific profiles, like:

- The Analyst
- The Project Leader
- The Financial Manager
- The Computing Expert
- The Designer
- The E-learning Expert
- The Communication expert
- The Training expert

The MU.S.EU.M. project had enabled to identify, through the DELPHI survey and the SWOT analysis, key professions in the virtual museum that are reported in the following table. These professional roles have been further studied in the already mentioned F-MU.S.EU.M. Report “*New and specific Professional roles between actual and Virtual Museums*”.

Project manager	Digitising expert	Contents expert	Web expert	Additional profiles
Manager of the institute	Technologist	Researcher	Web designer	Financial Manager (can be separated from the Project manager)
Virtual museum manager	Computer graphic designer/database developer	Contents architect	Web developer	Communication expert (can be separated from the Web expert)
	Photographer (optional)	Training methodologies expert (can be separated from the contents)	Web manager	Translator (can be included in the "contents" group)
	IT specialist (optional)		E-learning expert (optional)	

**Table 1 – Responsibilities and tasks of key professional positions in the virtual museum**



**Diagram 1 – Crossing between key professional profiles and responsibilities in the virtual museum (\* Professional profiles defined as “additional” in project are mentioned in italics).**

To better understand role and significance of the Virtual offer for Museums as well as to empirically confirm which are the skills needed for running and managing a Virtual Museum, an in-depth analysis of specific cases has been done.

The report “*Building a new concept of virtual museum*” described the product realized by four Museums and Institutions (three cases from Europe and one from a non-EU country) with particular focus on the virtual museums.

Evidences from this report make it clear that a good Virtual Museum is an added value to actual museums.

Both the Reports pointed out that the key-factors for the success of the experiences taken into consideration are:

- Strong preparation of the Museums professionals in the fields of virtual contents creation and communication, as well as in the sectors of education and management;
- Good preparation of the Museum professionals in the ICTs field;
- Capability to self-manage a Virtual product
- Easy sustainability of the Virtual products realized

### **3. AIMS AND SPECIFIC GOALS OF THE F-MU.S.EU.M. PROJECT**

#### **3.1. Background**

The F-MU.S.EU.M. is a Project based on the results of the MU.S.EU.M. project (2000-2006), a EU-funded project under the Leonardo da Vinci Action programme for the construction of a policy of professional training in European Union; the aim of the Project are creating a *network for the life-long learning* in the European Museums.

Several national Museums participated in the project:

- National Archaeological Museum of Athens
- Museum für Vor- und Frühgeschichte, Berlin
- National History Museum of Romania, Bucharest
- Hungarian National Museum, Budapest
- Museum of History, Prague
- National Museum of History, Sofia
- Museum of Natural History, Vienna

MU.S.EU.M. was particularly focused on the communication in prehistoric age, and had among its most important objectives to make Museums of National relevance protagonists in the ideation and in the construction of the prototype of a "Virtual Museum of the European roots".

The product realized within the project MU.S.EU.M. is a portal composed by the following sections:

- Presentation of the MU.S.EU.M. project (outline; outcomes)
- Museums (part describing the European Museums participating in the project)
- Virtual Museum
- E-courses: 3 on-line courses (Web-designer for Virtual museums; Content expert for Virtual Museums; Manager for Virtual Museums) meant to be an on-line learning model
- Links (providing access to a huge quantity of international links to Research engines, Institutions, Museums websites)
- Site index
- A section devoted to the contacts

The Virtual Museum of the MU.S.EU.M. project is a *museum of museums*, activated on the Web and able to document how Europe is founded upon a common matrix, which is consequential to the absence of rigid boundaries, to continuous migrations and interactions and to a plurality of cultural roots and imprints.

The F-MU.S.EU.M. project aims to realize a transfer action of a Virtual Museum Model created within the MU.S.EU.M. project: within the project, in fact, a specific model of on-line self-learning was created for the participating museums which faced many difficulties in building, running and managing a Virtual Products as they did not have enough competences, skills and experience in doing that.

The learning model provided by the MU.S.EU.M. Project made the participating Museums able to create and manage a Virtual product, also thanks to three *e-courses*, for Web Designer, Content Expert, and Manager for Virtual Museums, all available in English.

As stated above, the F-MU.S.EU.M. Project aims to transfer this Virtual Museum prototype as well as the learning model realized within the MU.S.EU.M. project to Museums of regional dimension, whilst the MU.S.EU.M. project was devoted to Museum of national level.

In particular, the F-MU.S.EU.M. Project aims are:

- To realize a transfer action so as to foster the development of 4 specific professional branches of the museum sector (management, technical, contents and communication), in order to answer to the fast evolution that the technological and organization innovations are imposing to the management and valorization of cultural properties by wider and wider categories of users
- To promote the adoption of the F-MU.S.EU.M. innovative lifelong learning model, through the contents, linguistic and technological updating of the prototypical product
- To realize the necessary adjustment of the training model through the activation of local laboratories for the experimentation, within the 3 countries partner

The F-MU.S.EU.M. Project has, among its goals, also the aim of answer to the specific training needs of the nine partner Museum for what concerns ICTs, that evidences from the SWOT analysis have shown. The F-MU.S.EU.M. Portal aims also to be a reference for research, study and application of a Model for all the scholars and professionals wishing to work we the aid of on web digital communication with the aim of valorizing and diffusing their heritage and knowledge.

The F-MU.S.EU.M portal of integrated communication represents a place and an occasion of “ideal search” to learn the formalities of realization of a virtual museum and to explore the different possibilities of dissemination and scientific communication of it.

At the same time, it represents a point of meeting, exchange and comparison for a community, made of both partner museums and beneficiaries, to valorize its own cultural heritage through a tool with great potentials of diffusion and sharing of contents.

F.MU.S.EU.M. promotes:

- Computer alphabetization and digital inclusion
- Dissemination of digital culture in museums
- Development of new educational contents and new training methodologies through digital technologies
- Innovation in museums
- Reducing the digital divide
- Promoting the use of technologies among the Museum Professional as well as the large audience.

In synthesis, the F-MU.S.EU.M. Project foresees:

- Guide to the use of the Virtual Museum
- How to realize a Virtual Museum
- Needed training to learn basic principles and contents to be realized
- Creation of a Community for sharing experiences and working documents
- Valorization of a digital platform
- Promotion of an on-line working group for the sharing of information, data and ideas among the Partner Museums, through “restricted areas”

The first objective that the F-MU.S.EU.M. Project aims to reach is that to give to the partners the occasion to experiment and to adopt innovative and technologically advanced training practices.

### **3.2. F-MU.S.EU.M. target groups**

The target groups of the F-MU.S.EU.M. project are:

- Experts in the ICT field, involved in the realization of an on-line virtual museum
- Experts in the definition of the contents, the design, the realization of a telematic cultural product;
- Communication experts.

Among the potential users of the project learning model there are:

- Museums (of regional, local dimension, as they are particularly active in organizing cultural events)
- Experts of the museums which, on one hand, are involved in the technological innovations and changes, and on the other hand can help in the further development of an Information and Net-economy Society
- Young people facing the labor market, needing a specific professional training
- New local subjects (both private and public), active in the valorization of cultural heritage
- Policy makers working on the museums and cultural heritage policies, universities, cultural institutions
- Operators of the professional guidance sector

#### **4. THE F-MU.S.EU.M. PARTNERSHIP: TRAINING NEEDS ANALYSIS AND ACTIONS TO BE UNDERTAKEN TO REALIZE THE TRANSFER ACTION**

A report about the characteristics and the potentialities of the nine European Museums (both partner and beneficiary Museums) participating in the F-MU.S.EU.M. analyzed the chances of the Project partners to migrate to a Virtual Museum.

The analysis has been done through a SWOT analysis of the questionnaires filled by the nine Museums, pointing out their Strengths, Weakness, Opportunities and Threats.

Its results show a situation which is different from one museum to another, even if, definitely, it is possible to state that several elements, common to the situation of all the involved museums and of capital importance for the possibility for these Museums to migrate to the virtual market.

The analysis reveals that all the nine Museum have some problems with ITCs competences of their staff, which, in the majority of the cases, are not enough and need to be increased. In most cases, the web presence is not of high level, with web sites available only in the local language and, furthermore, externally controlled and managed.

The other external elements of weakness and threats for all the Museums come, in order of importance, from:

- Lack of human resources
- Lack of funds
- Low level of linguistic competences of the staff

Looking, in particular, to the process of migrating to a Virtual Museum, the nine museums position is weakened by the lack of professional profiles skilled in the following fields:

- Elaboration of pedagogical contents for a virtual audience
- Creation of specific cultural contents suitable for a virtual product
- Communication of cultural contents to a virtual audience
- Web expertise (with particular focus on the web design and development)

Special attention, therefore, has to be given to a training action devoted to the following key-roles and competences, needed for creating, running and maintaining a Virtual Museum:

- E-learning expertise
- Web expertise
- Content creation
- Communication expertise

Achieving these competences and expertise must be considered as a basic action to make the 9 participating museum migrating to the virtual market, so as increasing their visibility, improving the quality of their services and developing new products for virtual and actual visitors.

The objective of managing the communication opportunities of Internet and new multimedia is closely linked to a pattern, similar in some way to the enterprise in a competitive market, considering museums not only under a conservative perspective (as a container at defense of archaeological, historical and ethnographic finds), but as a space that adds values to relevant findings for their symbolic features within communities (local, national and European), space that promote cultural marketing, by paying attention to customer satisfaction and to the quality of cultural services.

The necessity of high investments in human resources and the innovative demand of continuous professional training are the main outcomes of a context of a deep organizational and professional transformation caused to an increasing use of online communication channels by public museums.

Taking into consideration what stated in chapters 1, 2 and 4, it is possible to point out several actions and strategies to realize a transfer action of the products and methodologies developed within the MU.S.EU.M. project.

To realize this and, in particular, transfer the MU.S.EU.M. Model, several actions can be undertaken.

Before talking about them, it is worth to illustrate the Model to which we are referring.

#### **4. 1. The on-line learning model of MU.S.EU.M.**

The M.U.S.E.U.M project has been a real training laboratory where experts and managers from seven European museums exchanged views, made decisions, created new instruments and learned new languages while creating together the first virtual museum of European roots.

Participants in this laboratory – and in the project – can be seen as a scientific and technical community which is, in terms of interests, experiences and roles, and beyond obvious differences linked to the national backgrounds, a real community of practices necessarily and purposely evolving towards an informal on-the-job learning community.

With reference to the results of the learning programs, it can be said that the project team, composed by key professionals from seven partner museums, has performed the following education both in cognitive (knowledge) and operative (know-how) terms:

- Learned how to design the architecture of a database, necessary for the creation of the virtual museum;
- Became familiar with the modalities of use of the database;
- Created a cataloguing standard of museum goods through the elaboration of an identikit card; This is particularly significant since the museums involved in the project were not able until now to elaborate such standards by sharing their criteria.

The creation of the virtual museum has therefore implied participation modalities among all the project beneficiaries: constructing together the Virtual Museum of European Roots allowed to learn, more or less consciously, new ways of working together, where individual

input was immediately compared to others and the final product was, in fact, a collective output.

Starting from this analysis of the project as far as the “learning performed” is concerned, it was possible to elaborate a structured training program (the training pattern) focused on specific targets.

Through the implementation of different types of activities which were particularly relevant for the creation of the training pattern, the M.U.S.E.U.M project has enabled, on the one hand, to identify the best practices related to on-line museum supply in Europe and, on the other hand, to perform a mapping of new roles and professions on the basis of cases of excellence as well as an analysis of competences and training needs within the 7 partner museums participating in the project. Such earlier activities enabled the project to design a model of a training programme for the main professionals interested in the creation of a virtual museum, which has been tested on-line by the human resources identified by the managers of partner museums.

The logical framework of implemented activities has enabled not only to develop such activities from a training point of view – they were used in this case as information sources for the analysis of needs – but also to create an efficient training programme on the basis of the gap between existing and missing competences.

The learning model was therefore created following several steps:

- Analysis of the best work organization to create and manage a virtual museum
- Identification of key professionals directly involved in the work process
- Identification of training needs of these professionals
- Translation of training needs into skills needs
- Differentiation between basic skills and specialized skills
- Weighting of basic skills and identification of specialized skills for each key
- Identification of three key professionals (contents expert, web expert and project manager) for testing the training pattern
- Breakdown of the training program into training units (to be capitalized), didactic units and learning objects

Three training programs for the following profiles: contents expert, web expert and project manager.

The tasks and responsibilities linked to the design and management of a virtual museum

can be associated to these professional profiles.

The three e-courses were followed by 16 persons, 7 of which were staff members of the following M.U.S.E.U.M partners.

The remaining 9 persons who followed the programs were as follows:

- 3 experts in archaeology
- 3 experts in museum communications
- 2 experts in training design and evaluation
- 1 expert in human resources management

The Web site and the “Virtual museum of the European roots” are not a separate area from the training model, but a integral part of it and a support for it. In fact the access to the e-courses is through the Web site and the content of the e-courses derive from the information made available by the Virtual museum as well as from the MU.S.EU.M. laboratories for training experimentation online and on the job.

The experimental and innovative nature of the training program created ad hoc and tested within the M.U.S.E.U.M project allows us to reflect and consider possible improvements, which were already mentioned during face-to-face laboratories and could be used as a basis for a reformulation of the training program.

In particular, the following proposals were made:

- For the contents expert program, it is suggested to eliminate the didactic unit referring to IT detailed topics (Java language, etc.) since it is too specialized for a position which mainly deals with the contents of the virtual museum;
- Regarding the web expert, although the contents of the didactic units proved to be correct, they still include too much theory and too many explanations; it is proposed therefore to adopt a more concrete and operative structure such as the one used for the “Photography” didactic unit

- As far as the project manager is concerned, it is necessary to indicate more precisely the entry requirements, i.e. the competences that the user should already have, in order to avoid the risk that the program be considered as too difficult or too easy

The training programs are strongly connected to the needs that have generated them, i.e. the need to design and manage a virtual museum. During the laboratories, the following conclusions were drawn.

- The e-courses programs keep the same characteristics as the experience fulfilled through the M.U.S.E.U.M. project; given the innovative nature of the project, there have been equal relationships between actors and beneficiaries finalized at the fulfillment of the project objectives
- The didactic and pedagogic approach used does not consider the classic asymmetry between student and teacher but enables to create a learning program self-managed and with the support of experts
- The same expertise does not come from outside but belongs to participants in the M.U.S.E.U.M. project who represent, as such, a proper learning community

### ***Flexibility of the programs***

The training design is based on a modular approach which enables a flexible use of the training programs, not only in time (thanks to independent didactic units, a program can be followed in sequence or at different periods in time), but also possibly putting together didactic units (modules) in a different way according to the needs (for instance, if the contents expert needs major information regarding IT aspects, the didactic units included in the web designer program can be used). In the pattern, the basic element of the learning program is in fact the training unit to be capitalized (TUC).

### ***Focus on competences***

The methodological approach is the one defined as a competence-based approach, which takes into account, as training outputs, the multiple aspects of the learning process, not only in terms of knowledge but also in terms of know-how and behavior. The design of

competence-based and TUC-based training activities enables to customize and make the programmes flexible according to a progressive capitalization of competences acquired in time and, in parallel, to give them transparency with respect to the different types of other training beneficiaries (companies, training agencies, etc.).

The following table indicates the main differences between a traditional and a competence-based training approach.

### ***Modalities of use (residential/face-to-face and distance)***

Besides the distance learning modality, there is a need to adopt also face-to-face training and to involve in the training activity two types of professionals: The tutor, as an animator of the forum, and at least two thematic experts for the web designer and the contents expert positions. Face-to-face laboratories enable to solve doubts and answer queries in real time and to benefit from the stimulating input of all participants, using also more spontaneous and emotional channels.

The training pattern of the M.U.S.E.U.M project can be transferred, after making the necessary modifications, in other learning contexts.

In particular, for more strictly methodological aspects, the training pattern can be used in other cultural services or working sectors (services companies, small and medium companies, mutual companies) such as the following.

- Adult lifelong learning and continuing training in the field of culture as awareness museum subject;
- Post-graduate education and managerial training, i.e. when the training supply is designed for a particularly motivated audience able to manage itself autonomously, as in the case of the M.U.S.E.U.M. beneficiaries. In this case, the initial professional profiles and competences of individuals interested in the training program should be upper-middle level. Moreover, the proposed approach requires a high motivation and the sense of belonging to a learning community;
- Individual learning, i.e. when the individual use or the program is considered as not only possible but also desirable. This is the case of professionals, businessmen and self-employed, with a background of competences and knowledge, who need

specific additional ones (as in the case of the management of a virtual museum) or openings on particularly innovative fields within their specific profession.

As far as contents and objectives are concerned, the training pattern can be transferred in the field of initial training and continuing education.

## 4.2. The importance of the European standards

Given the importance of the of digitalization and of the development of ICT-based products for cultural heritage, the European Union established different trans-European coordination mechanisms, to be applied in the field of Cultural contents.

It is useful, for the aims of this research, to mention the MINERVA Projects and the standards created within its context.

### 4.2.1 The MINERVA Project

Minerva is a network of Member States' Ministries established with the aim of discussing, correlating and harmonizing activities carried out in digitization of cultural and scientific contents for creating an agreed European common platform, recommendations and guidelines about digitization, metadata, long-term accessibility and preservation.

Within the project it is planned to establish contacts among other European partners, such as countries, international organizations and associations.

Among the documents produced, there is also a useful *Good Practices* handbook. The handbook is a guide for what concerns the establishment, the execution and the management of digitization projects, and it is conceived for a specific target (e.g. teams of cultural Institutions who are executing digitization programs or are planning to do it). Another important product realized is a handbook on *Cultural web site Quality Principles*. It lists the ten principles or basic concepts on quality in cultural web sites. According to the principles of the Minerva project handbook, a good quality cultural website must:

- Be **transparent**, clearly stating the identity and purpose of the website, as well as the organization responsible for its management

- Select, digitize, author, present and validate content to create an **effective** website for users
- Implement quality of service policy guidelines to ensure that the website is **maintained** and updated at an appropriate level
- Be **accessible** to all users, irrespective of the technology they use or their disabilities, including navigation, content, and interactive elements
- Be **user-centered**, taking into account the needs of users, ensuring relevance and ease of use through responding to evaluation and feedback
- Be **responsive**, enabling users to contact the site and receive an appropriate reply. Where appropriate, encourage questions, information sharing and discussions with and between users
- Be aware of the importance of **multi-linguality** by providing a minimum level of access in more than one language
- Be committed to being **interoperable** within cultural networks to enable users to easily locate the content and services that meet their needs
- Be **managed** to respect legal issues such as IPR and privacy and clearly state the terms and conditions on which the website and its contents may be used
- Adopt strategies and standards to ensure that the website and its content can be **preserved** for the long-term

## 5. FROM THEORY TO PRACTICE: A METHODOLOGY FOR THE TRANSFER ACTION OF THE MODEL REALISED WITHIN THE MU.S.EU.M. PROJECT

### 5.1. General framework

Evidence by the Research Report “*Beyond The Traditional Museum Character, Profile And Extent Of European Virtual Museums*” highlights that together with the increasing of the number of visitors, the development of telematic media, especially the Internet and the

multimedia tools, could have a double impact on the museums functioning, detailed as follows :

- They offer the possibility to launch the leading role of these cultural institutions as a vehicle of education and recreation for the visitors, thanks to the realization of new on-line services and to the overcoming of the economic and geographical barriers
- They show the necessity to create new relationships with other inter-sectorial institutions, private subjects and new typologies of users

The most important objectives of these relationships are the cooperation in creating new services (also on-line), the coordination of projects related to the digitalization, the definition of standards and structures for the access to the resources and for further sharing them.

Although the existence of “good practices” in the EU museums, there are still some obstacles in the involvement of the museums in building and developing an Information and Net-economy Society.

There is, in particular, a gap due to the lack of technological profiles.

The development of the Internet associated technological progress in computer graphics and diffusion of information and communications technology (ICT) networks is enabling innovative exploitation of cultural goods. Although in the past some museums have been slow adapters of new technologies, many are now eagerly embracing web-enabled ICTs as a useful instrument to develop new modalities of supply of their cultural heritage, which after a first period of experimentation is becoming the main way of provision of culture throughout the world.

Internet technology diffusion allows the development of museum sites and their increasing sophistication in terms of interactivity in augmenting culture, meaning that traditional physical museums are progressively being complemented by new approaches and offers via virtual museums. Particularly important are applications enabling the access of museum-based artifacts and museum-generated knowledge for e-learning and widened access.

As the analysis of the three European Museums (see Report “*Building a new concept of Virtual Museum: four case-studies on best practices*”, available at the address [http://www.europeanvirtualmuseum.net/documenti/Four\\_case\\_studies\\_pdf.pdf](http://www.europeanvirtualmuseum.net/documenti/Four_case_studies_pdf.pdf)) compared to the MU.S.EU.M. Prototype suggests that to improve the Virtual Museum prototype and

develop its potentials is necessary to realize several actions, as detailed in the following lines:

➤ **To increase the use of Virtual reality**, further improving the quality of the 3D pictures of the items forming its Virtual Collection.

➤ **To Increase the number of the items** in the *Database*

➤ **Creating new thematic itineraries** so as to realize something similar, but, at the same time, new with respect to the Virtual exhibition provided by many Virtual Museum, like the Canadian Museum of Civilization and Corporation. In particular, visitors will be made free to discover items and explore the Virtual Museum by selecting several criteria for the visit – by participating museums, by geographic area, by specific item and by thematic route. Very remarkable is that the F.MU.S.EU.M. Portal will provide access to tourist and cultural itineraries, which will be realized with 3D pictures of the items forming the permanent collection of the Virtual Museum.

➤ **To develop multilingualism:**

The development of multilingualism will be achieved by translating into the languages of the three countries participating in the F-MU.S.EU.M. Project (Bulgarian, Italian, Romanian) the contents of the MU.S.EU.M. Portal which have been developed in English. Within the F-MU.S.EU.M. project the four e-courses realized with the MU.S.EU.M. project will be updated and enriched with new contents, and, afterwards, translated into the languages of all the participating countries.

This answer to the importance of multilinguality, which. Although is so important and so highly recommended (for example, by the MINERVA criteria) in the majority of the cases is not applied in cultural portal and Virtual Museums.

Multilingualism is among the most important point on which the MINERVA project insists.

As stated in the Minerva Survey “Final Plan for using and disseminating knowledge and raise public participation and awareness Report on inventories and multilingualism issues: Multilingualism and Thesaurus”, available at the address <http://www.mek.oszk.hu/minerva/survey/>, for the field of heritage “multilingualism is

of significant importance in making information available to as wide an audience as possible and to overcome language barriers. Multilingualism plays a strategic role in the quality and effectiveness of communication on the Internet. Multilingual exchange of information is of interest for cultural tourism to reach visitors from neighbouring countries and therefore for the attractiveness of different territories and their economic development.”

Also the European Commission underlines the importance of multilingualism in order to encourage language learning and promoting linguistic diversity in society, to promote a healthy multilingual economy, and to give citizens access to European Union legislation, procedures and information in their own languages.

For what concerns, in particular, museums, multilingualism is of great importance. “Museums define their sphere of tasks as collecting, making available, preserving, researching and exhibiting objects. A multilingual exchange of information on objects supports museums in their tasks on the one hand and on the other hand the users of the products of museum work (visitors). Museums collect objects whose meaning renders them unique and one-of-a-kind. However, the physical objects can only be available in one place at one particular time, making them accessible only to a few people. In order to make information about museum pieces available to as wide a target group as possible, a special importance lies in the accessibility of the relevant information on the Internet and in overcoming language barriers. Web sites are extremely powerful mean to do that. Multilingualism is of special interest to smaller and local museums in Europe, to preserve local and national differences and to make available their peculiarities and unique characteristics to others” (<http://www.mek.oszk.hu/minerva/survey/>).

Multilingualism is, furthermore, of great importance when we want to diffuse information in Internet; quoting always from the Minerva Survey, “Another point of view is the quality and effectiveness of communication on the Internet. Information technologies dramatically changed users’ behavior at the end of twentieth century and a constant increase in demands and expectations from new services can be observed. Some countries report that the number of virtual visits to cultural institutions is becoming higher than real visits. Therefore each institution should take care about communication on the Internet and the best medium for this is an institutional website”.

## 5.2. Transferring the MU.S.EU.M. Model

While the MU.S.EU.M. Project was focused only on prehistoric museums and collections, the F-MU.S.EU.M. Project will be focused also on other typologies of collections, such as collections of history and archaeology. The architecture and the model already existing will remain the same, while the specific contents will change broadening.

In detail, among the specific actions to be undertaken for a transfer action there are:

- F-MU.S.EU.M. training model online, as training technique, suitable to the objectives, shared and online
- Development of database images, video and documents for the “Virtual museum of the European roots”
- Identification, selection, motivation, involvement and training of target groups in museum beneficiaries: museum staff (3/4 for each museum) to involve in training actions concerning the establishment of a virtual museum and the management of an on line training tool.

The importance of this action is easily noticed in the SWOT analysis of the nine participating Museums

- Front training on the basis of the course wares, on the contents of the virtual museum at each museum beneficiary: realization of photos and interviews, decisions on literary work and multimedia material to put on play
- The filling of the identity cards by any museum beneficiary concerning n. 10 objects from its collections
- Set-up of Laboratories aimed to co-plan and co-realize the Web site for each museum beneficiary aimed to: a) to co-establish a virtual museum for each museum partner on the basis of the two above activities aimed to increase the database of images and documents, b) to learn how to administrate the restricted area which belong to any museum
- Coaching and Tutoring on line up to achievement and delivery online of n. 6 web sites at each museum beneficiary realized according to the F-MU.S.EU.M. Training and communicative model.

One of the most important goals of the F-MU.S.EU.M. Project is to update, transfer and implement the on-line learning model which will be tested in several local laboratories of experimentation.

This learning Model represents a real System for the Support of knowledge a highly flexible tool capable to vehicle new educational contents through a web-based learning offer.

The adjustment of the training models a mile stone of the transfer action, keeping in mind that the potential users of the project learning model there are:

- Museums (of regional, local dimension, as they are particularly active in organizing cultural events);
- Experts of the museums which, on one hand, are involved in the technological innovations and changes, and on the other hand can help in the further development of an Information and Net-economy Society
- Young people facing the labor market, needing a specific professional training
- New local subjects (both private and public), active in the valorization of cultural heritage
- Policy makers working on the museums and cultural heritage policies, universities, cultural institutions
- Operators of the professional guidance sector

The on-line learning Model of the F-MU.S.EU.M. will be transferred to the system through specific laboratories for transfer, coaching and implementation, devoted to 6 beneficiary Museums. Each Partner of the F-MU.S.EU.M. Project will be responsible for specific areas like: training on the job, coaching, simulations and exercitations.

The transfer action will be focused on the use on innovative *online* and *on the job* methodologies for learning, through which it will be possible to test, transfer and implement the MU.S.EU.M. learning model, by building a Virtual Museum of the European roots meant to be further developed so a to transfer thee MU.S.EU.M. experimental prototype.

The transfer will be done on local Institutions, of little dimension, far from the great tourist routes, keeping in mind the concept that the beneficiary museums have specific needs as well as potentials which are the same as for the national museums, so as to answer to their specific requests and needs.

The learning model foresees the achievement of knowledge devoted to the choice of the investment, to the creation and the management of Virtual, interactive museums, of user-friendly interfaces, of active images as well as on-line performances.

Coming to the specific details of the transfer action, several Learning laboratories for the training and the experimentation of the learning on-line Model of F-MU.S.EU.M. will be realized in the three participating countries. These laboratories will be devoted to all the partners of the F-MU.S.EU.M. project, both Partner and beneficiary Museums.

For the laboratories, different media, informatic and on-line, will be used, as well as workshops and papers. The didactical methodology will be strongly interactive; conference lessons, focus groups, discussion about selected case studies, simulations, self-evaluation as well as other strategies of learning by doing will be the most relevant methodologies applied.

The objectives of the F-MU.S.EU.M. Project will be achieved through the updating of the prototype product and through:

- The definition of new contents related to the professional skills of the museums experts, particularly involved in the technological changes
- The adoption of distance-learning methodologies online and in situation
- The realization of educational products for the training of 4 professional profiles (managers, Web masters, content experts and communication experts)
- Activation of learning laboratories in 3 countries of the partnership, in order to test the results of the methodology and products of the project.
- The creation of a Network for the lifelong education in the European museums.

### **5.3 Developing new educational tools**

In addition to the translation into three languages of the e-courses realized within the MU.S.EU.M. Project, a fourth new e-course will be created.

It will be devoted to a very important professional role for Museums: the Communication expert. The relevance of this role in a Virtual Museum has been highlighted by Report titled “*New professional roles between actual and virtual museums*” as well as in Report “*Building a new concept of Virtual Museum. Four case-studies on best practices*”.

The role and the skills for the Communication expert are detailed in the table below.

<b>Communication Expert</b>	
<b>Profile and abilities</b>	<ul style="list-style-type: none"> <li>• The ability to work in a trans-disciplinary team delivering a specified quality of output, on time and within budget.</li> <li>• Experienced in communication for cultural and or e-service organisations.</li> <li>• Internet and ITCs skilled</li> <li>• Management abilities</li> </ul> Public Relations oriented
<b>Job specification and responsibilities</b>	<ul style="list-style-type: none"> <li>• Plan and implement PR for the project.</li> <li>• Plan and implement Marketing campaign for virtual museum.</li> <li>• Work closely with relevant tourist, cultural and sponsorship organisations.</li> <li>• Generate and manage visit to the virtual and physical museum.</li> </ul>

**Table 2 – Profile, skills and job specification of the “Communication expert”**

The Communication Expert is one of the most important professionals of a Virtual Museum as well as in actual Museums; in fact, it will be up to this figure the communication, the promotion and the diffusion of the museum contents, as well as the Public Relations.

Using specific techniques and tools the Content expert will make the contents of the product interesting and usable for the virtual museum visitors.

Paying the importance of this professional figure, it is possible to state that the role will request a well skilled and whole-time working person, who will closely work with the other members of the museum staff, especially with the Project Manager. **General idea, accuracy and completeness** of the information to be diffused will guide her/his work.

Furthermore, keeping on mind the target-audience of the Virtual Museum, the educational objectives as well as the Virtual Museum contents, s/he will take care of making the educational materials, as well as other relevant document and contents usable for a wide public.

As stated in the previous lines, another important task of the Communication Expert will be the creation and maintenance of relations with Media and relevant Institutions from cultural and tourist sectors.

In summary, the Communication Expert will have several tasks and skills, from the Internet to Public Relations.

Although so important for Museums, the Communication expert is not always available in museums.

In particular, it is rather unlikely that museums of little dimensions have a very well trained and skilled communicator in their staff, while big, national museums have often an Information and Communication Department.

This evidence led us to the conclusion that for creating competences related to this particular professional role, it should be worth to dispose of a training tool to give to museum staff the needed competences necessary for a good communication action.

When these professional roles are already available in museums, it should be nevertheless opportunity to provide them with advanced training tools, given the more and more increasingly importance of ICTs and Virtual Reality applied to cultural heritage in general and to museums in particular.