Activities and Research for Cultural Heritage

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Introduction

I would firstly like to say that I am pleased to have this opportunity to tell the reader a little about what the European Commission is doing. I will try to focus on some issues that I believe are of direct relevance to the challenges facing those working with cultural heritage, and more specifically digital cultural resources.

Firstly, I will rapidly touch on some of our key policies, strategies and programmes.

Secondly, I will look at a particular action that involves digitisation, and very recently an extension to long-term digital preservation.

Thirdly, I will mention the work already undertaken in our research programmes, and I will finish by looking at our future research plans and the role digital resources will play.

Let me start by trying to set the scene. The work we do in the Directorate General on the Information Society involves funding European research on new technologies for cultural and scientific heritage. Thus our starting point is with Europe's cultural institutions and industries. The institutions cover public libraries, museums, digital libraries, archaeological sites, national libraries, science museums, data archives, galleries, public records offices, research libraries, and so on. Whereas the cultural industries cover film and video archives, image collections, broadcasters, media and design centres, publishers, etc. This represents about 150,000 cultural institutions, sites, etc. in Europe, employing perhaps as many as 2 million people, owning perhaps as many as 10 billion cultural objects, and welcoming somewhere around 6 billion visits annually. These figures are often quoted, and whilst we can all question their exactitude, we can all understand and accept the challenge our cultural institutions are facing in their move into an Information Society.

Fortunately, starting from the perspective of the Information Society, I am only really interested in the digital part of the world of cultural and scientific content. Although we have many projects that involve very specific physical objects, sites, or documents, our focus is on the digital part of the equation. However, even that digital "bit" is in itself a minefield of challenges and problems, and we are increasingly looking to focus on very specific topics that demand EU intervention. In a recent report from the University of Berkeley it was estimated that the world produces between 1 and 2 exabytes (10^{18} bytes) of unique information per year, that's roughly 250 megabytes for every man, woman, and child on earth. Again I'm not certain of the real meaning of such figures, but fortunately over the past few years we were able to focus more or less exclusively on cultural content on the networks, that is to say on the Web. However, with the Web evolving into a kind of global library with more than 4 billion public pages, and an additional 550 billion "deep" documents, we are inevitably becoming increasingly selective and we now try to focus our investments on research projects involving high quality digital cultural resources which have an eminently European added value. Even on this rather more selective basis we are now beginning to see an increasing need to understand how to identify and archive part of the Web as a specific manifestation of the evolution of European society.

However, let me try to focus down even more and look at a precise and pressing need. In May this year there was a meeting in London on preserving Europe's public broadcast archives. It was organised by a grouping of our research projects (under the title PRESTO), and some very astonishing figures were mentioned. If my memory serves me correctly these archives hold something like 10 million hours of film, 16 million hours of video and another 20 million hours of audio recordings. However about 75% of the holdings are on old formats that can no longer be read on commercially available equipment. In addition about 35% of the total archive is in such a state that the original will be damaged or even destroyed during the cleaning and digitisation process. Finally they loose every year several 10,000's hours of the oldest parts of the collections. So what does this example tell us? Well firstly they have a pressing need to act immediately since valuable assets are being lost each year. Secondly in many extreme cases their first action must be the right one since the original is often irreparably damaged and they are left only with the new digital original. Thirdly they must constantly address the interrelated problems of appraisal, selection and cost. In addition broadcasters are still trying to understand how to use the new technologies to deliver, or re-deliver,

their historical content to the viewer. They will need to manage their assets better using the latest content management applications and the new tools for such things as indexing, tagging, data mining, etc. They will also need a strategy for the long-term preservation of their digital archives that must be intimately linked with the way they provide new services. In addition they must learn how to exploit the potential of the entire archive and not just focusing on a small fraction of its content. In the years to come they will have to digest a changing public-service mandate and a revised public-funding regime, and no doubt come to grips with new models of public-private partnerships.

Today we appear to be in a situation where as we focus, our problems and challenges appear to get bigger. Nevertheless I hope through this last example you can see something of the logic that drives our research funding, and I would hope also that many of you are able to sympathise with the challenges facing Europe's broadcast archives! In the future we will need to focus even more on specific research objectives which have a compelling and easy to understand European added value, which produce measurable and lasting commercial and institutional benefits, and which establish world-class centres of excellence in Europe.

But perhaps I am rushing forward and I should start by looking at what the Commission has done over the past 4 years concerning technological issues supporting cultural heritage. So let's turn back the clock to the year 1998 and start with the research programmes.

Culture Heritage in the present IST

Cultural heritage issues had a focus in one specific part of the programme of Information Society Technologies - namely in an area entitled multimedia content and tools.

The specific research focus over the past 4 years has been the providing access to scientific and cultural content through the networking of Europe's libraries, museums and archives.

Our work has thus focused on:

- Improving access to heritage by expanding the contribution of libraries, museums and archives.
- New ways to access heterogeneous, distributed and networked collections.
- The provision of powerful new functionalities for accessing and managing large-scale digital repositories.
- And new technologies for the preservation of electronic materials and surrogates of fragile physical objects.

This has meant that we have focused our funding on advanced digital libraries, intelligent heritage, community memory, digital preservation, and numerous networking and cooperation projects.

We have issued 7 different actions over the past 4 years, and just to give you some idea of the size of our efforts:

- We have received and evaluated more than 400 proposals with a total requested funding of about 540 million euro, and using more than 150 different independent European experts
- We have launched more than 100 projects for a total budget commitment in excess of 90 million euro
- The projects involve more than 600 participant organisations from 35 different countries, and this translates into more than 1,500 man-years of research effort dedicated to Europe's cultural and scientific heritage.

So what about the **results** so far:

Well for **digital libraries** we are funding about 30 large projects many of them looking at resource discovery, metadata and interoperability issues. We are confident that we will see both new tools and new services for navigating through collections of different types of content. We have also a few research projects looking at different ways of publishing scientific and technical content over the Web, including work on Open Archives.

I will not bore the reader with long descriptions of projects, but I will just mention two that have received funding recently. The first is CHLT, which is looking to integrate computational linguistic tools and techniques within digital library environments. This project which includes Imperial College and the University of Cambridge, has a kind of brother project funded by the NSF, and they have a collective objective to reduce the barriers to accessing and reading texts in classical Greek, early modern Latin and old Norse. The other project is METAe, which is developing software modules to automate metadata capture by introducing layout and document analysis in to digitisation software used to create and maintain digital collections of printed material

They have also developed an omni-font OCR engine specialising in Fraktur and old European typefaces of the 19-century.

In the field of **digital preservation** we are funding some projects on digital restoration of old film, on video archival technologies, on new digitisation techniques for old manuscripts, and on new business models for exploiting digitised assets. Here I would just mention the project PRESTO, which brings together Europe's major broadcast archives INA, BBC, and the RAI, to develop affordable and efficient approaches and improved workflow for preservation of audio-visual material.

For intelligent heritage we are funding some very practical projects on image capture and management as well as some rather more advanced projects looking at virtual and augmented reality, in particular in the field of digital archaeology. Projects range from Tourbot, which is an interactive robot providing Internet access to museums, through Archeoguide that develops augmented reality, 3D-visualisation, and mobile computing for archaeological site visits, to Vakhum that is building annimated computer models and visualisation tools for viewing the kinematics of human movement.

Concerning the issue of **community memory** – which is a new activity for us. We have now launched a small number of projects looking at new and experimental ways to delivery memory-related services as well as new models for allowing the citizen to become more involved in the way they can create, manage and have access to the future digital memory of society. As an example CHIMERS brings together museum specialists, teachers and children in the Czech Republic, Lithuania, the Netherlands and Spain to create new forms of repositories of children's views of local cultural heritage using digital maps, GPS and mobile technologies.

The European Commission has also been particularly active in establishing a solid collection of supporting projects covering **networks of excellence**, training, standards development, awareness building, and benchmarking and evaluation fora. Topics covered by the larger networks include museums, public libraries, digital library researchers, historical film collections, music publishing, national libraries, architectural heritage, and digital preservation information.

And finally we have launched 25 small projects designed to help the transfer of new technologies into smaller cultural institutions. Topics range from the use of GIS for historic gardens, through the role of VR for presenting museum objects and collections, to the creation of 3D models of open-air museums.

More information on the projects funded, and on the different issues touched upon in this paper, can be found on the European Commissions Web sited www.cordis.lu/ist/ka3/digicult/.

eEurope

Let us move forward to March 2000. The European Union recognised the need to address the emerging challenges of the new knowledge economy, and at the Lisbon European Council of the same year it was decided that we should do everything we can to make Europe the most competitive and dynamic knowledge-based economy in the world. The target was sustainable economic growth with more and better jobs and greater social cohesion.

The European Commissions approach was to develop two complementary activities.

The first is a political initiative called *eEurope*. But this is also an initiative that is very practical and which is expected to produce immediate results.

The second is to reinforce Europe's longer-term research and development potential through the programmes on technologies that support the Information Society.

Let us first look at the *eEurope* 2002 initiative, which had three major objectives:

Firstly to try to bring every citizen, school, business and administration online and into the digital age - and to do so quickly.

Secondly to create a digitally literate Europe and an entrepreneurial culture ready to finance and develop new ideas.

And thirdly to ensure an inclusive information society, building trust and strengthening social cohesion.

Beyond these 3 major objectives more than 60 different practical actions were identified, and I would like here to look at just one of those actions.

Within the *eEurope* 2002 objectives there was a specific action for Member States and the Commission to jointly:

> *Create a co-ordination mechanism for digitisation programmes across Member States*

The first step for us was to form a Member States experts group to look at the problem and the nature of the actions needed. We were very fortunate that the Swedish Presidency of the Council provided both moral and practical support and hosted our meeting in Lund.

From that meeting emerged something we are calling the Lund Principles. They define the importance of the issues and what actions are most needed.

Firstly we looked at the way we could add value to Europe's digitisation activities, bearing in mind that our actions must be sustainable over time.

We established the importance of the issue by recognising that:-

> *Europe's cultural and scientific knowledge resources are a unique public asset forming the collective and evolving memory of our diverse societies and providing a solid basis for the development of our digital content industries.*

The first issue highlighted by our experts was the need to ensure **sustainable access to our heritage.** We all know that Europe has unique and significant wealth in its cultural and scientific heritage. And that the digitisation of these resources is a vital activity in that it can provide both improved access for the citizen and at the same time help preserve Europe's collective cultural heritage (both our past and our future heritage). The second important point was the support provided for **cultural diversity, education and content industries.** Digitised cultural assets are crucial in sustaining and promoting cultural diversity and at the same time they are also a key resource for education and for the tourism and media industries. The third issue was to recognise that **digitised resources are of a great variety and richness.** Member States have already invested significantly in programmes and projects for digitising cultural and scientific content. Such digitisation activities cover a diversity of domains and content types, such as museum artefacts, public records, library collections, archaeological sites, audio-visual archives, maps, historical documents and manuscripts, and we must build on what has already been achieved.

However, our experts also identified a number of key problems that limit the potential of these resources, whether culturally, socially or economically. The first barrier is the **fragmentation of approach.** Though widespread, digitisation activities to date are highly fragmented, depending on the policy instruments and mechanisms in the different Member States. Moreover, the absence of a coherent European view of what cultural content has been digitised or of how this content is selected for digitisation results in an inevitable duplication of effort and investment. The second barrier is **obsolescence.** Digitisation is a costly exercise requiring high investments usually from public funds. There are significant risks to these investments due to the adoption of inappropriate technologies and standards. This can result in creating resources which are quickly obsolete or which require the investment to be repeated a few years later. The third barrier is the **lack of simple, common modes of access for the citizen.** Access by the citizen to the different resources, at national and at EU level, is compromised by the lack of common approaches and technical standards as well as by the lack of support for multilingual access. The fourth barrier is **intellectual property rights.** The various stakeholders in the world of digitised content (e.g. original owners, intermediaries, and end-users) have different legitimate interests. These needs must be recognised and balanced. Solutions for managing rights need to be understood and applied by the cultural sector if the economic value of their efforts is to be sustainable over time. The fifth barrier is the **lack of synergies between cultural and new technologies programmes** and the sixth barrier is about making the best of **institutional investment and commitment.** We all know that digitisation requires a commitment from individual memory organisations to long-term, expensive and technically demanding actions, and our research programmes can help develop new cost-effective solutions and help in the way our institutions adopt new skills and practices.

So what are some of the key actions:-

Well let's start with National Profiles

In 2001 we issued a questionnaire to Member States in order to identify national policies. The results were surprising. For the 10 Member States who replied within the deadline we found more than 40 different policies and programmes. One very valuable result was the real feeling that the questionnaire had highlighted the need for stronger co-ordination **within** many Member States. We have decided to build a common baseline for national profiles and to try to ensure that they are maintained, publicly accessible and

easily understandable. Improving the awareness of what is going on in other countries (and within countries) at both policy and project levels is one type of action that can contribute to providing better access to digitised resources and to improving the effectiveness of digitisation initiatives. Here we see the first important message – in your respective areas – is information on national policies, programmes and projects well described and easy to find? Can the citizen understand what is being done and why, and are the activities described in a simple and non-technical way? In addition it is also important to recognised that simpler language will be essential if we are to foster greater interdisciplinary cooperation.

Concerning Technical Standards

The first step is to improve the quality and usability of our content. We must promote unified access for citizens as well as an increased awareness of long-term preservation issues. One way forward is to agree on interoperability standards and guidelines for digital preservation and content longevity. We also need coherent models and good practices for rights and asset management together with the development of the associated eCulture business models. We need to continue to support interoperability and resource discovery by launching more work on metadata, registries and schemas. Yet there is already a considerable body of knowledge available – so are we doing enough about the adoption of existing standards with all the related training, awareness building, and technology transfer actions that are needed?

Turning to Good Practice

Everyone wants to adopt practices that are recognised throughout Europe as good examples. We all should support issues such as consistency of practice and process, the proper management of assets and rights, and the re-definitions of the new skills required by our cultural institutions. Current topics of interest include metadata, multilingual support, and imaging and digital preservation technologies. In a recent meeting in Alicante under the Spanish Presidency more than 40 digitisation projects were presented as good (or best) practice. However we must go beyond just the tagging of good practice examples. How many of these examples have been documented in such a way as to highlight and explain the good (and bad) lessons learned? How many of these examples can be really adopted by the large body of small cultural institutions and organisations?

And then there is the major issue of Quality

Beyond the issue of technical standards we need to create a shared vision of European content and we need to develop a solid framework for a EU-wide infrastructure for accessing digitised cultural and scientific heritage. We need to identify added value conditions for European content (e.g. selection criteria) and establish technical standards for conformance to interoperability requirements. Certainly one of the key issues is to provide a practical and tangible focus for quality. Institutions and actors providing well maintained, authentic, reliable and trustworthy information should be seen to be doing so and should be able to differentiate themselves from other on the basis of those qualities. Are cultural actors prepared to develop, adopt and control their own framework for quality on the Web? We know that specialist communities are developing the quality criteria for health care information and educational resources on the Web. What will it take for cultural actors to do the same?

Concerning the specific issue of Digital Preservation

We must work to counter the risks of creating a 'digital dark age', by developing advanced industry-friendly research agendas for the preservation of content. Long-term digital preservation is a major problem, yet those who control national policy developments appear unaware of the issue. Have the cultural institutions, the problem owners, been sufficiently vocal about this issue? What can be done to bring this problem to the fore as a major policy issue?

National Representatives Group

Finally we need to ensure an effective forum for ongoing co-ordination across all Member States. We have now created a National Representatives Group, made up of officially nominated experts from each Member State. Its mission is to act as guardians of the "Lund Principles" and to monitor progress of the Action Plan. This group meets every 6 months under the chairmanship of the current Presidency, for example the next meeting is planned for 10-11 December 2002 under the Danish Presidency. The group should share national experiences and create a common platform for cooperation and coordination of national activities across the European Union, as well as for their follow up at national level. It should provide a stable, continuing focus for consensus building between Member States, for promoting good practice, and for encouraging initiatives to support the visibility of quality cultural sites. A final element is the recent creation of MINERVA, a Network of Excellence funded by our research programme. The network already has an initial participation of 7 Ministries or related national bodies, and all 15 EU Member States are expected to join in the coming months. MINERVA is a collaborate framework for executing the Lund Action Plan and organising its working groups.

At the European level, these activities have been lent added support from recent European Council Resolutions on 'Culture in the knowledge society' and the 'Role of culture in the development of the European Union'. More recently the Spanish Presidency (1st semester 2002) took on the challenge to create a framework for long-term digital preservation. A Council Resolution was prepared and has been accepted by the EU Ministers of Culture. The Resolution entitled "Preserving Tomorrow's Memory – preserving digital content for future generations" was published in the Official Journal in July 2002. The establishment of a EU-wide action plan on long-term digital preservation may be one way forward. Here again we are already funding several research projects looking at digitisation and preservation of historic film, old text, and other cultural materials. We are also funding *erpanet* a networking project aiming to increase awareness on the issue and provide source documents on the various digital preservation activities on-going around the world.

Digitisation: progress to date

Concerning digitisation the second meeting of the national representatives took place in Alicante, Spain on 16 May 2002 under the chairmanship of the Spanish Presidency and hosted by the University of Alicante. I will just mention some of the more important issues discussed there.

Improvement of policies and programmes through cooperation and benchmarking:

- Policies for digitisation, exist now in several Member States, and increasingly benchmarking is being seen as a key instrument for policy and for programme coordination at national level and for measuring progress.
- Co-ordination networks have been established in most Member States. Some are inter-ministerial others inter-departmental, but all aim at encouraging cooperation at national level.

Promotion of good practice

- Candidate projects have been identified for input to further development of good practice exemplars and guidelines. An interesting indicator of excellence has emerged with the cross-referencing of good examples between countries.
- Flagship or showcase projects, from small/local as well as large organisations, should be promoted in order to stimulate awareness of and interest in digitisation projects.

Immediate strategic priorities and actions

The meeting agreed the following major priorities and actions for the next 6 months period:

- A EU-wide status report on digitisation will be produced based upon Member State progress reports. This will be compiled and widely published early in 2003.
- We need to identify strategies and actions necessary for adoption of the Quality Framework at national level, and we need to understand how to apply quality criteria to digitised cultural resources on the Web.
- We need to make a practical contribution to emerging digital preservation policies initiatives and establish contacts with the different stakeholders.

Preserving Tomorrow's Memory

Let me develop some of our thoughts on the increasingly important topic of digital preservation. Late last year we discussed with the incoming Spanish Presidency the possibility to continue the work started with the past Presidencies. The issue of long-term digital preservation, whilst mentioned in the Lund Action Plan, was not really fully developed and as such does not figure as a major objective of the MINERVA network. The Spanish Presidency felt that this was a topic that would merit further work, and possibly justify a Resolution of Council. I must immediately compliment the Spanish Presidency on its courage in taking on such a difficult and complex subject. Long-term digital preservation is not an intuitively simple topic, and there are no short-term easy answers. It is technically complex and challenges the fundamental role of our cultural institutions. Solutions are not available today and it is already clear that there is a lot to be done in the coming years if we are to find acceptable and affordable answers to this problem.

I do not have to explain to the reader the importance of having clear policies concerning long-term digital preservation. In fact a majority of cultural institutions believe that irreplaceable information will be lost if digital preservation issues are not resolved in the near future. However, it is vital to recognise that a comprehensive digital preservation policy could be very expensive and will inevitably result in a substantial mutation in the focus and core functionalities of our cultural and scientific institutions.

So I think it became more and more evident that not only was there a need for a Council Resolution on long-term digital preservation but that now was the right time for such a Resolution. Over the past few months we have hosted 3 expert meetings, and now I will try to summarise their ideas concerning future actions.

So what are the possible actions and recommendations? Very rapidly ....

The preservation of digital heritage must become a **major policy objective** and even an institutional raison d'être. Many cultural institutions already assume responsibility for preserving digital material and most expect to do so in the near future. However few have explicit policies that govern acquisition, conversion, storage, refreshing, and/or migration of digital content. New organisational policies and procedures will be needed that maintain accessibility and authenticity over time whilst respecting cultural diversity and pluralism.

Solutions will not be purely technological, and research agendas must recognise that social, legal and ethical issues will be important in finding practical, acceptable, and affordable solutions for digital preservation. Important questions will need to be answered, for example, such as what should be preserved for the future? Who will archive preserved information and what skills will they need? What preservation meta-data will be needed and who will create the meta-data? Who will pay for all this?

Solutions will need to be supported by organisational will, economic means and legal right, and must ensure the preservation of and permanent access to digitally produced materials. Consideration should be given to innovate ways to manage Europe's digital collections such as through national information infrastructures or a system of certified digital archives.

Recognition of digital preservation as a major institutional and societal problem can only be achieved through large-scale, sustainable and significant initiatives that incite and stimulate public support. Large-scale initiatives are essential since they will force the cultural institutions to be explicit about their priority setting and selection criteria, it will bring to the fore other societal issues such as privacy and data protection, and it will oblige the institutions to take seriously the development of revenue generating activities to pay for collection maintenance.

There are the issues of costs and scale

Today there are no reliable and comprehensive data on costs, nor any proven techniques for estimating those costs. What is certain is that digital preservation could be very costly, and the survival of existing cultural institutions will depend upon the development of new cost, business and financial models and new ways to share those costs between the public purse and business interests. Today digital preservation is seen as a costly "extra" task. Recognising that society cannot collect everything, selectivity will need to be based on a collective understanding on quality metrics and collection appraisal. Automation will also be needed in order to reduce costs, however the way forward must be through the integration of digital preservation functions into the creation process – this is in part a technical issue and in part a issue of awareness about how to create properly so that it can be preserved effectively and efficiently.

Concerning the building of awareness and advocacy of the subject

It is vital to raise awareness among governments, public institutions and other information producers and holders on the need to safeguard the digital memory as much as possible in its authentic form. It will be important to convince the public since it is not immediately evident that the citizen cares about preserving digital information.

Stakeholders will need strategic guidance, with a particular focus on building awareness with data creators. And there is also a need to move away from guidelines and towards specifications which help the smaller institutions deal with the problem.

In addition it is now recognised that there is a major skills deficit in the institutions. The "skills gap" needs to be assessed and quantified with a view to what new skills will be need in the future. One option is to create a skills map and develop "fellowship" training and exchange programmes that would transfer knowledge between institutions and could be scaled up to a formal infrastructure.

One way forwards is networking

A large-scale multidisciplinary and multicultural collaborative model will be needed that both strengthens existing networks of archives, libraries, museums and other documentation services and brings together developers and users of digital information management and processing tools.

In addition an information infrastructure should be evaluated that would be collectively responsible for the long-term accessibility of the social, economic, cultural and intellectual heritage instantiated in digital form. This could be a network of certified repositories or archives meeting standards and criteria of an independently administered certification program. Such a network should not only provide archival for their

own content but should also work on behalf of others who do not care (providing failsafe mechanisms). It is not clear how such an infrastructure could be created, what would be the technical and institutional attributes of digital repositories, and how to set standards for institutions as repositories that operate across different existing collecting agencies. It goes without saying that there is much scope for a shared infrastructure to develop economies of scale, however as a final point there is still no convincing benefit model of such an infrastructure (and one that would take onboard all the regional implications and agendas in Europe).

And then there are the technical and research challenges

I will not bore you all with a long list of technical objectives and research issues, however we need work on requirements covering terms of use, data structures, provenance, legal validity, authenticity, etc. We need to validate social and economic models of archives and digital libraries as ways to ensure the future accessibility of information with enduring value.

We need new tools and technical infrastructures. The tools must automate preservation for data creators and warn us when obsolesces occurs. We need new standards and we need to ensure that they are used. And we will need test beds, prototypes and trails that demonstrate the technical and economic feasibility of operating on a mass scale.

The 6th Framework Programme (2002-2006)

Let me now turn to the near future and Europe's new research programme. In the European Commission's document entitled "Towards a European Research Area" Commissioner Busquin proposes to "... look at how.... to better organise research in Europe...". The idea is to create a European research area. This is not a new idea, but the conditions required to achieving this now seem to be in place. How should this idea of a European research area be defined?

Well it should certainly embrace the following aspects:

- Networking of existing centres of excellence in Europe and the creation of virtual centres of world-class competence.
- A common approach to the needs and means of financing large research facilities in Europe.
- More coherent implementation of national and European research activities.
- Greater mobility of researchers and introduction of a European dimension to scientific careers.

The Sixth Framework programme will be one of the most important ways to implement the "European Research Area". This new Framework introduces a new approach both in terms of content and instruments.

Firstly there will be a major focus on the task of "Integrating Research" – which will represent the bulk of the effort and is intended to integrate research efforts and activities on a European scale, and develop our knowledge and understanding on a limited number of priority thematic areas, as well as in areas supporting specific EU policies. A new instrument called the Integrated Project is designed to mobilise a critical mass of research and development effort that is expected to result in new products, processes or services.

A second major focus will be on "Structuring the European Research Area" - exerting a more structuring effect on the research activities conducted in Europe through stronger links with national, regional and other European initiatives and programmes. Here a new Network of Excellence has been designed to strengthen Europe's scientific and technical excellence by integrating existing or emerging national research capacities.

In the new Framework Programme, the Information Society will form the largest priority thematic area. One of the key objectives of the future programme will be to find solutions for major societal and economic challenges, and this will include work on health, security, environment, learning, e-government, etc. and also **"access to and preservation of culture heritage"**. Today this is the only easily identifiable place for cultural heritage and the working text that we have put forward is as follows:

"for cultural heritage the effort will focus on intelligent systems for dynamic access to and preservation of tangible and intangible cultural and scientific resources".

Information Society Technologies – Work programme 2003-2004

Many of you will know of the recent **Expression of Interest** launched by the European Commission. More than 15,000 have been received for the entire research programme, and more than 100 were directly of relevance to cultural heritage. Based upon our analysis it would appear that preservation, digital libraries and community memory are the most well developed topics.

Today the future Information Society Technologies priority has a **draft work programme for 2003-2004**, and the 1st call is planned for Dec. 2002.

The overall focus of IST will be on the future generation of technologies in which computers and networks will be integrated into the everyday environment, rendering accessible a multitude of services and applications through easy-to-use human interfaces. A major effort has been made to concentrate on a limited number of research objectives in the core technologies and their applications.

For 2003-2004 it is planned to focus on a small number of strategic objectives, possible only 23 specific topics, and devote 1.725 billion euro over the 2 years.

For cultural heritage the present plans envisage only one single call in late 2002 on the topic of *"technology-enhanced learning and access to culture".*

The research focus would be on providing a global view of Europe's educational resources and cultural and scientific collections, through advanced services that generate new forms of cultural and learning experiences.

Concerning "access to culture" the key objective is to promote accessibility, visibility and recognition of the commercial value of Europe's cultural and scientific resources. Specific research objectives are provisionally (and are very likely to evolve in the coming months):

- advanced *digital libraries services,* providing high-bandwidth access to distributed and highly interactive repositories of European culture, history and science
- *environments for intelligent heritage and tourism,* re-creating and visualising cultural and scientific objects and sites for enhancing user experience in cultural tourism
- advanced tools, platforms and services in support of highly automated *digitisation* processes and workflows, digital *restoration and preservation* of film and video material, and digital memory management and exploitation.

Our target is to have, within the next 10 years, a *stable distributed repository* of Europe's digital cultural content as well as *assured protection from loss.* And for *digitisation* we hope to see within the next 5 years systems that are both automated and considerably less expensive than those used today.

Conclusions

Let me try to conclude here by saying that technologies are now appearing that will provide citizens and professionals anytime, anywhere access to information. Provided the information is available in a digital form, there are now an almost infinite number of ways of delivering it to an individual. Cultural actors are already challenged to manage an increasing variety of different content formats and contextual frameworks - but they will also be able to (and be expected to) provide a diversity of new services in the near future. In Europe there are world-class collections of cultural and scientific content and it is normal that we will continue to offer, at the European level, a place to tackle some of the major challenges facing our cultural communities.

We recognise that cultural actors are crucial in providing access to collections and in delivering integrated and meaningful access across distributed digital collections. They must manage an increasing variety of digital assets and to develop solutions for discovery, longevity, and interoperability. They will need to overcome diverse descriptive practices, and to increasingly address the needs of multiple audiences and applications. Users now believe everything is available on the web and are increasingly intolerant about delays, poor service, and unreliable information. There is a clear demand for new services to be created out of cultural resources – but it is also clear that these opportunities can no longer be developed in isolation. New types of partnerships and alliances will certainly be needed – with the private sector, with other content holders, and across different types of memory organisations.

I hope I have been clear in my message that funding opportunities will continue to exist, but they will be increasingly focused on well-defined problems where a European intervention is manifestly justified, can be efficiently implemented, and provides substantial measurable returns on the investment made. However in order to exploit these new opportunities the Europe's cultural communities will have to create a compelling European vision for themselves – and, if I may say so, the vision must be easy to understand by the European citizen. They must be seen to move rapidly to establish their leadership on key problem issues. And they will need to be much more vocal and militant about their vision for the future and the values they wish to protect in tomorrows society.