Enabling persistent and sustainable digital cultural heritage in Europe

1. The Netherlands questionnaire responses summary

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Abstract

Attention to and coordination of digital memory preservation must be raised by the policy-makers at all levels, by administrative and national authorities, by the cultural institutions, by the research community. A precise list of priorities addressed to policy-makers is provided as conclusion of this paper.
The Netherlands Presidency has given a strong impulse to the development of a coordination framework introducing the vision of a 'European Continuum of Digital Heritage' that could be accessed any time from any place by all European citizens.
In particular, the Netherlands Presidency is driving the National Representatives Group NRG towards definition of the successor of the Lund Action Plan, that will be more complete, built on past experience and results, including not only the digitisation issue but also the preservation or persistency of digital memory.
In the coordination framework, the Spanish Presidency started the initiative with the "Council Resolution on preserving tomorrow's memory - preserving digital content for future generations". Following Presidencies carried on, up to the Italian Presidency that organised an important meeting in October 2003. As a follow-up of that conference an expert workgroup was established and it approved the "Firenze agenda", a document with some preliminary actions that the workgroup set up as priorities for its activity. After one year, in a perfect 'rolling agenda approach', the Netherlands Presidency presents the progress of the activity.
The "Firenze agenda" workgroup, mainly thanks to the continuum support offered by the Istituto Centrale per il Catalogo Unico - ICCU, has improved the community awareness, consensus and participation, some significant papers have been produced and are available on the web site of the group.
Finally, through the endorsement by the NRG and the initiative of the Netherlands Presidency, an initial political visibility has been obtained.
A detailed position paper, by Hans Hofman on behalf of the Netherlands Presidency, draws the current scenario worldwide and future possible strategies through identification of priorities and recommendations at the European level.
The Netherlands questionnaire responses summary is a synthetic survey about the main initiatives on-going across Europe. It identifies issues to be tackled by Member States collaboratively, it reveals main needs and gaps in funding, organisational structures, responsibilities, legal issues, pointed out by the experts from a variety of Member States. Finally, a precise list of priorities that is summarising all the other points, represents an invitation of the expert workgroup addressed to the policy-makers at national and European level for some actions and responsibilities to be taken urgently.

Introduction

In accordance with the *e*Europe 2002 action plan, the EC and the Member States have started establishing some coordination mechanisms for digitisation policies and programmes across Europe on the field of cultural and scientific contents and applications. The initiative started in April 2001 in Lund, under the coordination of the EC, with the Lund Principles and the Lund Action Plan for the implementation of these principles, which are focused on processes of digitisation and accessibility to the digital cultural and scientific content across Europe.
(www.cordis.lu/ist/directorate_e/digicult/eeurope.htm).
The National Representatives Group – NRG is composed of representatives officially nominated by the Member States' authorities, and was set up during the Belgian Presidency in 2001 as 'guardians of the Lund Principles'. The NRG is an independent group established on a volunteer basis by Member State representatives. It is co-chaired by the EU Presidency in turn and the EC DG-INFSO (www.minervaeurope.org/stuctures/nrg.htm).
Moreover, the MINERVA network provides the practical coordination for the plenary NRG meetings every 6 months and the support for the expert workgroups. MINERVA (MInisterial NEtwoRk for Valorising Activities in digitisation) is a network mainly of Ministries of Culture in Europe, and its activity is focused on the areas and objectives described in the Lund Action Plan, and aims to create a European infrastructure to support 'digitisation of cultural and scientific contents'. As the efforts of NRG and the implementation of the Lund Principles & Action Plan depend mainly on the active role of the chair of the EU Presidency in turn, the new approach of the "rolling agenda", thanks to which Presidencies in turn work collaboratively, has been successfully adopted, implementing de facto a sort of 'hand-shake' between following Presidencies. This was due to the need to coordinate ambitious objectives which inevitably requires sustained efforts

over a lengthy period of time. The NRG produces annually a report on progress of activity "Coordinating digitisation in Europe", describing the European framework and the national scenarios, the main initiatives and good practices.
(The last issue from December 2004 is freely available on the MINERVA web site: www.minervaeurope.org/publications/globalreport/globalrep2003.htm).

The Lund Principles & Action Plan address the problems of digitisation and accessibility but not the problems of digital content preservation. As a result, new parallel actions were undertaken - also in frames of the "rolling agenda". The "Council Resolution on preserving tomorrow's memory - preserving digital content for future generations" (2002/C 162/02) was issued during the Spanish Presidency (June 2002).
In response to that resolution, the Italian Presidency organized a conference on "Future of digital memory" in October 2003, and an experts' workgroup was proposed to check the state-of-art and to plan development as needed to implement the resolution principles. The workgroup has been led by the ERPANET www.erpanet.org/ and MINERVA www.minervaeurope.org projects, under the chair of the EC and the Istituto Centrale per il Catalogo Unico (ICCU) www.iccu.sbn.it/ on behalf of the Italian Presidency.
The workgroup set up 3 main goals:

- draw a state-of-art of on-going initiatives and exchange of good practice;
- draft a priorities' agenda as a starting point to produce an action plan accepted by Member States;
- define the basis for building a European network and developing national initiatives.

The first activity of the workgroup was the start-up of a cooperative process to define priorities and mechanisms to improve coordination and effectiveness of national and sectoral initiatives on digital preservation across Europe. This work was summarised in the "Firenze agenda" (www.erpanet.org/www/workgroup/main.htm) and successfully presented at the Conference in Florence in October 2003. The agenda identifies three main Action areas:

1. create awareness & cooperation mechanisms;
2. exchange good practice & develop a common point of view;
3. long-term policies and strategies.

At the same conference, two interesting studies were presented under the auspices of ICCU: one on emergencies for digital memory, and one on the current legal situation in this field across Europe. www.iccu.sbn.it/conserdigit.html

The "Firenze agenda" workgroup was also embraced by the national representatives of 27 countries (Member States, Newly Accession States, Russia, Israel) at the 5th NRG meeting in Parma November 2003. The NRG has endorsed this workgroup activity as complementary with the digitisation issue, promising support both in terms of experts' participation and as far as network infrastructure and progress promotion is concerned. (www.minervaeurope.org/structure/nrg/documents/parma031119.htm).

The "Firenze agenda" workgroup has continued the activity in order to foster cooperation at European level, to reinforce awareness and consensus on the initiative. The progress was made, under the chair of the Istituto Centrale per il Catalogo Unico on behalf of the Italian government, not only in terms of coordination of the experts workgroup up to the Netherlands Presidency as agreed in Firenze, but also in carrying on the two studies: the one on emergencies for digital memory with other significant cases, and the one on the current legal situation in this field across Europe that sets up more in detail the situation in five EU countries.
(www.iccu.sbn.it/conserdigit.html).

Actions under the Netherlands presidency 2004

The Netherlands Presidency in cooperation with the EC and the NRG has proposed new actions and organisational strategies for digital cultural heritage in Europe (as a follow up for the Lund Action Plan at the end of 2005). The Netherlands have already presented a position paper during the Italian Presidency on the creation of a common Digital Area for European Cultural Heritage. Part of this vision is the subject of persistence: without assuring the life-span of cultural heritage resources, the continuity and robustness of our digital cultural memory will be at risk, and the reliability of digital knowledge infrastructures will be undermined. Therefore, the Netherlands Presidency in close cooperation with the "Firenze agenda" workgroup worked on an overview of the most recent developments and EC-funded projects in relation to digital preservation, in order to identify their potential contribution to the vision and development of a Digital Area for European Cultural Heritage.
Focus points of this particular initiative are:

- maintenance and preservation of the digital collections
- persistence of access and services

Under the Netherlands Presidency the opportunities, issues, and potential impediments were analysed that

may support or obstruct the development of the idea of the European Cultural Digital Area. The analysis will help as well in building the above mentioned actions and strategies on European level and to identify who should be responsible for what activities. The analysis outcomes will be used as input for preservation related issues in the new action plan for the coordination of digitisation in Europe. This action plan, with participation of all the Member States through the NRG, will be prepared by The Netherlands, Luxembourg and United Kingdom Presidencies and implemented by the end of 2005.
The actions undertaken under the Netherlands Presidency contain:

1. a qualitative analysis based on responses to a detailed questionnaire provided by the experts of the "Firenze agenda" workgroup from Austria, Finland, Germany, Italy, Poland, Portugal, Russia, Spain, Sweden, and The United Kingdom and comments from Belgium, Denmark, and The Netherlands;
2. a position paper based on desk research.

The qualitative analysis has investigated four main issues. Firstly it asks to describe the main on-going initiatives around Europe, both from the maintenance and preservation of the content point of view and from the persistence of access and services one. Then it moves to the issues that are to be tackled by Member States collaboratively. The experts were supposed to elaborate on funding, organisational structures, responsibilities division and legal issues that may be the challenges to be taken together by the Member States. What is more, the questionnaire includes the question on the priorities that should be addressed for these issues. The last part of questions was asked to gather the observations on the needs, gaps and lacking incentives on EU, national, governmental or sectoral level that would efficiently foster the creation and implementation of digital preservation policies.
The position paper, prepared by Hans Hofman on behalf of the Netherlands Presidency, is based on desk research and its own analysis of the responses to the questionnaire, it presents an overview of the developments so far, the current situation and some recommendations with respect to digital preservation or persistence of digital information resources. During the last decade, many initiatives and projects in this field have been carried out and are still being conducted at the moment, funded at national and European level. The results are mostly reports or guidelines, sometimes tools or prototypes. These projects were and are based upon action lines defined by the EC with the goal to stimulate thought and to promote experiences with permanent access to digital information, application of new technologies etc.
A certain level of maturity has already been reached. The report rethinks the objectives and offers an idea of the future.
The full report of the survey will be presented during the European conference "Towards a continuum of digital heritage - Strategies for a European area of digital cultural resources" in The Hague on 15 - 16 September 2004 (http://eu2004.digitaliseringerfgoed.nl/).

The Netherlands questionnaire responses summary

1. *Main initiatives on-going*

The current scenario in Europe does not abound in initiatives in the field of digital memory preservation, but the most worrying aspect is the lack of attention paid to this issue by the policy-makers and by the responsible national and sectoral bodies. Only the United Kingdom has set up a national structure, the DPC, specifically devoted to the problem of digital memory preservation. Most of the Member States have just started thinking about that issue and defining some responsibilities. The New Member States of the Union are often at the initial stage of the digitisation process, even if they start understanding the importance of making the right choices from the beginning of the activity both for digitised and born-digital objects. However, it is quite common in other countries that the same national bodies or institutions take care of all the aspects of the digital world, like digitisation, metadata, users' accessibility, copyright protection, digital content preservation. The digitisation issue is of course much more mature than the digital preservation one in all countries.
The EC-funded projects in some ways related to this issue like ERPANET, DigiCULT, PRESTO, ECHO, MINERVA, the eContent reUSE and the FP6 PRESTOSPACE, DELOS, play a key role and constitute the main opportunity both for technology development and for sharing expertise among Member States. In most of the countries the additional funding coming from the EC is the only way to establish a framework for a pan-European cooperation, in particular in the field of cultural heritage.
The International Internet Preservation Consortium – IIPC (http://netpreserve.org) is a good practice example, where some national libraries with common objectives and work plan on web archiving and long-term accessibility of trusted digital archives join investments and optimise efforts.
The UNESCO Charter on the Preservation of the Digital Heritage (http://unesdoc.unesco.org/images/0013/001311/131178e.pdf) is an important document that sets out some international principles and objectives adoptable by responsible authorities worldwide. UNESCO representative has joined from the very beginning the "Firenze agenda" initiative in order

to establish a fruitful cooperation for maximisation of the impact and consensus building within the international community. The Russian Committee of the UNESCO Programme "Information for All" has been very active in supporting and promoting discussion about the Charter within national institutions and professional communities (www.ifap.ru). As a consequence, an Interdepartmental Council of experts for preservation of the digital heritage was established.
In the United Kingdom the Digital Preservation Coalition - DPC (www.dpconline.org) is a coalition of mainly British organisations which recognise the need to wok jointly and to share information and experience in order to solve the problems posed by digital preservation. The DPC works to promote and encourage recognition of the importance of information lifecycle management for those who develop and store digital material. It is mainly concerned with maintenance and preservation of born–digital content but its members from both public and commercial sector are engaged also in digitisation and accessibility projects. The DPC (with strong participation of British Library, other national libraries, national archives, BBC, universities) has undertaken many projects both with national and international partners, for example on hybrid archives, selective web archiving, e-prints and in general on systems and processes of effective preservation. An initial three year project to develop a national Digital Curation Centre (DCC) was also undertaken as a key aim of the JISC *Continuing Access and Digital Preservation Strategy 2002-05*. The DCC will focus on research in data curation, file format information, tools, test beds and certification and advisory services.
Another cross-sectoral organisation - WG EUBAM (www.eubam.de) - works across the federal states in Germany for the institutionalisation of coordination of national efforts regarding a wide spectrum of activities like digitisation of content, metadata, copyright, preservation of and access to digital cultural heritage. A development of this kind is the 3-year project NESTOR (www.langzeitarchivierung.de) funded by the German Federal Ministry of Education and Research to build a network of expertise in long-term preservation of digital data through enforcing communication and collaboration and to enhance awareness among institutions, policy makers and individuals. Other valuable initiatives were undertaken by Archives School of Marburg, German Federal Archives, German National Library, Bavarian State Library and Max-Planck Institute that lead EC-funded project ECHO.
In Italy digitisation policies are mostly oriented to the preservation of traditional cultural objects employing virtual access. The digital preservation issue and policy makers' awareness about it, are absolutely not mature (expect for the ICCU pioneer initiative), even if the Italian government has just started seriously paying attention to the problem. In the national context some initiatives are visible like the Servizio Bibliotecario Nazionale SBN (www.sbn.it) together with the Biblioteca Digitale Italiana BDI (www.iccu.sbn.it/bdi.html), as well as with the National Archive System, especially for the maintenance and preservation of the content. In terms of access and services, the SBN catalogue has recently started a section about digital content. It is also worth to mention the MAG Committee (www.icccu.sbn.it/Eschemag.it) that is working on Digital Objects Management Metadata. The MINERVA project, even if it is focused on digitisation, has offered its network and infrastructure to collect data and to involve experts nominated by the NRG. Moreover a special section about the "Firenze agenda" has been included in the 2nd NRG progress report publication (www.minervaeurope.org/publications/globalreport/globalrep2003.htm).
A specific agreement has been established with the University of Urbino, as an ERPANET partner, and the ICCU, to investigate further the digital preservation issues and to create qualified content both for the Italian institutions and for ERPANET users and environment. Reports on national policies (Italian, French, German and UK) have been prepared (and will be early published on ICCU and on ERPANET website), while the publication of the Florence conference printings will be ready in October.
Portugal National Library (www.bn.pt) is committed with its initiative for the National Digital Library (http://bnd.bn.pt) both for digitisation and preservation of resources. It intends to promote and to disseminate the results of its actions as examples of good practice for other organisations in the country. Moreover it plans to propose its future storage service as a national deposit for all kind of digital content, offering also a persistent identification service. In order to improve the accessibility, PORBASE - the national union for bibliographic database - was created to offer mainly the service for resource discovery for digital resources (up to now only for digitised ones but the service for born-digital is under analysis).
Also National Library of Spain is in charge of digitisation to safeguard the original content both paper and audio-visual one. A systematic and extensive microfilming programme has been developed in order to preserve contents in long term. Microfilm physical support has been chosen due to the risk of obsolescence and fragility of digital information. What is interesting, priorities and selection criteria for digitisation are based on users' demand to avoid the material use of original works. For born-digital material, like e-publishing a new approach is under study, although a national program has not been launched yet. (www.red.es).
In Sweden the National Archives recently started a project on long-term preservation (LDB project).

The scope of the project is not only to understand how to automatically transfer information from a governmental agencies to the National Archives (maintaining the same accessibility conditions), but also to further establish a centre of competence in this field. Poland, however still on the stage of initial digitisation, searches already to elaborate the problems of maintenance and preservation of digital content.
The institutions that should be mentioned are mainly the libraries: Polish Internet Library (www.pbi.edu.pl) – funded by the state funds, National Library – digitising own resources, regional digital libraries plus the archives (State Archives), concentrating on publishing the selected content, cooperating with the NASK (National Academic Internet Provider) in order to make their digitised resources available to the public.
A recent Finnish activity is so-called SHAKE project, which focuses on the long-term preservation of material produced by records management systems. Another national initiative is the Finnish Archival Database – VAKKA (www.narc.fi/atengl.html). The chosen data module for the archive is based on a Finnish adaptation of international archival description and inventory standards ISAA (G) and ISAAR (CPF).
The National Library of the Netherlands (the Koninklijke Biliotheek - KB) for over 10 years has been successfully developing policy and practice for digital preservation, involving the IT sector in research and development. Main achievements are: a substantial contribution to the content of the international archiving standard OAIS and promoting its use, the endorsement of the NEDLIB approach and results by CENL (Conference of European National Librarians) and CDNL (Conference of Directors of National Libraries), the first successful application in practice of the OAIS standard and the NEDLIB approach and the creation of worldwide the first operational electronic depository. The unique achievements are widely acknowledged by international scientific publishers, several of them who have signed archiving agreements with the national library of the Netherlands to archive their e-publications and guarantee permanent availability. In November, the KB is organising the EU Presidency conference on digital preservation of the 'records of science'.
At the moment there is no national structure, nor a national policy in Russia that would take a responsibility for the preservation of the digital cultural and scientific heritage, thought the problem has been widely discussed inside the professional communities. There are some effective institutional activities but the level of coordination and administration of the efforts (including recommendations, guidelines, standards, etc.) is not sufficient. In the field of the registration and inventory of the information resources should be mentioned the Technical Centre "Informregistr" (under the Ministry of Information Technologies and Communications - www.inforeg.ru) and the Federal Repository for Russian electronic publications.
The institutions preserving cultural and scientific heritage in Russia are mainly concerned with off-line resources, also because Russia is a country with low Internet penetration (no more then 10%) and for that reason the off-line resources are more important and will be important also in the future. The two National libraries (the Russian State Library, Moscow and the Russian National Library, Saint-Petersburg - www.rsl.ru) understand their mission, are active in collection and preservation of digital heritage and design regulations but no state body (neither a library nor a museum) but only some business and public institutions collect and preserve media art.
Currently, there are no nationally funded projects for digital preservation in Austria. Awareness of its importance still needs to be raised among governmental bodies' and the funding agencies' stakeholders. The Austrian National Library realises its responsibility for the long term preservation of digital content and aims to play a leading role in this field. The library set up a digital preservation department in 2004, which is responsible for installing a trusted digital repository, for coordinating the digital preservation issues of the library's departments and for cooperating with other institutions, also international ones. The Austrian National Library the German National Library (Die Deutsche Bibliothek), and the Swiss National Library set up a joint trilateral digital preservation working group (D-A-CH) to share effort, expertise and experience in digital preservation and to develop joint policies and standards. For the implementation of the Lund principles in Austria a new service of The Austrian Digital Heritage Initiative (www.digital-heritage.at/) has been launched in 2003, linked to the eFit Austria Programme (Federal Ministry for Education, Science and Culture) that acts as the national reference point on Austrian digitisation policies and initiatives.
In Flanders (Region and part of Belgium as a federal state: www.flanders.be) the Flemish Minister of Culture (www.wvc.vlaanderen.be/cultuurdigitaal) ordered a broad strategic research (about forty experts collaborate) on digital cultural heritage with the aim to define a long term global policy and strategic plan for digital heritage in Flanders in the context of e-culture, including the issue of digital preservation/sustainability. At the moment, several projects regarding digital cultural heritage are being conducted in Flanders, but there is at this date no main global national initiative on the level of the Flemish Community regarding digital preservation. One of the most prominent best practices was the DAVID project (www.antwerpen.be/david/website/eng/index2.htm) conducted by the City Archive of Antwerp with the support of the Flemish Government, and which

has also an e-government component.
Since 2001, the Danish Minister of Culture has prepared a report (www.kum.dk/sw5937.asp) on the state of preservation of Danish Cultural Heritage, suggesting alternative strategies for preservation of both physical and digital cultural heritage.
On the preservation of digital memory, the report recommends a centralised harvesting of Internet-based cultural heritage and points to the importance of registering the necessary metadata to enable searches in collected materials. A number of specific recommendations are given with respect to methodology, priorities, policy and delegation and guidelines for accessibility. Additionally, the Ministry of Culture has just initiated a process calling for IT sector strategies for its institutions. Working groups, headed by the ministry's Chief Executive Forum with participation from the Ministry agencies and educational institutions, will produce the actual strategies also for preservation.

2. *Issues to be tackled by Member States collaboratively*

Funding
The Member States have responsibility for supporting digital memory preservation through national initiatives and programmes, through pilot projects and demonstrators, through training programmes.
The EC should fund European networks for cooperation and interlinking of the levels of national institutions.
It is vital that the importance of digital preservation is fully understood on EC level and, as a consequence, important digital preservation projects are correctly supported. A funding programme for research and demonstration, with particular attention to the born-digital content, should be co-supported by the Member States and the EC in order to assure international cooperation across the Union.
Digitisation funding is normally not related to the yearly budget of cultural institutions, so digital archives, after being created, are under risk of being lost for the lack of maintenance or technology migration. Costs for digital preservation must absolutely be considered as "running costs" in the balance of the content-holders institutions.
There is a need of long-term, sustainable and specific funding initiative that is hypothecated so that the digital preservation projects do not have to compete with the projects of other kinds. In particular, at national level, investments and efforts for digital cultural memory should be in strict relation and synergy with the e-government plan. Cultural institutions should cooperate through international consortia in order to optimize investments and reduce costs.

Organisational structures
Digital era imposes rethinking of the traditional approaches and structures. New challenges can be faced only by traditional institutions in cooperation with some new national organisations/institutions specialised in digital sector.
Coordination is the first urgency at all the levels.
A national coordinating and administrative body is absolutely needed for an action involving all the cultural actors, the governmental authorities, the communication agencies and the IT industry.
They can be built on the example of British DPC that brings together several sectors like cultural heritage, education, science and research, commercial actors - publishers, computer or software industries or taking from the German experience of EUBAM or from the DLM initiative. These national bodies (or coalitions) and the competence centres can be linked with the same bodies in other countries in an Europe-wide network in order to share experience, to get a clear overview of what is on-going and to raise the profile of digital preservation as a political and commercial issue.
The MINERVA network model can be considered as a good practice.
A Network of Excellence (NoE) in the FP6 sounds good for implementing a Digital Area for European Culture Heritage, in particular to coordinate research, to disseminate results, to train staff. For basic research, experiments and test beds the mechanism should have the form of Integrated Projects and for developing specific tools and innovative applications the form of focused STREPs.
Cultural institutions should cooperate through international-consortia in order to set up common digital assets like services and infrastructures (European common catalogue service for libraries). The national competence centres should work together possibly co-supported by all Member States in an European network with a common agenda, experts mobility and recommendations production, that is absolutely in line with the ERA (European Research Area) vision within the FP6.

Responsibilities
No division of responsibility is foreseen. Preservation of collective memory is a collective responsibility of our society, nobody should be excluded. It is vital to share responsibilities among several components of each country: governmental authorities, cultural institutions, research departments, competence centres, communication agencies, commercial and technological sector. However the strong leading role of traditional cultural institutions should be maintained. It is Member States responsibility to create new entities as a result of the new ways of cooperation at national and European level. On the other hand, on national level the involvement of small local or regional bodies needs to be surveyed and guaranteed. Responsibilities might, though, be distinguished as functions, e.g. planning and coordination, research, dissemination, training,

evaluation of impact. A national coordinating body might be responsible for policies orientation and selection of proposal for funding, for evaluation and monitoring, for training and dissemination of results. The national network should involve for example governmental and legal bodies, cultural actors, research centres, professional associations, e-government sector. A European Agency, supported by the EC, for digital preservation might be useful to coordinate national efforts and to create a network of national institutions and international bodies involved. EU should be still responsible for funding the important projects and for general coordination and cooperation. The EC should fund a network of national competence centres.

Legal issues
The main legal sectors that require improvement and adaptation to the digital context but in line with traditional laws are:

- Legal deposit
- Archival and records management / e-government legislation
- Copyright and rights management
- Trusted digital depositories
- Privacy and transparency of archives
- Freedom of information.

The issue of copyright definition and protection for multimedia objects on Internet might be a problem. First of all, from a technology point of view, the stakeholders must be convinced of security and rights protection availability for the content published on Internet. On the other hand a too restrictive copyright legislation might be an obstacle for the accessibility of cultural content, so the right balance between the rights protection and freedom of information access must be obtained.
Besides those common problems there is a diversity of issues that change from country to country. New Member States like Poland struggle with fragmentation of legislation and legal issues among Ministries. In Sweden the legal tradition obliges the information delivered to the National Archives to be accessed and presented in the same way as how it was at the governmental agency, which might be very complex for digital content. Obviously every Member State should create its own legal context, accordingly to its particular situation and characteristic of its legal tradition but also taking in consideration the European context. In this specific sector the effort to create a common knowledge on the legislation state-of-art at European and at national level could have a positive impact for further developments.
However, it seems necessary that the EC produces a Directive to identify the basic requirements for the digital preservation at least for the main products of the public administration (as done for the electronic signature) and related guidelines.

3. *Needs and gaps*

There is a visible need of new funding mechanism – preferably through strong funding support provided by both EC and Member States, for research and demonstrative projects in the field of digital preservation. The current funding model does not suit an approach to create new stable European institutions on digital memory preservation. The funding for enduring digital memory, especially on the part of the Member States, cannot have the form of singular sums for single projects, but must be treated as a fix issue of work agenda and so, as a running cost, guaranteeing this way a sustainability for digital preservation in long term. When it comes to EC funding, it also needs to be sustainable and hypothecated so that the digital preservation projects do not have to compete with no-preservation projects. Additionally, NAS countries may need also the structural funds to help the transition from analogue resources into digital era.
We can also observe a vital necessity of coordination and improved communication and dissemination of the results. National institutions should exchange experience and develop research programmes in cooperation with other countries to avoid duplication of investments. This kind of European Digital Cultural Area can be created if the national institutions are involved in a new European structure, preferably a new network of excellence funded by EC and coordinated by a special European Agency or Committee for digital preservation. A new structure or network can be based on the national agencies for digital preservation or on the national consortia like DPC, this way joining the members from different sectors. That would be especially welcomed if it promoted (through the agency as an intergovernmental body) the lacking stronger links and cooperation between commercial sector and research departments, or professional associations like IFLA, ICA, EBLIDA. National consortia or agencies, coordinated thanks to the network of excellence and European Agency, can act as national cross-sectoral and multi-level focal/contact points collecting and distributing results and best practice, interlinking sectors, gaining overview on general tendencies and problems (providing also this way a feedback for institutions and the network at European level). This system of national agencies interconnected through a network of excellence (European gateways) should also recommend guidelines to the national governments, encourage them to produce an inventory of the running projects, to hold seminars and training events, as there is a crucial necessity to promote the dissemination of results and technical guidelines and standards for digital preservation. That can be done

in cooperation with other collaborative networks like NRG, which can also exchange information on on-going activities and appropriately channel them.
On the national level, Member States need to be encouraged to overcome the gap between the central government and regional competencies, as well as the use of the existing resources and institutions. It may be observed that, first of all, there are few stable national institutions and that they are not sufficiently engaging regional, local bodies in their policies and programmes. It is obvious that coordination in Europe demands firstly coordination in each single country through all levels but also across sectors. As already mentioned also private sector needs to be involved to provide practical support and long term sustainability of developments, e.g. "cultural tourism" may be an opportunity for the cultural heritage sector.
To fulfil above mentioned needs the digital preservation issue should become a central and permanent issue in the agendas of Member States and EC. The political and financial profile and priority of digital preservation must be raised. It must be ensured that all the responsible bodies fully understand the importance of that issue and that they emphasise the preservation and management of digital content and not solely its creation. Furthermore, digital preservation needs to change into practical profession from a research subject. More meetings like in Lund may be organised as well as informative seminars for Member States Ministries about digitisation and digital preservation.
The EC support for the MINERVA network should continue. At the same time, as a natural consequence of the efforts done in the last three years, projects like ERPANET should be analysed and supported to ensure continuity in this sector.
From the international point of view, we may also observe that European cultural heritage sector has a very important role compared to USA one. In terms of digital preservation Europe, even if many National Archives have already good experience with born-digital content (for example the Nordic countries and The United Kingdom), most of them are only starting with digitised material, while NARA administration in USA has already much more experience with electronic records that in a large part represent born-digital and deep-web content. That is why policies for born-digital should be stimulated to fill this gap. Maybe it would be worth to look for an international exchange in this field, too.
There are also more specific, technical needs like training of the cultural heritage personnel, librarians, etc., models for costs of digital preservation, methods for preserving dynamic web, setting standards for technology migration, clearer distinction between publications and web sites, for automatic validation of information packages, automatic file format validation, automatic metadata extraction, automatic file format migration etc. There is a lack of experience in managing over timer critical masses of digital collections, in particular for the reason of costs and related policies.

4. *Priorities for policy-makers*

a. *Stakeholders' and policy makers' awareness and responsibilities.* The political and financial profile and the priority of digital preservation in the national and European agendas must be raised. It needs to become a permanent point of work plans at all levels. Basic responsibilities must be assigned clearly to national and sectoral bodies.
b. *From theory to practice.* There is a lack of practical results for implementing new e-services for the citizen. We must move away from theoretical research to practical solutions. The research activity should be further implemented.
c. *European coordination.* EC is asked to support a cooperation infrastructure among Member States, eventually with specific funding, in order to develop strategic alliances to avoid duplication of efforts, to share results and experience and knowledge, to promote standards and good practice. Three tools appear to be suitable for implementation of such coordination: a Directive with the basic requirements; an European Agency or Committee acting as a gateway across Europe; a Network of Excellence and the form of focused STREPs for developing specific tools and innovative applications.
d. *Funding research for digital preservation.* The current funding model does not suit the needs of integrating research and activities on digital memory preservation. EC and Member States should develop specific funding programmes for digital memory preservation excluding the competition with other projects from other fields.
e. *Running costs.* Preservation costs must be considered as a permanent "running cost" in the yearly balance of the cultural institutions. Research activities for definition of a sustainable economic model for digital libraries should be supported.
f. *National Agencies.* Member States should identify national institutions that coordinate digital memory management, for example by the production of organisational recommendations and technical guidelines. These national institutions must link, with a collective responsibility, different kinds of actors from cultural sector, from research centres, from professional associations, from industry, from e-government. Coordination in Europe demands first coordination in each single country.
g. *International Consortia.* National institutions and research centres should work collaboratively through inter-sectoral consortia, both national and international, for example like the IIPC, for costs reduction and joint investments.

h. *Commercial sector.* Consortia have to involve private and commercial sector in particular the ICT and electronic publishing industry, as well as the e-learning programmes.
i. *Training.* It is vital to invest in training of the cultural heritage personnel, in e-learning both for users and professionals. The cooperation between the projects that are developing the technologies and e-learning programmes should be reinforced for faster and more effective knowledge transfer.
j. *Cooperation with e-government.* If governments do not understand the central importance of how to archive information produced in e-government solutions, most of this information will be lost in the future. (This point involves many issues of the funding-responsibility-legal parts of our survey).
k. *Legal issues.* The Member States have to define suitable law/rules for copyright management of digital objects and for deposit and permanent access of net published documents. The EC should produce a Directive and related guidelines to identify the basic requirements for the digital preservation, at least for the main products of the public administration.
l. *Economic sustainability.* It is worth to take advantage of commercial opportunities offered by digital resources in order to create new jobs, to increase competitiveness of European industry, to provide financial and economical sustainability of digital content, especially in sectors of electronic publishing and cultural tourism.
m. *Technology observatories.* Independent expert centres that would monitor the technology evolution are needed, in order to signalise the risks of possible obsolescence and the needs for migration of the currently used technologies and standards.
n. *Protection of fragile objects.* Born-digital contents like web, multimedia, electronic records are seriously under risk because they depend totally on the technology evolution. We have already lost plenty of music, film and audio/video archives due to obsolescence of technology.
o. *Topics for research.* Technology research should further focus on methods for automatic archiving, indexing and management of high volumes of dynamic digital objects, on automation of preservation tasks for born-digital objects.
p. *Common terminology and definitions.* A serious work for the definition and adoption of a common base as terminologies, definitions, metadata sets, thesaurus, have to be done in order to prepare the ground for integrated and multilingual services for EU-citizen.
q. *Online registers.* Creation of on-line registers or indexes of projects or digital collections would be very useful for monitoring developments, sharing experience and planning investments. The establishment of a European or global registry for file formats and of software archive would be highly practical.
r. *Social benefits.* The digital resources need to be used to promote and reinforce the concept of EU-citizen, to safeguard the Europe cultural diversity, to improve accessibility of culture for all the citizens, especially those elderly and disabled.

The Netherlands questionnaire

Questions to be answered by experts of the "Firenze agenda" workgroup (Version 22 March 2004)

The Netherlands EU-presidency in co-operation with the National Representatives Group for Lund is preparing new actions and organisational strategies for the digitisation of cultural heritage in Europe, as a follow up for the Lund Action Plan end 2005. Therefore, the Netherlands have already presented a position paper during the Italian Presidency on the creation of a common Digital Area for European Cultural Heritage. Part of this vision is the subject of persistence: without assuring the life-span of cultural heritage resources, the continuity and robustness of our digital cultural memory will be at risk, and the reliability of digital knowledge infrastructures will be undermined.
In co-operation with the Firenze Agenda working group, the Netherlands EU-presidency aims to create a better overview of the most recent developments and (EU) projects in order to identify their potential contribution to the vision and development of a Digital Area for European Cultural Heritage.
Focus points are:

- maintenance and preservation of the digital collections
- persistence of access and services

Based on the input of the Firenze Agenda working group we want to analyse the opportunities, issues, and potential impediments that may support or influence the development of the projected European Cultural Digital Area as well as that will help to build the above mentioned actions and strategies and to identify who should be responsible for what activities.

Therefore we would appreciate it if you could answer the following questions:

1. What are the main developments (please distinguish between national projects and European funded projects in which you or other institutions in your country are involved) in your country for
   - maintenance and preservation of the content:
   - persistence of access and services

2. What issues do you think raise from these developments that should be tackled by member states (and/or institutions) collaboratively?

funding
What funding mechanisms should be in place (how and where) to support better co-ordination?

organisational structure(s)
Could you elaborate on how current and future projects could and/or should support the transition to a co-ordinated effort;
What possible structure(s) could be feasible? What role for instance do you see for networks of excellence as exist now?

responsibilities
Could you elaborate on the division of responsibilities you think is necessary?

legal issues
Could you identify the legal issues that may support or could obstruct coordinated efforts?

3. What are the priorities in addressing the above issues and why?

4. What needs or gaps do you observe in EU context (and the above mentioned vision of a European Digital Cultural Area) with respect to digital preservation in general or more precisely to the maintenance and preservation of the content and the persistence of access and services?

5. What incentives are needed to make this work? (Please, describe the roles, functions and responsibilities and prioritise accordingly)
   - for national institutions
   - for national governments / member states
   - for intergovernmental bodies / structures
   - for the European Commission
   - else

6. What, in your opinion, needs to be done by the European Commission at the European level to encourage and support initiatives that will contribute to the development of the European Digital Cultural Area? Please elaborate.

With respect to
- co-ordination/ management
- funding
- support

2. Position paper

by Hans Hofman (Nationaal Archief, The Netherlands),
in co-operation with the "Firenze agenda" Workgroup

Introduction

The diversity of European cultures is most apparent in the area of cultural heritage and accumulated in many information resources. By bringing these sources together in a virtual environment their visibility, availability, and accessibility to a broad audience will be increased tremendously. It is therefore relevant to think about how to achieve an added value at a European level. Achieving that will have a significant impact on European co-operation within the domain of a digital cultural area by making actions more coherent, structured and visible.
It regards many different areas such as digitisation, contextualisation, creation of digital repositories and digital libraries and the development of a common cultural knowledge infrastructure.
This shared environment-to-be will allow easy and equal access to cultural heritage for all European citizens.
In this report, produced under the Netherlands 2004 Presidency of the EU, an overview will be given of the developments so far and the current situation with respect to digital preservation or persistence of digital information resources. During the last decade, many initiatives and projects in this field have been carried out and are still being conducted at the moment, funded at national and European level.
The results are mostly reports or guidelines, sometimes tools or prototypes. These projects were and are based upon action lines defined by the European Commission with the goal to stimulate thought and to promote experiences with permanent access to digital information, application of new technologies etc.
A certain level of maturity has already been reached. It is therefore opportune to rethink the objectives: where do we stand and where do we want to go, taking into account the long term sustainability of both the resources *and* the services.
By taking stock of what happened so far and analysing the current situation, it should be possible to define how to proceed, achieve and define targets regarding the long term preservation that will contribute to the common objective of a common digital cultural area or referring to the leitmotiv introduced by the Netherlands Presidency, a 'continuum of digital heritage' .
In the following paragraphs a discussion of persistence related issues will be undertaken to identify relevant activities and to put them into perspective.

A vision

In the Fall of 2003, the Dutch national representative for the "Lund Action Plan on Coordination of Digitisation Programmes and Policies" presented in Parma a vision on possible next steps after the Lund Action Plan[1]. The vision envisages a 'European Continuum of Digital Heritage' that can be accessed any time from any place by all European citizens. Existing barriers that we all know so perfectly well are relieved. Such a continuum should support the mobility of knowledge and information, the exchange of cultural ideas and traditions, and the visibility of the variety of European cultural traditions. The multidimensionality and variety of cultures within the EU will be brought together in the virtual space of the World Wide Web. It will open up new opportunities and new connections, and it will help a better understanding of each other. Although much work is done already, it will require a lot of effort and time to achieve the implementation of the interesting vision. How do existing initiatives fit into the big picture? What is needed to get a better co-ordination and who will be responsible for what? Many different aspects have to be taken into account in getting there, including

- persistence
- interoperability
- roles and responsibilities
- funding mechanisms
- standardisation.

It will be necessary to set priorities and ensure consistency between the activities undertaken under each of them. The results should not only be concepts, but also practical tools. Investments are only worthwhile if continuous availability of the digitised and digital-born resources within the continuum is guaranteed. However, the very nature of these resources is and will always be fragile and there are still no adequate strategies for their long term maintenance. Therefore one of the priorities has to be on persistence and sustainability. This interest area is also very dependent on international collaboration, because of the challenges to overcome. As stated also in the vision by the Dutch National Representative, the European level will be best suited to co-ordinate the efforts in this area. The interest in coherence and consistency is most significant there, but it can also promote and enhance the cross-domain and cross-organisational collaboration best. Important criteria for users, such as trust and reliability find their ultimate foundation in continuity and persistence. That should be shown not only in the availability of resources, but also in understandable and reliable access and search services. In the end, the European citizen should benefit from it. The persistence of cultural heritage as societal memory touches the identity of individuals, the member states as well as the European community as a whole.

Current situation

So far preservation or persistence has not been a really big issue in the co-ordination of digitisation activities in Europe. The Lund Principles on Coordination of Digitisation programmes and Policies mention among many other issues the need "to increase awareness of long-term preservation issues" and the need for "guidelines for digital preservation and content longevity". The Lund Action Plan has ten objectives of which 4b ("Sustainable access to content") sets the objective: "ensure digitised cultural and scientific content is available over time". As such its focus is on analogue material and does not include the growing amount of digital-born resources. The MINERVA project supports the co-ordination efforts of Lund and helped to improve the digitisation process and the management of it, e.g. through benchmarking instruments and handbooks. Yet the approach regarding long term preservation has been fragmented, practically invisible, and primarily focussed on analogue resources. Under the Spanish EU Presidency in 2002, a Council Resolution[2] on "Preserving tomorrow's memory - preserving digital memory for future generations" also underlined the importance of preservation of digital-born assets and set out a number of measures for the Commission and Member States to investigate. Another example of attention that was given to the subject is the workshop on the preservation of digital memory held on 12 December 2002 in Copenhagen under the Danish Presidency. But like these two examples, most activities still have a rather incidental character.
A special position in all this is taken by the experts group that was established under the Italian EU Presidency during the conference 'The Future of Digital Memory and Cultural Heritage' in Florence in autumn 2003. This initiative clusters knowledge and projects around several long term preservation objectives laid down in the so-called Firenze Agenda. It is a further development based upon the Council Resolution of 25 June 2002. The Firenze Agenda objectives include raising awareness, establishing co-operation, exchanging experiences and best practices, developing a research agenda and training programmes, and developing long-term preservation policies. The projects involved in the agenda include ERPANET, MINERVA, PRESTOSPACE, DigiCULT, and DELOS. It also makes clear connection to UNESCO work on digital preservation.
The Firenze Agenda was submitted for endorsement in Parma on 19 November 2003 to the official

meeting of the National Representatives Group (NRG) for Lund, as an extension of the current Lund action plan, and in order to make a visible and practical claim with respect to digital preservation. The NRG then established as one of its five priorities for the second semester 2003 to "carry on the activity on preservation of digital memory". On the same day the NRG adopted the "Charter of Parma", a strategic document promoting all the NRG activities, but this document does not address the issue of digital preservation.
So the interest in the issue does exist, but has not yet had a significant practical impact, such as on the proposals for projects or activities related to digital objects and services. So far, work at the European level on digital preservation is mainly taking place in the area of building or increasing awareness and of supporting exchange of information and experiences, like ERPANET.
Most European projects are rather limited in scope and scale, though useful, like PRESTOSPACE (focusing on the preservation of digital audio-visual contents). Many other projects are not specifically focusing on digital preservation but may include it (such as the research being done in the field of digital libraries (DELOS2)), or are monitoring the latest developments in technologies including preservation (DigiCULT).
The DLM-Forum (a European Economic Interest Group) is working on what is called a new version of the 'black book', describing the situation in the archives of the member states and including a chapter addressing long term preservation of electronic archives, also with respect to archives in the enlarged European Union. Its recommendations will be translated in a list of concrete actions, one of them addressing digital signatures and indicating that standards and specifications will be developed. An operational model, however, still has to be defined, and will be limited to archives, archival records and government administrations.
The BRICKS-project takes a much broader view. It covers the sectors of libraries, museums and archives (although it does not seem to have a strong commitment from these sectors) and therefore surely may give an impulse to the realisation of the "European Continuum of Digital Heritage". Sustainability is one of its main areas of work, however this is interpreted mostly as the "management of the practical outcomes of the project in arder to make it a self-sustaining, profitable European asset". More is needed for the actual issue of digital preservation and persistence. Nevertheless, the project is positioned by the European Commission as an important project in this area.
The Sixth Framework (2002-2006) includes six research areas in the cultural heritage domain, of which "Digital Libraries" may be best serving projects enabling the "European Continuum" leitmotiv. In general, however, digital preservation of cultural heritage is not identified as important separate issue in this European research framework.
In October 2003 the General Conference of UNESCO adopted the "Charter on the Preservation of the Digital Heritage". It includes sections on 'The digital heritage as a common heritage" and "Guarding against loss of heritage". The section called "Measures required" contains the following four very relevant articles:

- Developing strategies and policies: "The co-operation of holders of copyright and related rights, and other stakeholders, [...] will facilitate this".
- Selecting what should be kept: "Born digital materials should clearly be given priority. "
- Protecting the digital heritage: "Member states need appropriate legal and institutional frameworks [...]. Access [...] without causing prejudice to their normal exploitation. Legal and technical frameworks for authenticity."
- Preserving cultural heritage: "The digital heritage of all regions, countries and communities should be preserved and made accessible, so as to assure over lime representation of all peoples, nations, cultures and languages. "

In the final section on "Responsibilities" the Charter claims "it is necessary to reinforce international co-operation".

Next, or rather preliminary and parallel to the international and European level, much work on digital preservation is done at the national and at institutional level. At the national level, initiatives like the Digital Preservation Coalition (DPC), the Digital Curation Centre (DCC) in the United Kingdom and NESTOR in Germany are good examples of the fact that the issue of digital preservation is taken up seriously in these countries. Both DPC and NESTOR are network building initiatives, bringing together stakeholders and setting a framework for co-operation and exchange of information and experiences. The recently established DCC intends to support UK institutions to stare, manage and preserve digital data to ensure their enhancement and their continuing long-term use.
At the institutional level the Koninklijke Biblitoheek in the Netherlands with its "e-depot and several National Archives (e.g. in Denmark, Sweden, UK) have actually implemented initial versions of facilities that support longer term preservation. The recent Dutch "Testbed Digitale Bewaring", a joint venture of the Ministry of the Interior and the National Archives, conducted experiments to identify the best current options for maintaining records in a more persistent and usable way.
Research in the past has offered some important reference models that also support sustainability, such as the Open Archival Information System (OAIS),

or some possible approaches and practical guidelines from projects as CEDARS, but it is still a long way to really establishing an infrastructure that is persistent and includes both preservation and access to digital resources, either digitised or digital-born.
Software suppliers previde software applications and tools that only accommodate part of the requirements, if it is even clear yet what these requirements are in principal. There is for example a lack of standards, but at the same time there are too many. It is a widely accepted notion that persistence starts at the moment of creation of digital objects and even before in the design stage of the systems that enable it. That requires a kind of chain management of the digital objects from their creation to wherever they will be maintained. It means the perspectives will be no longer limited to the immediate interest of the responsible party (e.g. the publisher, the records creating organisation or the custodial body), but should be based upon a shared vision and broader interest. All key players in the chain are involved and should subscribe to the same objective that goes beyond there own direct interest. Such a change entails not only a new paradigm, but also takes a long time to implement and institutionalise. So, as a preliminary conclusion, the current situation still seems far from working towards a much desired shared European digital cultural area. If anything already exists, it is a patchwork of initiatives that may overlap, are not necessarily in line with or at best coincidentally complement each other. The existing networks are already of some use but have not yet reached all relevant parties such as private sector companies or certain management levels. Yet, they raise awareness of what is happening in different places and support the circulation of practical experiences and new insights. The community or communities involved are still rather small though and limited to direct interest parties: the convinced talking to the convinced. Expansion is needed to get the attention and the support of all levels of users and creators of digital information, decision makers and of funding agencies. Long term thinking is not a built in human characteristic and therefore inciting and suitable approaches will be needed to attract the necessary attention. Possible triggers may be awareness of the value of digital resources for society and economy and of the consequences and risks if they are lost because of negligence.
As indicated earlier, persistence is not limited to the cultural heritage sector. The cultural heritage characteristic is only one possible link in a whole chain of digital information. Thinking strategically about persistence will always need a broad perspective including connections with all different kind of domains. Libraries for instance are connected to and dependent on publishers, while archives are for an important part embedded in government practice. As a matter of fact, producers of digital information are more often outside then inside the cultural heritage domain. Even, most of the times they won't be aware that the digital things they produce could come to belong to the cultural heritage domain after a certain amount of time and therefore should be carefully kept after! This situation requires special attention to prevent loss of information and incompatibility when resources are crossing boundaries between domains. The emergence of electronic service delivery in and outside government agencies, publishing companies etc. through the World Wide Web entails even closer connections between producers and memory organisations. This growing interconnectivity means a considerable extension of the persistence issues involved, of the need to collaborate with other partners and even of the re-engineering of business processes. That certainly is a challenge, because in the past those aspects were always rather limited and much easier to control. Many organisations also may fear a loss of identity when aware of their incapability of controlling the whole information chain. Strategies are needed to influence (or to find common ground with) other organisations that may not have a similar direct interest in long term access and preservation. In the end this might even entail a re-arrangement of responsibilities.
In general, however, traditional structures and existing division of responsibilities are very persistent, thus a potential obstacle to new and innovative approaches in meeting the challenges facing us. Most co-ordinated work is still very much sector bound. Examples are The European Library (TEL) and DELOS. The activities initiated by the DLM Forum are very much from the archival perspective, i.e. the traditional mandate of preserving records appraised as having archival value. A possible example of crossing boundaries may be the fact that archives are trying to influence or to get grip on what is happening in the government organisations in order to ensure the survival of digital records for cultural heritage. That may turn out to be a rather difficult task. Unless there is some common interest in preserving their records, the primary interest in those organisations, however, will be with their immediate responsibilities. The main pillar for transfer of records therefore is still archival legislation.
A project like ERPANET and also the Firenze Agenda initiative more or less encompass scope beyond sectors. They bring together people from all interested different sectors (archives, museums, libraries, industry, consultancy, private companies).
Reactions from European experts in the field of preservation and persistence show that institutions and people still struggle with many preservation issues and lack a framework for positioning those in a useful approach. Based on the discussions in the ERPANET workshops and seminars the observation can be made that organisations need direction for implementing

adequate digital information and records management including preservation strategies. Digital preservation, unlike analogue information, has to be taken into account at the moment of developing information and records management policies and in designing supporting infrastructures and systems.
To enable exchange and cross-domain searching and use of information resources, focus on interoperability will be crucial. Interoperability in itself is very dependent on persistence. In cases where metadata formats or ontologies are not maintained and kept consistent through time, this will undermine the viability, quality and usability of the cultural area. Consequently not only a continuous management with a long term view on digital objects and services is needed, but also the underlying preservation actions in arder to keep the cultural heritage area vital and the resources available. These challenges of digital preservation and persistence are so huge and complicated that it is impossible for most organisations and countries to salve them on their own. Only very large organisations, such as national libraries, will be capable to work on approaches that are significant on much larger scale. In fact, most organisations and national situations require a concerted approach in combination with clear intermediate structures: at European level a co-ordinating framework must be developed and agreed upon, while the actual work on access and preservation must be done at the country and institutional level. Cross-sector and cross-border collaboration is hesitantly emerging, creating its own dynamics. The transition from rather closed and distinct communities with specific mandates, to open, connected and cross-sector interwoven communities is not easy. In the end it will be the ultimate stakeholder, the user, who is confronted with the results, and therefore has to be taken into account in this decision-making process as well as in the design and implementation of the envisioned digital cultural area.
A broad range of issues, not exclusive for or necessarily limited to persistence rise from this situation:

- How to avoid fragmentation without restricting flexibility of institutions/ allowing for own solutions?
- Different levels of expertise/conditions: how to align them?
- Collaboration. There are different sectors, how to bridge differences between them and even within sectors? Need to involve IT-industry or other private sectors with an interest in digital preservation (both as suppliers and as stakeholders). They should become active partners in doing research, setting standards, and developing tools.
- The need to understand the requirements of the users
- The need for cultural change within institutions.
- The need for (other) expertise and therefore of continuing training.
- Will there be a need for redefining roles (e.g. of national institutions)?
- Need for standards.
- Funding (more specifically how to organise it)

All this raises the question whether a more structured approach is desirable to focus the rather limited expertise in the area of preservation and curation in a more cost-effective way. Both at the international (UN ESCO) and the European level several resolutions were adopted upon and established indicating that preservation is an important issue, that it should help maintain our cultural heritage, so future generations will also be able to know and use it. There is however a big gap between those rather ephemeral though politically appealing statements and every day practice where institutions and projects are trying to achieve some concrete results. That gap has to be bridged, if we want to be successful in building a persistent memory that can be used throughout Europe and on an ongoing basis. A conclusion is that more focus and co-ordination are needed and that the scope has to be broadened to both digitised and digital-born resources.
How to achieve that?

Options for how to proceed

The previous sections show that persistence, including maintenance, preservation and curation, is not yet really integrated into all activities with respect to creating a new digital order, but is defined and seen mostly as a separate issue that is dealt with separately. The consequence of this way of thinking is not only that it will be considered as an issue only for the immediate interested parties, such as memory organisations, but more importantly in the end will be a liability or risk for the overall sustainability of access to digital resources and services. It is the responsibility of all direct in indirect stakeholders, national governments and inter-governmental cooperation, to prevent this from happening. It is required to make persistence an inextricable aspect of all developments and activities, either structural or on project basis, with respect to creating, managing and making available digital resources. Only then, there is a chance to establish a digital environment that proves not only to be reliable and successful for users, but also to be cost-effective and sustainable.
As indicated already the current Lund Action Plan does not really address preservation and persistence, nor does it include digital-born sources, an increasingly important area. A possible successor to the Lund Action Plan when the current one finishes in 2005 does need a higher level of ambition with a broader and more flexible scope. It should at least imply the inclusion of persistence as a natural aspect of anything that deals with digital resources and digitisation practice, even

when an analogue alternative will always be available. That also includes the services through which these resources will be made available, the knowledge needed to create and manage them, the infrastructure that supports access, exchange and maintenance, the metadata structures for retrievability, reliability, and usability, as well as the preservation and curation of analogue objects.
Other things to be supported by a future coordination initiative are the preparation and development of common preservation policies, fostering communication across Europe, promoting a European division of labour and expertise, coordination of project efforts, and organising funding as well as identifying sponsors or champions and include more effectively the private and commerciai sector.
The current situation with respect to managing digital objects and, as a consequence, the activities and expertise on digital preservation in each of the European countries is rather different. Some have just begun, while others have already gone a long way and built up substantial experience, both with respect to digitised and to digital-born sources. In some countries and organisations a core infrastructure may be available to manage, maintain and preserve both these kinds of digital objects; in others thinking about it still has to start. Some practical tools exist, e.g. to harvest resources or to store documents in a sustainable format and with their proper metadata, but for more are needed. Preferably such tools should be open source, so they will be easily available throughout Europe at affordable cost and without copyright restrictions.
What preliminary conclusions may be drawn from all this?

1. Persistence is still defined and seen too much as a separate issue, only of importance for certain institutions responsible for long term preservation. As a consequence it becomes a liability not only to initiatives aiming at building a European digital cultural memory, but also in general to any organisation that manages its intellectual capital and information assets in a digital formo

2. In addressing the issue of persistence the scope of activities should not be limited to digitising analogue objects, but should encompass all digital objects both digitised and digital-born.

3. Despite the resolutions and charters decided upon by the European Council of ministers, the General Assembly of UNESCO and the NRG, and despite the fact that they have raised a lot of awareness, the consequences have not yet been integrated or formulated into concrete action plans nor have they taken it beyond the level of a stand-alone topic. As long as the practical integration of persistence into our daily economic, social, cultural and policy issues is not achieved, it will be difficult to raise it and to make it politically appealing and interesting for funding.

4. The current situation shows that most of the initiatives are sector bound or focusing on a certain type of objects (e.g. audio or video files), on a temporary basis, or in an experimental phase. As a result, efforts are fragmented, their impact too limited and their final contribution to cost-effective solutions or approaches unclear. The challenge will be, and this is where the European added value comes in, how to build a criticai mass of convergent activities, and of collaborating institutions and people, in such way that it will become a self-sustainable mechanism or entity.

5. There is a great need for coordination, including preparation and development of common preservation policies, fostering communication across Europe, promoting a European division of labour and expertise, fusing of project efforts, organising funding as well as identifying sponsors or champions and include more effectively the private and commerciai sector.

6. There is also an ongoing need for more practical coordination with respect to the exchange of information and experiences, practical tools, practical 'how to'-guidelines, identifying and/or establishing common standards.

7. The interests and role of the user need to be clearly identified and defined, and should be included in any further action plan.

How to organise

If the above conclusions are shared, there is especially a need for better European coordination. This requires some structuring mechanisms. Based upon the objective of a European Area of digital heritage, it is clear that continuing the current situation will require an enormous amount of effort and time and still will lead to a very fragmented picture with respect to access and persistence of European digital cultural resources. The opposite, a centralised European approach, will also be difficult for political and organisational reasons. It is not desirable that any European body will determine the national or institutional priorities. Furthermore, it will be very difficult to organise and monitor all activities that will be needed to achieve the objectives. The ultimate responsibility for persistence of digital objects lies with the institutions that created and/or maintain them, but the range of problems to be tackled is such that it will be difficult if not impossible for

institutions to solve them on their own. The solution may be found in a more mediate approach, that tries to combine both views, the individual and the centralised one. Coordination will be necessary and may be achieved by using the 'model' of the Digital Preservation Coalition in the UK, that brings together the key players in the area of digital preservation and tries to support, co-ordinate, and encourage related activities. In Germany the recent NESTOR project fulfils a similar role. It could be a model for every country in Europe. However, the focus on preservation should be inclusive and not exclusive as is the case now in the UK and Germany. Persistence has to be embedded in the creation and management of the resources as well as in the development and provision of services that allow people to use them. This should not preclude initiatives specifically focused on digital preservation though. They still will be necessary in order to make progress in this area.

Priorities lay in the field of:

a. developing practical tools such as metadata extraction tools, ingest tools, conversion-to-open-standard tools;
b. identification (and maybe development) of standards that support persistence as well as interoperability of digital objects;
c. promoting the establishment of national networks, so the basis will be strengthened and broadened;
d. creating an open 'market piace' where organisations and people can discuss ideas, upload and find (if possible open source) practical tools, identify interesting partner institutions or projects and so on;
e. establishing funding models.

One aspect that deserves attention is the connection with other international developments, since preservation is not a solitary European issue. What for instance should Europe do by itself and what can be learned from research and developments elsewhere? In the USA and Australia for instance many efforts in the same area are going on and should be taken into account when developing programmes or research agendas. Collaboration with leading projects in those countries has to be sought to increase the impact and synergy of research. The DELOS-NSF research agenda on digital preservation already provides an example.[3] What ways of co-operation are possible or desirable and should this be coordinated?

Recommendations

1. Integrate the concept of persistence as an ongoing and natural aspect of the digital cultural heritage continuum and, as a consequence, make sure the integration of this aspect in all activities contributing to that European continuum. Persistence should be a criterion for all future projects.

2. Given the different situations in institutions and countries with respect to digital preservation it is recommended to develop a framework with different levels of ambition, that are consistent among each other, and will serve as a structured mechanism to stimulate and coordinate efforts to achieve the objectives under 1.

3. Each country should develop a DPC-like networking body to stimulate, coordinate and support national and cross-sector initiatives in the area of digital preservation and curation.

4. A high-level political body should be established for co-ordination issues at a European level. The current NRG for the Lund Action Plan consisting of representatives of ministries of culture may be well the right body when its mandates and responsibilities are better determined. One of its possible tasks may also be to identify when co-ordination with other international political developments will be necessary.

5. Collaborative and concerted activities or focus areas with respect to persistence and digital preservation will still be necessary. Priority areas are the development of practical tools (e.g. for metadata extraction, ingest, support of preservation strategies) if possible as open source, identification or further development of standards (e.g. metadata, storage or file formats, functional requirements for software applications) and training courses for professional development. Those collaborative activities may take place at European level, especially for supporting and stimulating exchange of information, knowledge-sharing, and practical experiences and for organising of training seminars and courses (e.g. together with academic institutions).

6. A European division of labour and expertise should be promoted, the organisation of funding or economic models stimulated and the private and commercial sector more effectively attracted.

[1]The Lund Action Plan (www.cordis.lu/ist/directorate e/diqicult/lundaD browse.htm) is expected to finish in the end of 2005.
[2]25 June 2002 (2002/C162/02).
[3]*Invest ta Save*, Report and Recommendations af the NSF-DELOS working group on digital archiving and preservation (2003), http:// delos-noe.iei.pi.cnr.it/activities/internationalforum/Joint-WGs/digitalarchiving/Digitalarchiving.pdf.