'Technology-enhanced learning and access to cultural heritage'

Introduction

This response to the consultation reflects the view of the National Representatives Group, established under the eEurope Action Plan. It therefore reflects the views of the Ministries of Culture of each Member State in Europe, including the New Accession States, and their representatives.

The NRG supports the Lund Principles and Action Plan, and can summarise our agenda as
- foster the development of intelligent systems for dynamic access to and preservation of tangible | intangible cultural and scientific resources.
- ensure the creation of large-scale, inclusive cultural landscapes where Europe's digital heritage is globally visible, interacts intelligently with users, and persists over time.
- prevent the loss of Europe's unique cultural and scientific heritage by ensuring access to those that are in obsolete formats or are too rare or fragile for regular physical access.

From these top level objectives, we see three key areas for future RTD:
- **Area 1**: achieve significant enhancements in the dynamic access to, and interoperability of cultural and scientific heritage to support the development of the Knowledge Society
- **Area 2:** unlock, enrich, and exploit cultural resources by offering personalised, highly interactive, stimulating environments;
- **Area 3:** tackle the problems related to archiving a growing volume of digital resources and ensuring their long-term preservation.

Response to consultation question Please indicate if the Strategic Objective should be modified, for what reason and how. Emphasis should be placed on any re-asertion of the existing Strategic Objective for the period starting 2005, any new research focus and suggestions on the most appropriate instruments to address these.

The NRG wishes to reassert the continuing importance of the existing strategic objective **(2.3.1.12 Technology-enhanced learning and access to cultural heritage) to develop advanced systems and services that help improve access to Europe's knowledge and educational resources (including cultural and scientific collections) and generate new forms of cultural and learning experiences.**

The NRG would also reassert the continued importance of the focus of the 2003-4 work programme on the areas of:

- Improving the efficiency and cost-effectiveness of learning, for individuals and organisations, independent of time and place.
- Improving accessibility, visibility and recognition of the commercial value of Europe's cultural and scientific resources.

In the area of cultural and scientific resources the NRG sees research opportunities as:

Accessibility and user friendly applications for all citizens; specific areas include:
- supporting access for all citizens, and especially those with physical or mental disabilities.
- Evaluating the requirements and needs of European citizens for information and digital cultural heritage resources.

advanced *digital libraries services*, providing high-bandwidth access to distributed and highly interactive repositories of European culture, history and science; specific areas include:

- liquid broadband
- mobile computing
- Technologies for integration of mobile services with other channel strategies
- Interoperability, resource discovery and multilinguality for Digital Libraries services. Common standards for interoperability. Digitization activities will benefit by enhancing digital content with machine-understandable data. These meta-data should be semantically well defined and will be based on relevant descriptive terminology, vocabularies and ontologies.
- Personalisation services applied to distributed digital library services
- Semantic web technologies
- GIS technologies for both query and results plotting, linked to digital library services
- Protection of Intellectual Property Rights and Digital Rights Management (DRM) Systems to clear rights, to secure payment, to trace behaviour, to enforce rights and, with approaches such as Creative Commons, to actively demonstrate that materials can legally re-used.
- DRM systems as a modular component that can be integrated with other systems, such as a DAMS or CMS. Particularly important are open source approaches that can be used to actively demonstrate that materials can be re-used
- Sustainable approaches to Persistent Identifiers, using open source.
- Promotion of information infrastructures for accessing and using high quality European digital culture and scientific resources. These will improve access to digital culture and scientific resources through co-ordinated approaches to digitisation and collection building.
- Links between cultural sector metadata and educational metadata

environments for intelligent heritage and tourism, re-creating and visualising cultural and scientific objects and sites for enhancing user experience in cultural tourism; specific areas include:

- VR and 3D and multimedia applications for a more attractive and emotional perceptional experience and also for the reconstruction of monuments, sites as well as non material Cultural Heritage.
- Integration of 3D and VR applications with digital library technologies
- 3D visualisation

advanced tools, platforms and services in support of highly automated *digitisation* processes and workflows,

- OCR for printed materials
- Reduction in costs of digitisation – based on adoption of good practices, as well as technical developments
- Automatic metadata extraction
- Open source applications to reduce deployment costs, coupled with innovative approaches to service delivery, such as the use of data centres delivering shared services
- Selection of materials and resource, based on quality criteria

digital *preservation*, and digital memory management and exploitation.

- Digital preservation - the issue involves setting up new organizational workflows for assuring long-term integrity and preservation of digital resources, as well as technological aspects such as data migration, OS simulation, emulation techniques, sustainability of file formats and adoption of common information and archival models.

Transformation of *eLearning through interaction with digital culture*

- Semantic integration of cultural resources and unified discovery and access mechanisms

Appropriate instruments include:

- Networks of excellence contribute to exploratory, longer-term research enhancing human learning and cognitive processes including the fields of digital libraries, intelligent tourism, accessibility and user friendly applications
- Integrated projects will provide a vehicle for R&D and demonstration of *learning* systems and services, accessibility and user friendly applications, digital libraries
- Specific Targetted Research Projects or Innovation projects (STEPS) will continue to provide an instrument for research into intelligent tourism
- An Observatory should be established to ensure that the maximum value is obtained from the investment in research in the cultural heritage sector. This would promote the results of EU-funded research and ensure that Europe has a coherent voice in the development of International standards, technologies and delivery of services. An Observatory would act as an advocate for all European Member States in a range of Global initiatives, give a voice to all EU Member states, deliver economies of scale and ensure that best practice is widely adopted.