



## Greece

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### Policy

#### Policy scenario for digitisation

The Hellenic Digitisation Committee (HDC) has continued its official meetings, under the presidency of the High Performance Information Systems Laboratory (HPCLab). The Committee has been informed about the latest NRG initiatives and related actions (during the Spanish and the Danish Presidencies). An overview of the agenda of the Danish Presidency was also presented. More than 25 people from the Hellenic Ministry of Culture (HMC) (representatives of the directorates), Cultural and Technological Institutions and Universities were participating. The decisions and presentations will be available online at <http://www.hdpweb.org>.

The Projects Selection Work group for Digitisation of Cultural Heritage has been established as part of the Hellenic Digitisation Committee with the objective to define and initiate the digitisation projects with the highest priority.

The Projects Selection Work group is co-ordinating the General Directorates and is aiming at the definition of the digitisation projects to be immediately initiated. The Work group is headed by the High Performance Information Systems Laboratory. The most important results, so far achieved are:

- the definition of the project selection criteria based on issues like, feasibility, national priority, importance, funding, locality etc.;
- the definition of the necessary technological studies, which will be the basis for the future digitisation projects. The necessary technological studies were categorised and analysed. A draft plan of assignment

- of the studies to certain universities and research institutes of Greece was developed and submitted to the HMC. The plan is still under consideration;
- based on the criteria the Work group selected the most important cultural collections to be digitised at the near future. A list of the projects is nearly completed. The list includes cultural collection of the most important Museums of many regions of Greece;
- estimation of the funding opportunities and planning for future actions towards efficient funding for the digitisation projects of the highest priority;
- the creation of a draft master – plan for the establishment and development of the Hellenic Digitisation Center for Cultural and Scientific Resources;
- proposals to the Minister of Culture for the initiation of an Office (within a Directorate of the HMC) responsible for funding and evaluation of digitisation projects.

In the framework of the Project Selection Work group a large number of people and Institutes were co-ordinated, five official meetings took place and an equal number of proceedings was produced and submitted to the Minister of Culture.

In addition another significant activity in 2002 in terms of policy development has been the creation of the document *National Digitisation Policy - Guidelines and Standards for Digitisation Programs*. The document has been submitted to the Hellenic Digitisation Committee and is under refinement and final approval. Upon final approval it will be made publicly available through <http://www.hdpweb.org>. The document is based on the *NOF-digitize, Technical Standards and Guidelines*. The document is providing guidelines to organisations, private companies and institutes about the digitisation,



management, preservation and development of added value services for the cultural content. Specifically, the guidelines are divided into five critical issues (creation, management, collection creation, accessibility and reuse). For each issue relevant standards, technical requirements, benchmarking indicators, best practices etc. are presented and proposed to be used by projects which are digitising cultural content. The document will support and give guidance to organizations that are managing projects which are fully or partly funded by the Hellenic Ministry of Culture.

#### Terms of reference and National policy profile

The Terms of reference after the official agreement during the Spanish Presidency (Alicante Meeting, May 2002) were submitted to the Minister of Culture. The Ministry has committed to the Lund Principles and the mission of the NRG to monitor progress regarding the objectives stated therein. The first Greek National Profile was published on the Web page of the Ministry in 9 May 2002. The Greek National profile is being continuously refined. The new National profile is under consideration. The key issue for the development of the new National Profile is the approval of the National Digitisation Policy described above. The Greek National profile can be found at: <http://www.hdpweb.org>.

#### Co-operation activities

##### Co-ordination of national networks

The activities during the last six months focused mainly on the dissemination of the NRG objectives to Greek

libraries and archives. The Hellenic Ministry of Culture supervises only museums. Archives and libraries are being supervised by the Hellenic Ministry of Education and Religious Affairs. Due to this reason the activities were concentrated mainly on informing and inviting the libraries and the archives to participate actively on the HDC objectives.

In this framework a workshop is being organised and will take place at 15<sup>th</sup> of January 2003. The workshop is entitled "Digitisation for Archives and Libraries, Current Situation in Greece and Europe, Funding Opportunities". The workshop will have the next important thematic categories:

- current situation in the European Union and relevant initiatives in the framework of the European Commission. Special focus – National Representatives Group;
- current situation in Greece, digitisation policies, national committees and activities by Ministries. Special focus – Hellenic Digitisation Committee;
- digitisation issues. The issues include technologies, training issues, accessibility to digital content, standards and metadata, problems and cost, etc.;
- examples of implementation, best practices.
- IPR protection and management;
- regional, national and European funding opportunities.

A large number of representatives from the European Commission, the Hellenic Ministries, museums, libraries and archives, universities and research institutes and the private sector are invited to participate.

In parallel a network of organisations and institutions has been established, which will implement the technological studies for digitisation of Cultural



Heritage. The network is co-ordinated by the High Performance Information Systems Laboratory. A detailed document was produced which included:

- 9 categories of technological studies for digitisation of cultural heritage. Namely:
  - technologies for digitisation of text, image and 2 dimensional objects;
  - technologies for 3D digitisation and presentation of monuments and sites;
  - technologies for audio and video digitisation;
  - technologies for 3D reconstruction of monuments and sites;
  - technologies for interoperability, reusability and management of the digital cultural content;
  - technologies for IPR protection and management;
  - technologies for best practices and benchmarking;
  - technologies for digitisation of non-material cultural heritage;
  - technologies for security of networks and information systems of cultural heritage.
- 14 universities, 25 professors, 5 research institutes and all the general directorates of the HMC, which are going to participate in the technological studies;
- budget and cost of effort (is estimated but the funding has not yet been confirmed).

Relationships and co-ordination with other national initiatives in connection with eEurope, e-government, e-learning

The HPCLab is currently searching for similar initiatives at a national level. Until now several preparatory meetings took place with delegates from the Ministry of Education and Religious Affairs, the Ministry of Foreign Affairs and the Ministry of Interior, public



administration and decentralisation. The topics discussed were mainly on e-learning opportunities based on a digital cultural content, e-government applications in the cultural sector etc.

In addition, the HMC had initiated the Web Portal, <http://www.culturegui.de.gr>. The portal is offering services to the Internet users mainly for providing information and making online reservations for cultural events organised by the HMC. This effort is aiming at the quick and easy reservation of tickets for the most popular upcoming cultural events (e-government services). The cultural events are categorised by thematic area (theatre, cinema, book, concerts, etc.) and include all the future events of the Cultural Olympiad (2003-2004).

#### European and international co-operation

The Hellenic Ministry of Culture through its representatives and the HPCLab has established a close co-operation with the Ministerium für Wissenschaft, Weiterbildung, Forschung und Kultur of RheinlandPfalz in Germany. The cooperation is focusing mainly on the next main activities:

- Support the RheinlandPfalz Ministry for the design and implementation of a project entitled "Vertikult" especially focused on promoting job opportunities in the Cultural Sector. The project has been originally designed and proposed by Fraunhofer-IGD, the Kaiserslautern University, the HPCLab, the Politecnico di Milano (MEDICI Network), the Austrian Cultural Service and several SMEs to the RheinlandPfalz Ministry of Culture. The project has been approved and a kick off meeting took place. The services planned to be implemented include:





- search for employment opportunities;
- job offers and requests;
- creation of new partnerships;
- special applications for the physically challenged.
- Safeguarding the European dimension of the project by transferring the Vertikult model to Greece, Italy, Austria and Hungary.
- Present the European approaches, best practices and initiatives to the Vertikult Consortium (NRG, eEurope, etc.). This is aiming at keeping the Vertikult objectives compatible with the European activities at a policy, and technological level.

## Benchmarking

The need to co-ordinate digitisation policies and programmes across Member States can be encouraged through building a platform for improved collaboration between countries in terms of exchanging “good practices”. Benchmarking is a key element of this process. Benchmarking is not a purely statistical exercise. Qualitative and quantitative benchmarking is and will be widely used in the eEurope Initiative 2005 “An Information Society for All” and the EUROSTAT service, giving an insight in significant aspects of many European issues.

The Short Term Strategy is based on the assumption that benchmarking is not aiming at developing direct or measurable comparisons between projects and policies. It aims to facilitate the identification and dissemination of best policy and practice across the EU, while taking into account the need for adaptability to different national contexts. The benchmarking exercise, in general both for Short and Long Term Strategy, will provide insights into how national digitisation policies

may be improved and made more effective. The creation of a benchmarking methodology for digitisation policies is a complex and difficult goal to be achieved. This goal gives rise to two main difficulties, the creation of an open benchmarking model and the creation of a platform for implementing the benchmarking practice. The Short Term Strategy is a plan of activities scheduled mainly to support the Minerva benchmarking framework, at an initial stage, so as a first set of benchmarking results to be quickly produced. These results should have the following characteristics:

- the results should be reflecting the pan European current situation at least at a preliminary format. This is mandatory so as the European dimension of the results to be safeguarded;
- the results should be accessible via the World Wide Web. This is implying that the data collected in various formats (.doc, email, etc.) should be utilised in a way that will be homogeneously accessed by the Internet user. This process incorporates actions like a database development, the data entry, etc.;
- the data collected should be available in an open format for future use by the Long Term Strategy, which is currently being designed. This is mainly aiming at preserving the data on the long term in a way that could be utilised by a future online system or a future database.

The Short Term Strategy is mainly aiming at integrating the results of the National Representatives Group and especially of the Benchmarking Work group into the Minerva benchmarking framework. The Benchmarking Work group of the NRG had produced specific results that could be efficiently exploited for the purposes of

the Minerva benchmarking framework. These results were mainly focusing on:

- The definition of the Benchmarking Methodology. Benchmarking methodology is a continuous exercise similar to our instinctive way of learning. In accordance with this definition a benchmarking exercise can be used wherever a process can be identified. The starting point is to define the process or activity to be studied. The methodology was described in detail and can be found at <http://www.cordis.lu/st/ka3/digital/cult/benchmarking.htm>.
- The definition of the Benchmarking Model. The benchmarking model was originally created, analysed, refined and finally published by the Benchmarking Work group of the National Representatives Group. This model, proposed by the Commission to Member States, is a qualitative one: the main task is to encourage the exchange of good practice as part of a continuous process of improvement. Also, it considers, at a preliminary stage, a comparative framework for quantitative measures. The benchmarking model is based on a list of indicators, which are categorised according to the main themes of digitisation (management, technical issues, etc.). The indicators were discussed, finalised and endorsed by the National Representatives Group. The detailed model can be found at <http://www.cordis.lu/st/ka3/digital/cult/benchmarking.htm>.
- The creation of the Benchmarking Questionnaire. The Questionnaire is based on the Benchmarking Model and its indicators. The Questionnaire was created and distributed to the Member States for data collection.
- The creation of the Productivity Form.

The Productivity Form is aiming at practising in a method to collect statistical data about the available amount of digitised content at an institutional level across Europe. It is targeting mainly at content holders and it's looking for finding some methodologies to measure the digital content available, the usage, accessibility, quality of digitisation, etc. The creation of the Productivity Form is supported mainly by the Cultural Heritage Application Unit and Maurizio Lunghi. The experts by Member States have been invited to give comments and suggestions for the Productivity Form. The form has been finalised at this early stage and has been distributed to the Member States for data collection.

The Short Term Strategy is, in parallel, aiming at designing, implementing and pilot testing an innovative technological platform for online benchmarking and automated data analysis. Generally, statistics soon become outdated and indicator measurements must be available quickly. To improve the speed and quality of the process, an interoperable technological platform for efficient, quick and Web-based benchmarking is proposed. The technologies used to implement the platform are mainly Internet based. The person completing the form is using the Web Browser to contribute to the benchmarking process. The benchmarking interface is user-friendly, designed from scratch to allow inexperienced users to interact with the system. The tool for data collection is the online questionnaire. The online questionnaire is in fact the benchmarking model, the main themes and indicators, translated into a Web-based format:

- an expert supports the process by providing the benchmarking model;



- the generic system is able to incorporate any benchmarking model and its corresponding questionnaire. This is achieved through a tool for the benchmarking model insertion and a tool for the questionnaire creation. The tools are used by the benchmarking experts, who are not considered to have any expertise and experience in Internet based technologies. The tools are very usable;
- the online questionnaire, which the benchmarking expert is creating, is connected with a relational database, which holds all the data inserted by the person completing the benchmarking form;
- each authenticated user may create, view, edit or save a questionnaire;
- the relational database of the questionnaires is connected with the user database. A person has the ability to log on to the system and view his completed questionnaires at any time.
- data are analysed with customisable analysis tools that support the automatic generation of benchmarking reports and statistical results;
- the graphs, statistical pies and reports are generated dynamically during the completion of the questionnaire. This reduces significantly the time for data analysis and report generation.

The platform is embedded into a Web-portal, that provides other useful information and services, which is available for further reviewing and testing at the Web address <http://www.benchmarking.gr> (English language is available).  
The platform was initially tested during two main practices:

- the first benchmarking practice on digitisation policies and projects in Greece. The benchmarking practice

took place as part of the actions of the National Representatives Group and especially of the Benchmarking Work group. The results are analysed to a next chapter (Good practice exemplars);

- the first pan European practice for data collection both for the Benchmarking Questionnaire and the Productivity Form. This practice was of a short scale and resulted to a draft report on Benchmarking currently under final revision. The full report can be found at <http://www.benchmarking.gr>.

**Draft Results**

On the front page some draft results are shown (screenshots from the online system).

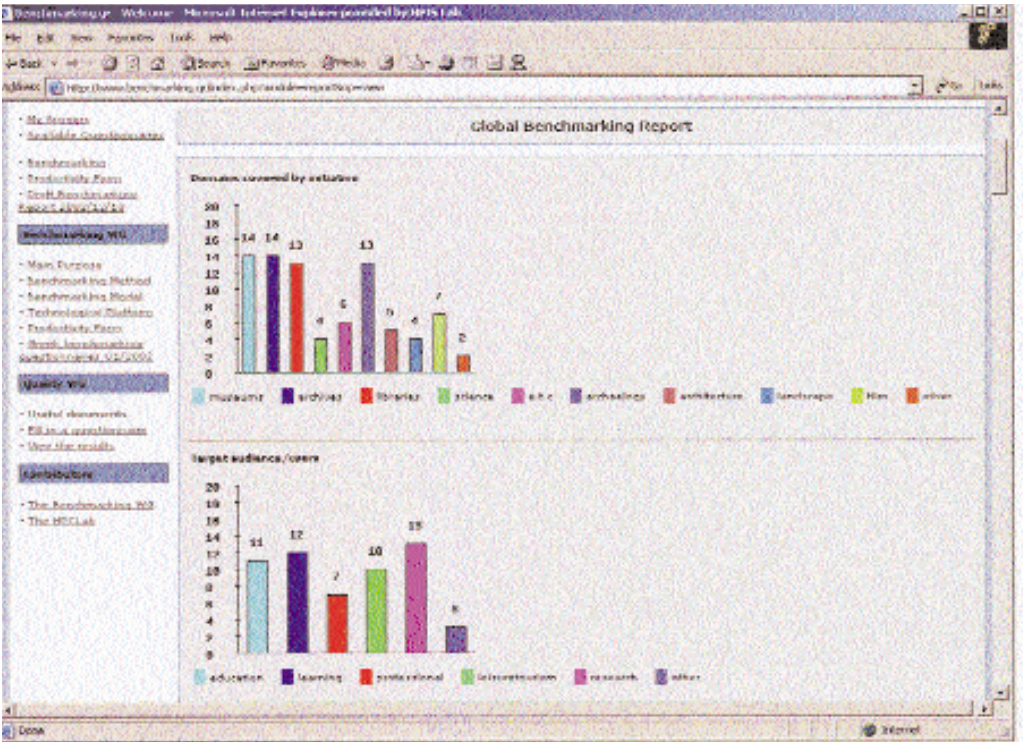
The Benchmarking Questionnaire – Global Report (fig. 1-2-3)

The Benchmarking Questionnaire – Italian Report (fig. 4-5)

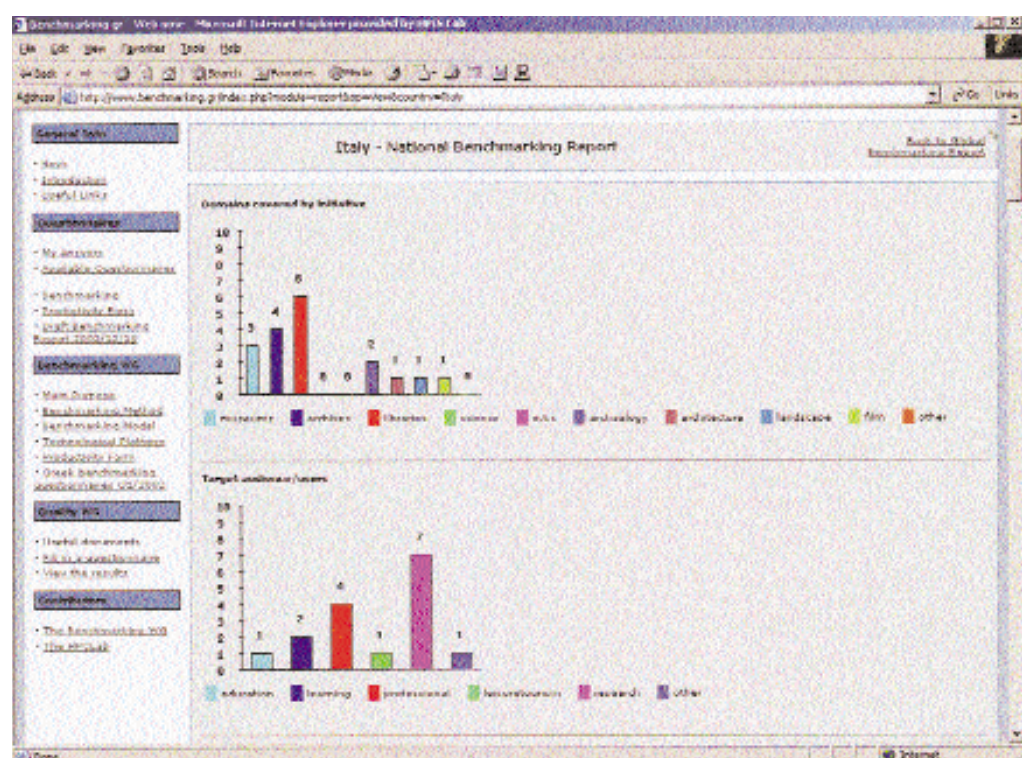
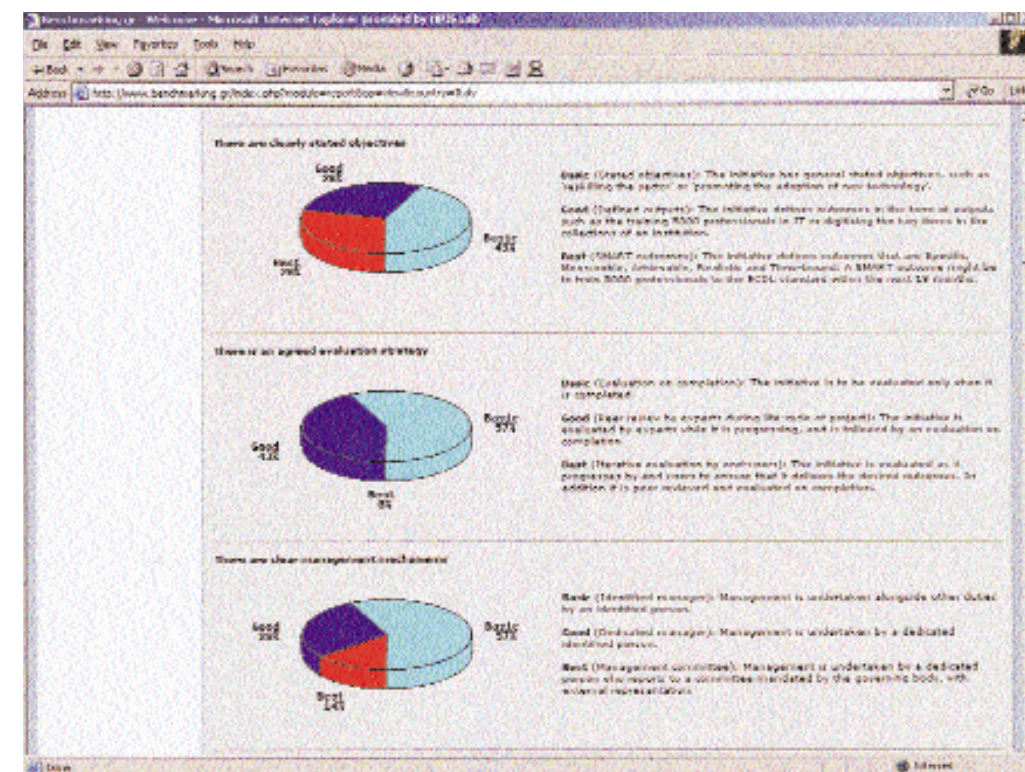
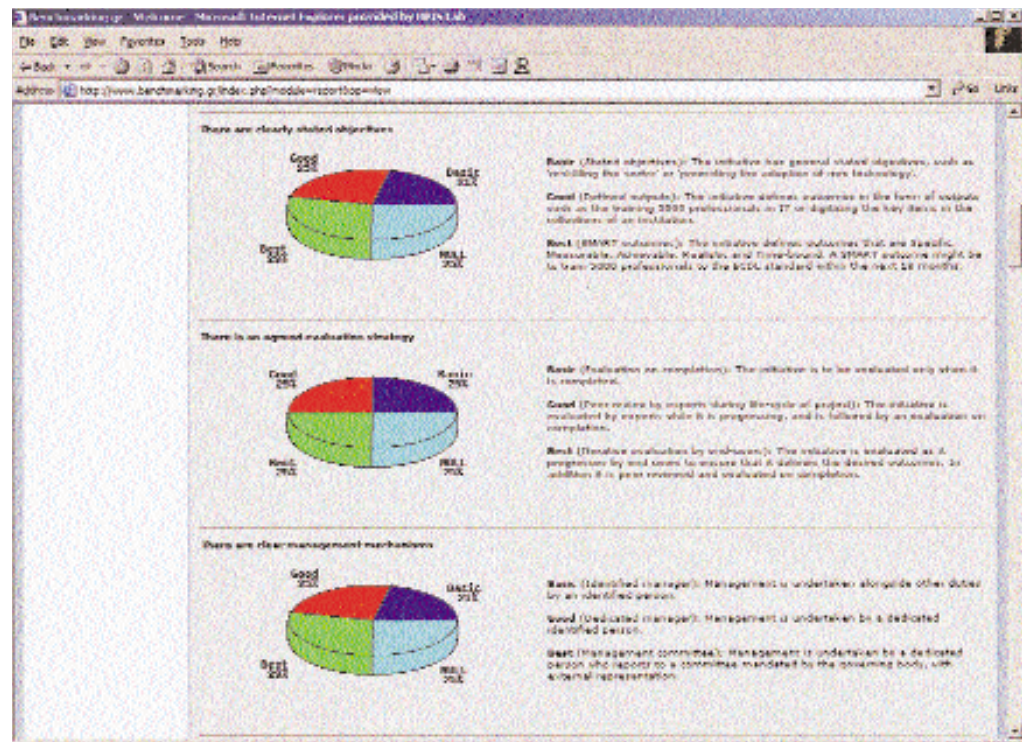
**Inventories and resource discovery**

Metadata and interoperability for resource inventories

HPCLab has already submitted its proposal for a National Digitisation Policy - Guidelines and Standards for Digitisation Programs to the HDC for final approval. This policy will act as a reference and set of guidelines for every digitisation project and inventory developed in a national level. This “National Digitisation Policy”, among other things, prescribes guidelines for resource discovery and proposes metadata standards for every phase in the whole lifecycle of a digital item: Creation, management,







collection development, access and repackaging. Some special key issues regarding metadata and interoperability are stressed in this policy:

- Preservation Metadata: possible conformance with the OAIS Reference Model is proposed, while digitisation activities are guided to consult the "Metadata Framework to Support the Preservation of Digital Objects" developed by the OCLC/RLG and is available at [http://www.oclc.org/research/pmwg/pm\\_framework.pdf](http://www.oclc.org/research/pmwg/pm_framework.pdf).

- Collection Level Description: for collection level description the Policy suggests the schema developed for the Research Support Libraries Program (RSLP, <http://www.ukoln.ac.uk/metadata/rslp/>) in the UK, using the Dublin Core Metadata Element Set as its core.
- Interoperability: Interoperability is achieved through adoption of wide-spread and common standards. Z39.50 for information retrieval, OAI-PMH for mass metadata consumption and MPEG-7 for describing multimedia objects and collections are specifically proposed.



This policy will soon be available through the official HDC Web site, <http://www.hdpweb.org>. It is considered that a digital collection is best described by a combination of data models rather than adhering to a single one. As an extension to the project PRAXITELIS, an “Integrated Environment for the Management, Protection and Exploitation of Digital Objects of the Hellenic Cultural Heritage”, there was developed a hybrid metadata schema combining DC-simple, DC-qualified and DIG-35, a metadata standard for describing digital images ([http://www.i3a.org/i\\_dig35.html](http://www.i3a.org/i_dig35.html)). A simple interface for automated export of XML metadata files conforming to the above schema was also developed. In the area of Collection and Project Description an active discussion has been initiated, following the 5<sup>th</sup> July Minerva meeting in Paris. The discussion revolves around a metadata set for digitised collections and projects and a mapping to existing systems. This set is based on an extension of the RSLP schema and the French model and regards also a mapping to the benchmarking grid, which is based to the recent Greek initiative. The proposed model will possibly result to a common schema for describing digital inventories and projects, as generic as needed to accommodate descriptions of collections developed by member states and adjusted to multilingualism needs. Nevertheless, it is still under development and has not yet reached a wide consensus. A potential refinement and implementation of this model, for digital collections and projects developed in Greece, is under consideration and its mapping to the grid and the productivity form is examined. Currently in preparation there is also a “Digital Repository Functional Model” which aims at providing guidelines for the ingestion, storage, management and consumption of digital entities. The Digital Repository will act as a

reference model for potential digital repository initiatives and will be supported by a prototype implementation. The model is heavily influenced by the OAIS, but tries to be a more concrete and practical approach by suggesting specific implementation solutions and proposing tangible standards. The OCLC/RLG reports about the attributes and responsibilities of a trusted digital repository are also taken in to account (<http://www.rlg.org/longterm/repositoryes.pdf>). Finally the model describes procedures for manual insertion and automated extraction of metadata, demonstrates awareness of interoperable standards for ingestion and / or consumption like Z39.50 and OAI-PMH and considers methodologies for the exposition of the repository as a Web Service (UDDI specifications, <http://www.uddi.org>). Research in resource discovery is now moving towards more intelligent and automated ways for extracting information. The recent advent of the Semantic Web is considered quite influential and is driving research to ways for a more expressive, machine understandable and semantic description of resources. In this context, there is a close monitoring of the W3C’s Web-Ontology Working Group and specifically of the development of the Ontology Web Language (OWL, <http://www.w3.org/TR/owl-gui-de/>). Moreover, the exploitation of the ISO proposed standard “A reference ontology for the interchange of cultural heritage information” (ISO/CD 21127, <http://www.iso.org/international/SC4/n500.pdf>) is being examined. This reference ontology, originally known as CRM and developed by ICOM CIDOC, may be elaborated and adapted in order to facilitate semantic description of cultural digital collections and items. An implementation of the ontology in OWL or its predecessor, the DARPA Agent Markup Language



(DAML, <http://www.daml.org>) and a method for exploiting their inherent reasoning capabilities to make intelligent queries possible are currently in plan.

Good practice and skills

Good practice exemplars

During the 1<sup>st</sup> Benchmarking Practice for the Greek Projects on Digitisation of Cultural Heritage many best practices and examples have been identified. The Qualitative Benchmarking Questionnaires showed that most of the projects have an adequate approach to the issue of digitisation and the creation of reusable digital contents. This Benchmarking Practice has utilised the technological platform mentioned above. The good practices are directly or indirectly related to the digitisation of the Hellenic Cultural Heritage. Projects that are aiming at developing the necessary infrastructure for digitisation (networks of cultural organisations, museum intranets, digitisation software and hardware, etc.) were also included. Totally 34 projects have participated at the benchmarking process. A significant amount of data was collected. Totally 101 online questionnaires were filled, from which 34 were selected as appropriately answered. The projects are not all co-ordinated from Greek institutions and organisations. There is a number of projects in which Greek organisations are participating as content and/or technology providers. It was observed that most institutions filling the questionnaire were not willing to provide specific financial data. The projects are funded mainly by the European Union and the responsible Greek Ministries. The institutions completing the questionnaires were not

aware that they were taking part in a benchmarking practice. That led to broad participation, but had the side-effect of poor completion, especially for the quantitative indicators. Some institutions that were aware about the benchmarking process were more willing to dedicate time and effort for completing the questionnaire. The institutions completing the benchmarking forms have agreed the questionnaire information to be publicly available.

Summary of results

Digitisation projects were rated on the main themes of digitisation defined at the benchmarking model, namely Management, Funding, Technical / Content Issues, Productivity, Human Resources, Services / Impact and Priorities.

Management

Most of the digitisation projects (42%) claim to have clearly defined outcomes. The majority of the projects (50%) are evaluated, as they progress, by end users to ensure that they deliver the desired outcomes. In addition they are peer reviewed and evaluated on completion. Management (50% of projects) is undertaken by a dedicated person who reports to a committee mandated by the governing body, with external representation. A management committee on a regular basis formally reviews the work plan of the 39% of the projects and the reports are made publicly available.

Funding

Most of digitisation projects (66%) have a confirmed funding stream but few (8%) have a strategy for sustainability and commercial exploitation of results. The



cost estimates for digitisation is mainly based upon a small pilot study. Private sector funding is encouraged, but there is no specific incentive (26% of the projects).

#### Technical / Content issues

The digitisation projects (50%) claim to use technical standards for interoperability, decide on the standards that will be implemented and ensure that the implementation of the standards is mandatory. The metadata standards for content are used at a percentage of 36% of the digitisation projects. Most of the projects (40%) have left the question about awareness of Intellectual Property Rights issues unanswered. Multilingualism is insufficiently treated, 47% of the projects only translate the Web site of the project in one or more languages and 40% of projects left the question unanswered.

#### Human resources

The workforce development is one of the main drawbacks of the digitisation projects in Greece. Most projects (45%) have left the question, “is clear provision made for workforce development”, unanswered. 26% of them have only a general (and not specific and clearly stated) objective about “reskilling the sector”.

#### Services / Impact

The content is used efficiently to create new user-focused services, new learning resources and training material but not to create new sustainable employment positions in the content-holding institutions. The content increases the job opportunities only for the employees already working for the content-holding institutions (39% of the digitisation projects).

#### Priorities

The content selection criteria are mainly based on a formal

review process, involving specialist expertise, requirement assessment, and production of formal reports.

The full benchmarking report and the list of the good practices can be found at <http://www.benchmarking.gr/>.

#### Guidelines

The document National Digitisation Policy - Guidelines and Standards for Digitisation Programs is including guidelines for many issues relevant to the digitisation of cultural heritage. The document is submitted to the HDC and after final approval will be made publicly available.

#### Competence centres

There is not available information at this phase. There are many organisations and initiatives that are responsible for digitisation of cultural heritage. An established centre, which is indirectly relevant to digitisation is incorporated to the ICS FORTH (Institute of Computer Science, Foundation of Research and Technology Hellas), the Centre for Cultural Informatics (<http://www.ics.forth.gr/isl/cc.html>). This centre is mostly aiming at the development of information systems for cultural heritage.

#### Main digitisation training initiatives for cultural heritage institutions

There are no specific training initiatives on digitisation in the cultural sector. A draft plan for a wide training initiative for archaeologists and personnel of the cultural sector is under development. This plan is





developed by the High Performance Information Systems Laboratory and the Directorate of Greece - European Union Relations of the Hellenic Ministry of Culture. This master plan is drafting a training project for many regions of Greece and for many types of organisations (archaeological museums, Byzantine collections, etc.). The main training modules include lessons for digitisation techniques, digital content management and protection, Internet technologies and other issues. The funding for this training plan has not yet been confirmed.

European added value  
and content framework

Quality and accessibility for Web sites

The High Performance Information Systems Laboratory has a special team working on Quality and Usability issues. This team is dealing with the general research area of information systems' Quality and Usability and stimulated by the European cultural actions has focused on the quality of cultural Web sites. Below we present the efforts of the Greek team on Quality. The aim of the work is:

- to provide quality factors for evaluating the quality of a cultural site on the Web;
- to direct and support the process of design and development of a cultural Web site.

Quality is a word with a very broad meaning and the quality of a Web site (or a cultural Web site) can be viewed in a very subjective way. Having this in mind, we prefer not to give a strict definition on quality. After reading this document and understanding the quality

criteria presented here, anybody should have a quite clear understanding of what quality is.

Quality Criteria

Below we present the quality criteria used in the first iteration of the Quality Assessment of Cultural Web Sites. These criteria were based on the Brussels Quality Framework, the reflection document presented during the first meeting of the Group of National Representatives held in Brussels on 11 December 2001 under the Belgian Culture Presidency. The quality criteria are separated into five categories (presentation, content, policy, design and interactivity). Each category contains more detailed criteria that help us to understand the specific aspect of a Web site that the criterion is focused on.

Presentation of the site

The presentation of a site covers themes such as the scope statement and authority of the site.

- *Scope statement:* the scope of a site deals with the title and the URL address of the site and focuses on issues such as descriptions of its content, its purpose, and its intended audience.
- *Authority of the site:* authority of the site includes descriptive information about the publisher of the site (name, position, and training), his/her contact information (email, telephone, fax etc.) and information about other individuals, groups or organisations that provide assistance in the creative process.

Content

The content criteria concern the quality of the information made available on the Web site. The criteria

that are used to evaluate the content of a cultural site are presented following:

- *Coverage/Completeness:* refers to the depth and breadth of the information provided. A balance is desirable to exist in the amount of available information, otherwise the aim of the site will not be clear and evident and the users will not be able to find easily the subjects they are interested in.
- *Accuracy/Objectivity/Validity:* examines the identification of the methods used in obtaining the information, the avoidance of obviously misleading statements or outrageous, the evasion of unsupported claims made by the authors etc.
- *Usefulness:* the information provided by the site should be useful and interesting to the users, meet their needs, in terms of type and depth of the material provided and should enable them to acquire knowledge.
- *Logical organisation of information/ Comprehensiveness:* the content made available by a site must be properly organised, and the semantic relations have to be clear. To achieve this goal, a good practice is the hierarchical organisation of the information.  
A site designer should divide the available information in thematic units and give optical emphasis in the most important content. Also, he should use synopsis, summaries, headings and provide context and orientation information to help users understand complex pages. For the purpose of comprehensiveness, the complexity of the language of the content should be appropriate for the site's target audience.
- *Authority of the content:* authority of the content refers to the credibility and expertise of the supplier

of the information and deals with descriptive information about him.

Policy

This category covers criteria which address the site's policy in two areas:

- *Legal policy:* concerns intellectual property rights (IPR) and user data protection. Since every day a vast amount of material is distributed online, and digital networks cache copies of documents to improve performance, the owners of digital material need to protect their digitized products. IPR systems help customers realise the full value of their digital material. To address security or management driven concerns, relating to dissemination and use of digitally-encoded information, some methods have been developed, including "digital watermarking" and rights management languages. Also, the "Information Society" increases the cross-frontier flows of personal data between Member States of EU. Facing this fact, EU has harmonised the data protection legislation of the member states.
- *Maintenance policy:* Web sites are maintained in order to keep the information current, the links functional and, above all, to keep visitors coming back. For the purpose of maintenance policy of a site, a publication date or last revised date should be contained.

Design and usability

The design of a site is defined by images, text and links. Its objective is to improve the delivery of information and the effectiveness of its use. Four criteria make it possible to evaluate the design and usability of cultural sites: accessibility, navigability, quality of links and aesthetic design.





- *Accessibility*: before the quality of a resource can be judged, it is necessary to locate and gain access to the server that houses the document. Site access deals with issues such as ease of connection and downloading. Usability studies proved that a site's response time should be between one sec and ten sec. Also, wide access to Internet requires sites being accessible by the lowest-level available browser technology and being translated in a lot of languages. To enable use by users with disabilities, Web sites should provide alternatives to auditory and visual content and use features that enable activation of page elements via a variety of input devices.
- *Navigability*: navigation deals with how easily documents are explored. It is usually the principal mechanism by which the users can gain access to the contents of the Web site. Thus, the facilitation of navigation constitutes a crucial aspect of the total quality of the cultural Web site and can be decomposed into a number of factors. First of all, a site should have a good organisational scheme (by subject, format, audience, chronology, geography etc.). Also, the site should provide clear and consistent navigation mechanisms (orientation information, navigation bars, a site map, etc.), a help function and a search function. These are required to increase the likelihood that a person will find what he is looking for. Finally, the site should prevent the user from "getting lost in hyperspace" (a typical syndrome of the great hypertext structures). The users should always be aware of the real status of their navigation session and they should be able to understand their current position within the cluster of objects they explore.
- *Quality of links*: one of the distinguishing aspects of hypertext-based Internet resources is the ability to link a document with related materials or resources.

This aspect is sufficiently important to be evaluated separately from other organisational characteristics. Quality of the links deals with how useful the links are and how clearly they are marked or annotated. The target of the links should be clear and the link text should be meaningful enough and terse, so that the user understands the destination of each link. Also, the links should only point to relevant material and do not prevent viewers from returning to a previous page. The use of labels such as , and is not recommended.

- *Aesthetic design*: aesthetic aspects deal with how well the site is designed in terms of graphics, readability, and the use of creative elements. This category specifically deals with the "look and feel" of the site. The proper use of graphics, animation and sound increases the vividness of content. However, it is essential for a site to make moderate use of original components, clear and appropriate multimedia content and leading edge technologies. Also, the use of legible fonts and good colour balance in text, links, background, images and other visual elements is recommended.

**Interactivity**

A site should provide feedback mechanisms to users, in order to give them the capability to make their comments, corrections, critique and raise questions. Also, a site should support communication forums and provide various ways of presentation of the available content.

**The Online System**

To make the quality more applicable and measurable, the above questionnaire has been implemented as an online



questionnaire. The online questionnaire was implemented using open Web oriented technologies (Apache, PHP, MySQL, Linux). The system supports user authentication (only authorised users can access the questionnaire and the view results). The system provides automatic report generation, each time a new questionnaire is filled the results ate updated. This system can currently be reached through <http://www.benchmarking.gr> and it will soon be migrated to the new benchmarking platform prepared by the High Performance Information Systems Laboratory of the University of Patras, Greece. Based on this questionnaire, we have evaluated a number of cultural sites on the Web and gathered conclusions from it.

Long-term sustainability

The very important issue of long-term sustainability of the digital cultural content is at an initial phase in Greece. The activities so far included the dissemination of the issue to the Directorates of the Hellenic Ministry of Culture and the Hellenic Digitisation Committee.

Research activities on digitisation

The nation wide research activities on digitisation are mainly focusing on the definition and implementation of technological studies. The technological studies will be assigned to research laboratories, universities and institutes and will shed light on the state of the art for digitisation of cultural heritage and the added value services for the digital cultural content. In addition, many research projects have already been proposed to several national and international funding initiatives and organisations.

