

HOMM. *ICT for hands-on laboratories*

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ABSTRACT

The poster will present a proposal of developing a prototype of ICT tools named HOMM (ICT for hands on laboratories); building multidisciplinary teams to support, test and evaluate its development, and to build the specific multimedia contents for the application in the museum hands on laboratories; building a network of museums to experiment with HOMM's uses.

Keywords

Interactions with visitors before, during and after the visit to the museum; communication through IT/communication through interaction; different types/levels of visitors; lifelong learning; communities of practice; network of museums; museums of science, technology, of the industrial heritage, eco-museums; e-learning and teachers' training; documentation and communication; evaluation; India, Italy; mechanical technology; textile handcraft technology.

1. From Modena to New Delhi: ICT for hands-on activities in museums as an instrument to promote lifelong learning strategies

1.1 A new and an old museum

HOMM is a project promoted by the Officina Emilia Museolaboratorio (OE) of the University of Modena and Reggio Emilia, Italy, and by the Crafts Museum (National Handicrafts & Handlooms Museum) of New Delhi, India.

OE has developed, since 2000, hands-on laboratories on science, technology, history and society with the objective of improving the students' (and their teachers' and families') understanding of the social context in which they live. The goal is to support the local education system in enhancing innovation processes in technology and society.

With a long history, the Crafts Museum has recently undertaken a deep restructuring aimed at enhancing the opportunities offered by a large collection of handcrafted products and by a vast endowment of traditional Indian crafts skills held by craftspeople.

With the project HOMM, Officina Emilia and Crafts Museum intend to explore the use of ICT in enhancing the opportunities created by hands-on laboratories.

1.2 Hands on workshops and ICT

Hands-on laboratories – involving both individual visitors and small groups of visitors or school classes – are largely used in science and technology museums, and increasingly in all other types of museums. to support informal learning and teaching experiences (now considered a constituent part of museum activities).

Generally, ICT-based tools are used in museum contexts for interactive games (edutainment is now popular in museums) and increasingly to support sharing of resources. Recently they have

been used to build “communities of users” (eg Louvre).

1.3 Unexplored benefits of ICT in museums

The benefits of the ICT-based tools are well known: they can be used repeatedly and in different and personalized ways. Nevertheless, so far, their use in museums has not been fully exploited in integrating ICT with hands-on practices: ICT-based tools can support hands-on labs in order to improve knowledge acquisition through interaction and to extend the experience before, during and after the visit; they allow a focus of attention on the process and not only on the final result; they offer the opportunity to connect, share and create networks with other visitors having the same interests (create communities).

Moreover, other unexplored dimensions of ICT in museums are of utmost importance in supporting design and testing of new learning approaches. In this direction HOMM aims at linking activities generally kept separate: sharing resources, evaluating efficacy of individual activities and of the hands-on program; interactive track of visits (before, during and after), multidimensional involvement of communities within the hands-on labs and outside the museum.

1.4 ICT supporting multidisciplinary lifelong learning approaches

The need to contribute to the development of multidisciplinary lifelong learning approaches for different levels of learning (pre-school, primary, secondary, tertiary, adult, continuing) requires the availability of communication tools suitable to the needs of the widest group of population – “from cradle to maturity” – without neglecting scientific rigor and accuracy.

Therefore, by combining LLL principles with the opportunities offered by ICT in museums, the project intends to provide an innovative model for lifelong learning, through the direct involvement of a network of museums which take advantage of technological progress in order to experiment in new ways of providing informal education.

In other words, the project aims to disseminate the idea that museums, with the support of ICT, can provide an alternative site to promote lifelong learning strategies. The knowledge society stresses the need for radical change in the traditional educational and training paradigms and the importance of non-formal and informal learning strategies. New “learners” are increasingly experiencing these new needs, and, from this point of view, the museums will play a crucial role. Furthermore, this project enhances the visitors' participation in cultural activities of education and training and this can represent an important tool for the valorization of social cohesion and active citizenship. For example, among others, the project helps to overcome some of the problems of marginalization of more disadvantaged groups. These goals aim to promote civil, cultural and economic development, through the valorization of culture, and the quality enhancement of the

education and training system.

2. HOMM: an ICT prototype for learning practices within and outside museum labs

With HOMM we intend to produce an integrated ICT-based tool to address some needs specific to learning practices in museums.

2.1 First two applications: main features

We start by developing HOMM with regard to two complementary cases: the Officina Emilia laboratories in Modena, Italy, and the Crafts Museum (National Handicrafts and Handlooms Museum) in New Delhi, India. The following issues are extremely relevant to both cases: (a) mechanical and textiles, respectively, are industries with a very strong tradition in the regions where the museums are based; (b) the regeneration of competence networks is a crucial issue for enhancing the development of the industry and the local economy; (c) education, building communities of practices, supporting technological culture and the special knowledge of handicrafts (as in the Indian textile tradition and in some branches of mechanical production) play an important role in this process; (d) culture and society are key factors in the reduction of the gender gap and the promotion of lifelong learning.

2.2 HOMM prototype: a set of applications for a network of users

The HOMM prototype consists in several multimedia applications addressed to the different groups of users in all the phases of interaction with the “laboratory-museum” activities (before, during or after the visit). The network will work to find a pathway to spread the use of the prototype to other laboratories of the two initial partners of the network (OE and Craft Museum), and to all those museums which may be interested to adopt it.

2.2.1 From development to testing of HOMM

Development, implementation and testing of the HOMM prototype will require:

- Defining the appropriate format for the performance of different laboratory activities with classes of students and adult groups. The format will be developed starting from two of the workshops now offered in Modena and New Delhi.
- Realization of a prototype for effective demonstration of multimedia applications targeted, in both cases, at different users at different stages of interaction with activities (before, during and after the visit).
- Building a significant network of designers and software developers, manufacturers and retailers of hardware, graphic designers, video makers and researchers in different disciplines involved (mechanical engineers, textile and dying experts, economists, sociologists, educators, evaluators of the results of informal learning, museum experts etc...)

2.2.2 Multimedia content to test HOMM

Short multimedia products will be specifically produced to fully illustrate the HOMM application, by realizing: video clips, 3D modelling, graphic design slideshows, for which the following will be provided: storyboard/screenplay, shooting, editing. The multimedia production, modular and scalable, will be developed around the two workshops selected for testing, and will cover historical, social, technical, economic, organizational topics related to the two educational workshops.

2.3 Creating a network of users

- Building a partnership with a network of museums (such as museums of industrial heritage and eco-museums). The goal is

to create a network of museum experiences that promote learning through informal workshops on technology, culture and society.

- Why create a network of museums? Expanding the set of end users of the products that will be realized (methodology, appropriate tools, etc.) will make the investment required to support the project more attractive (thanks to economies of scale); it will allow the testing, development and sharing of effective practices for a range of museum experiences of which also OE and the Crafts Museum might benefit in the future, even when these concern experiences that are not yet offered at present (economies of variety); it will help to satisfy a more general demand from the education system for support through museum-based practices (informal education).

2.4 Monitoring and evaluation of HOMM

- Design of the evaluation plan and monitoring of the implementation of the HOMM prototype in the OE museum laboratory and in the Crafts Museum in Delhi, and then in the network of museums testing it.

2.5 The project team

The multidisciplinary research team will be composed by computer engineers, mechanical engineers, textile and dying experts, designers, manufacturers of hands-on experiences for museums, multimedia communication experts, experts in complex systems, education planning experts, professionals in the design and implementation of multimedia documents, researchers (history, technology, economics) for the production of multimedia content. The coordinators will be the scientific director of Officina Emilia, Prof. Margherita Russo (University of Modena and Reggio Emilia, UNIMORE) Italy, and Dr Ruchira Ghose, Chairman of the Crafts Museum (National Handicrafts and Handlooms Museum), New Delhi, India).

2.6 Stakeholders

The project is intended to involve also the participation of relevant stakeholders, especially policymakers at national, regional and local levels. Indeed, the final aim of the project is to develop a renewed identity for the museums, which will be recognized as effective education and training centers, promoting the complementarity of their innovative activities with the training activities offered by the more formal education and training sectors. Therefore, the active involvement of decision-making bodies will be crucial in expanding this concept to the public, and in attracting a wider public compared to the past and, above all, addressing those citizens who are not traditional users of the museums.

3. Seeking partners for HOMM

Officina Emilia and Craft Museum are seeking partners to develop and implement the prototype. Private investors interested in a new field of social investment for enhancing communities' opportunities would be an essential part for supporting the project.

4. REFERENCES

- [1] Officina Emilia www.officinaemilia.it
- [2] National Handicrafts & Handlooms Museum <http://nationalcraftsmuseum.nic.in/>

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