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### **Multimedia applications for innovation in cultural heritage: 25 European trial projects and their accompanying measure TRIS**

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#### **Introduction**

The *Cultural Applications* Unit of DG Information Society launched, as part of its 4th call in year 2000, a programme for 'Take-Up Actions' under Action Line III.1.5 (*Trials on new access modes to cultural and scientific content*).

The intention was to launch trial actions across Europe, encouraging take-up of results and stimulating the implementation of innovative products and services in the cultural heritage sector. The focus of the Action Line was on exploring and experimenting novel ways of creating, manipulating, managing and presenting new classes of intelligent, dynamically adaptive and self-aware digital cultural objects, either held by memory institutions (archives, libraries, museums, etc) or directly involving digitally born objects or art forms. The proposal were to be user-centred with the emphasis on user interaction and models for interactivity with high-quality virtual representations of valuable cultural objects, and the creation and navigation of virtual cultural and scientific landscapes.

The workplan recommended that focus should be given to the sustainable development of valuable digital repositories in Europe's libraries, museums and archives, on models for future virtual collections and on guidelines for integrating real and virtual objects and collections. Proposers were asked to provide examples of how dynamic user interaction with the cultural and scientific content can enhance the user experience, addressing the experiences of learning, exploring and entertaining for the user.

This led to the selection of 25 new TRIAL projects with an average duration of about 12 months. They address a wide-range of user communities (specialist but also general such as children or tourists) and cultural heritage themes.

One of the most distinguishing aspect of the projects is that they are driven by cultural institutions mostly run by local authorities or by SMEs with local interests, demonstrating a great potential to create a European-wide momentum for innovation even in smaller cultural institutions. The projects are interesting to a range of potential users, as in many cases they will lead to improved access to cultural assets in museums, archives and libraries, through their use of innovative technologies such as mobiles, digitisation techniques, Internet support etc.

In particular, it is very interesting to look at these experiences as practical demonstrations of how smaller institutions can play a very important role in the use of innovative technologies for the production of cultural content aimed specifically at the educational sector.

Many large scale initiatives exist for the production of standardised cultural content for educational purposes but they mainly rely on well known technologies and concern themselves with traditional cultural objects of global importance. The group of TRIAL projects, instead, focuses on the possibility of new ways of interaction and on content of regional or local importance. This type of cultural content is getting more and more interesting to educators worldwide, as the attention to local history, traditions and cultural and environmental assets grows steadily in educational programs.

The TRIALS meet head on the challenge of cultural institutions taking on ICT, not in an RTD setting, but by experimenting with technology and in partnership between technology providers and, in many cases, smaller cultural institutions – local archives, museums, libraries. These institutions face the challenge of responding to organisational change, of integrating new skills and competences, of meeting the digital challenge. Their motivation is to make cultural content more visible and accessible, to offer their users new ways of interaction and experiences. Those that will benefit from the results of the trials include tourists, teachers and SME's, historians and scholars, botanists, scientists, the interested citizen, our everyday European life. Particular attention is given to the inclusion and involvement of young people through games and in the creation of content.

## **TRIS**

The TRIS Accompanying Measure has been set up to cooperate with all the TRIAL projects to strengthen and enhance their effectiveness and the benefits of individual actions and projects beyond their own perimeter. The co-ordination, grouping and dissemination activities of TRIS will help the projects to reach critical mass and substantial cultural, scientific and commercial impact.

The following is a list of the activities of TRIS in relation to the TRIAL projects:

- analyse the portfolio of the selected projects and identify relevant clusters among them to improve the potential for communications and knowledge sharing among the projects, and TO encourage the exchange of experiences and success stories
- catalyse the projects' opportunities to produce viable and standardised solutions and assist the exploitation towards complementary subject areas (including education) and throughout the European

markets beyond the normal outreach of any single project, by means of dedicated Web tools and through specific actions towards potential users, industrial partners, territorial policy makers and venture capital

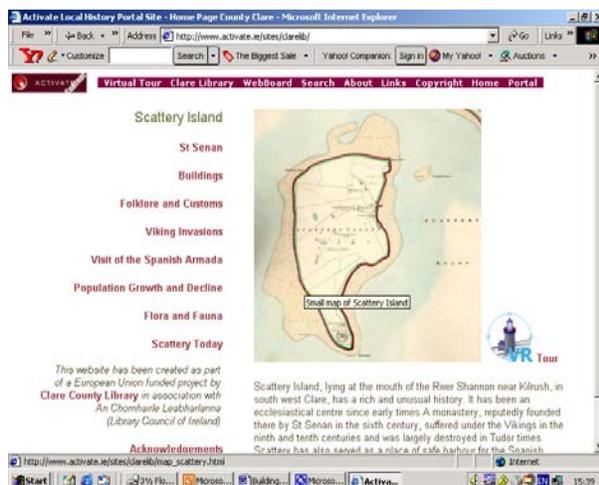
- heighten the TRIALS profile through their collective dissemination and promotion to national and international bodies and the media, stimulating cooperation with non-EU countries and related key networks
- analyse and reconsider the TRIAL format in itself and the related submission/evaluation process, while acting for the promotion of the TRIAL format to foster a wider and more informed participation in future Calls for Proposals
- actively foster the participation of relevant interest groups that may not otherwise be present in IST. This relates in particular to the participation of non-EU countries, mostly within the PHARE, TACIS and MEDA areas. Despite the availability of significant resources and the active promotion policies undertaken by the Commission, in fact, these areas have experienced difficulties in their involvement in European RTD activities. It is one of the working hypothesis of TRIS that the TRIALS format, because of its lightweight footprint and of its direct concern with results and technology transfer, may represent an optimal vehicle for the involvement of these countries and potentially a bridgehead for a low-risk inclusion of these areas into the 6th FWP.

This paper is an exercise by the TRIS team in analysing a number of projects with high educational potential categorising them based on their relevance for their model and implications, for adopted technological solutions or for the particular interest in the content involved.

### The TRIALS from an educational perspective

Each project is taken in consideration here, with the aim of highlighting those aspects related to educational purposes, with particular attention to models of user interaction, content, and potential educational value of the technologies adopted.

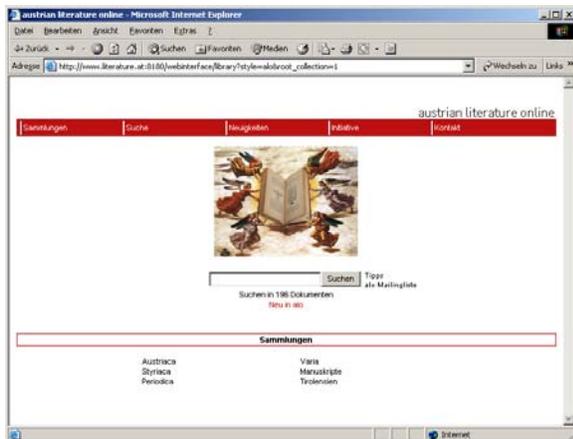
**ACTIVATE** - will build a virtual reality model of a historic landscape, to provide a new way of accessing existing rich stores of cultural content concerning the landscape. One of the results will then be to provide for free a number of templates that will enable people with minimal IT skills to set up their own, easy to maintain, portal and content thematic network. Their experiment is based on material provided by the contrasting urban and rural library services of Cork City and Clare County, which are setting up a local history content site and link it to a central portal, thus forming an example of a thematic network and testing the template in action. The interesting aspect here is the concept of the same model and templates, reused in an economy of scale, to reduce the impact of technology on the creation of (possibly educational) content rich networks of a regional area.



**ARCHIVIEW** - is developing a software aimed at opening the historical city archives to broader audiences by integrating easy tools for the management of collections with solutions for creating "narratives" around sources and publishing the results on the Web. This will make a wealth of first-hand information available to those interested in getting to know and feel the past of the towns they live in or are visiting. The interesting aspect here is that the authoring tool will be easy enough to be used by the archive curators themselves, thus allowing them to promptly react to the needs of different audiences, first among them young people. As a matter of fact, some of the trial content being developed is specifically devoted to school classes often visiting the archives.

**BEASTS** - will adapt a resource locator tool initially developed for public sector education and training, to develop an e-commerce on-line training package and portal service for the tourism sector in a region of Wales.

**BOOKS2U!** - has a direct European level impact on professional learning as it aims at experimenting with a new approach to inter-library loans (replacing the usual process), especially when dealing with old and valuable books, by digitisation on-demand. By performing Optical Character Recognition the documents' content can be rendered accessible on the Internet also to blind and visually impaired people.



**CHOSA** - is developing an interactive web game and a WAP tour, both fun and educational, for access to and awareness of an archaeological site for those who cannot visit the real museum. The game will turn a board game principle into an interactive and educational experience based on the historical events and the people of St Albans.

**CTIC** - the partnership, which consists of several UK museums and art galleries, is trialling a novel, purpose designed interface enabling users to access cultural content displayed in their collections. The project will focus on digital content related to costumes and textiles and will permit to explore, interpret and encourage dynamic user participation in the interpretation of user selected objects. Visual content such as photorealistic 3D and virtual reality will be privileged and organized using visual metaphors so as to help decreasing language barriers.

**DOMINICO** - the project features an Austro-Slovenian partnership to trial innovative technologies to support smaller museums and exhibition designers in their networking, digitisation, and production of promotional material and Web presentations. Similarly to the ARCHIVIEW project, DOMINICO's publishing pipeline toolset seems particularly suited to produce children specific publications and study material.

**eISLAM** - this and the following project are an example of the rich diversity of content and topics present within the TRIALS. eISLAM aims at promoting the Islamic collection of the Benaki Museum in Greece by creating digital surrogates of exhibited items (for instance, the items currently displayed in the exhibition 'Glass of the Sultans').

**eSTAGE** - the project is setting up a web-based resource on European puppetry. It permits content owners to provide information about their activities online so as to create an easy and enjoyable access to European puppet theatre productions. eStage also attempts to create a virtual community for the exchange of ideas concerning puppet theatre productions and related information capable of inspiring new creative talents.



**EULER-TAKEUP** - based on the pilot developed through the European RTD project EULER, the trial is setting up and evaluating a European digital library for mathematics. EULER aims at establishing a world class reference and delivery service, offering full coverage of the mathematics literature worldwide, including bibliographic data, peer reviews and/or abstracts, indexing, classification and search, transparent access to library services thus directly addressing a large audience of students and teachers.

**HITITE** - will test a model to enable anyone interested in the historic environment to remotely access and explore sites and monuments without the need to have specialist knowledge. The most innovative tool will be a VR-based thesaurus allowing users to explore terminology through images and Virtual Reality models, a conceptual component which, in itself, holds great educational value.

**HYPERGUIDE** - is building an XML tool based on a web description methodology, for access to high-value web-based resources in order to enhance selection, filtering and usability of information resources in specific domains.

**KIST** - will use 3D, audio, animation and video for a digital exploration of the collections of the National Museum of Scotland. The project will also develop and trial the Treasures Programme as an on-line resource enabling National Museums of Scotland collections to be explored in detail from anywhere in the world. As part of the on-line development, Treasures will be integrated into the educational environment as a teaching resource for use in classrooms and available to children of all ages.

**LAB-VR** - the project is working to improve 3D photographic Internet access to research laboratories and their research activities. Users will be able to view the operational research environment as an interface for gaining further information from the Web.



**MATAHARI** - will use portable information devices for access to information gleaned from libraries, archives and museums about outdoor objects in order to enhance the visitor's experience. The set of tools this project is experimenting with might certainly prove to offer a large spectrum of future applications for education.

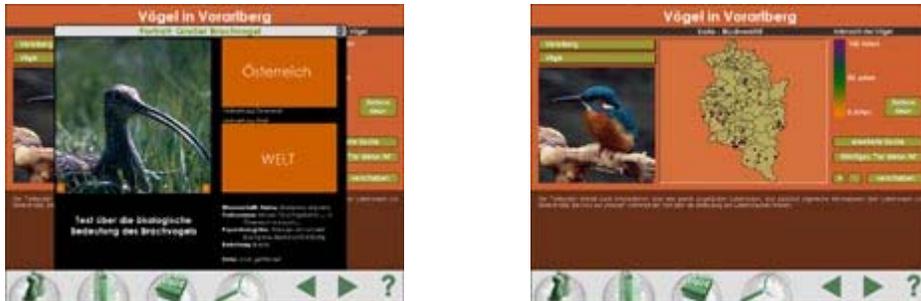
**POUCE** - seeks to validate a model for a common access portal to a group of French museums on the Web. The semantic, XML-based approach will permit to manage heterogeneous resources (great variety of objects conforming to different descriptive systems) contributed by the participating museums.

**SANDALYA** - will trial the results of previous research dealing with the digitisation of manuscripts. The developed technology will permit to explore, search and compare, through the Web, digitised ecclesiastical manuscript of Sardinia containing information about births, marriages, etc.. and holding great potential, for example, in the possibility to compare the various languages used and their evolution over the last centuries.

**SEAX-DAMAS**: will trial a software solution encompassing a wide range of aspects of archive management fully relying on international standards. A public access module will also be trialed on the Internet.

**TPHS** - is trialling an innovative approach to promoting information on architecture and heritage in that the project focuses on information about buildings and related objects which children consider to be of particular interest. It directly deals with culture as seen and appreciated by children, in an engaging and playful way. Very strong attention is paid to the suitability of the Web user interface for children and experiential context. Value is added to key artifacts by providing means for young people to contribute their ideas, experience and connections.

**TREBIS** - is trialling a natural history museum approach to the use of multimedia techniques in order to enhance awareness of biodiversity, endangered species and ecology. The user community – school children – will be given access to a database and to digital maps. Quiz and computer simulations provide an introduction into biological diversity and its dynamics.



**UHI-NMS** - the Scottish consortium will trial an approach designed to add value to National Museums of Scotland's digital content for the National Grid for Learning. Special attention will be given to appropriate pedagogical approaches. The project plans to design content to have application in formal and informal learning environments, addressing a wide range of end-user groups as well as intermediary users (teaching/advisory staff).

**VALHALLA** - is going to provide a resource displaying real-time video & explanation of historic gardens and parks. It will provide, through a Web interface, the possibility to explore, directly controlling the camera(s), gardens and parks from viewpoints not usually achievable at ground level. This has immediate educational application in the trial experiment putting on the website comparative views of two historical gardens, permitting visits by young or disabled virtual visitors, and enabling skills and understanding to be shared between experts at remote garden locations.



**VIRMUS** - this project from Latvia proposes to experiment with the use of market-ready 3DML tools in order to enable first-time users to create 3D pages with a virtual representation of parts of the Latvian Ethnographic Open Air Museum. The project will also provide Internet users with means (3DML blocks, textures, etc.) to create their own 3D environments displaying architectural objects. The objective is to provide a way for ordinary museum web masters and Internet users with limited IT knowledge to create interactive virtual environments in three dimensions.

**VIRTUAL** - is going to develop a prototype for Web based access to archive and library collections of historic buildings, based on the 3D model as a metaphor of a Cathedral building

with an underlying multimedia database. At the same time, the project will work on identifying, evaluating and communicating the cultural significance of the collections through a Web interface.



**VRCHIP** - will develop technologies to allow a town library to gather and store information in a multimedia format, and provide enhanced retrieval services. Users will be able to navigate the virtual towns and, thanks to the use of realistic sounds and animation of vehicles, machinery and life, they will get immersed in a virtual environment which will enhance their learning experience.



## **Conclusion**

As the above analysis has shown, many of the trail projects are directly focused on exploiting technologies and content for educational purposes. Most of the others, are of indirect educational and learning value for different audiences, as the same models and technologies can be refocused to enhance educational processes.

It can therefore be concluded with some confidence that the continued monitoring of the results these very practical TRIAL projects will produce over their life-time can be a stimulation to those seeking fresh ideas on ways to expand the educational possibilities of cultural institutions.