



Greece

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Delphi, the Temple of Apollo
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Policy scenario

1. General description of the political support for digitisation (and national ownership)

The Greek Ministry of Culture considers digitisation to be a basic means for the development of a networked cultural society. Consequently, it has included major digitisation activities in its current implementation plan (2000-2006) being mainly implemented through the National Programme for Information Society. Moreover, the vision and design of the next implementation plan (2007-2013) regarding digitisation activities have been initiated, with specific decisions to be taken within the first half of 2005.

2. Range of policy (geographical, institutional and ideological)

The digitisation activities planned or currently implemented by the Greek Ministry of Culture refer to the whole Greek territory, addressing the needs of all geographical departments of the country. Moreover, attention is paid to both ancient and modern cultural forms, involving digitisation of museums, archaeological sites, archives, libraries, film centres, festivals, and other cultural organisations. The recipients and potential users of the generated digital content and related services, apart from the general public, include the staff of cultural organisations, researchers, schools and universities, producers, public organisations such as ministries and administration organisations, as well as the European and foreign researchers, organisations or travellers. The Ministry of Culture has realised that the emerging digitisation activities will affect both the structure and

organisation of the cultural content owners/providers, as well as the related 'market' involving companies dealing with software development, hardware provision and digitisation. For this reason, it both leads and encourages activities related to cultural organisations' staff training in ICT, to investigating new organisational models for the content owners and providers and to studying the effects of the interaction of these organisations with the technology providing companies in the framework of the evolving digital economy.

3. Available instruments and the use of those: guidelines, funds, target organisations

The National Programme for Information Society has a total budget of about 120 Meuro. It has been issuing specific Calls for public and private organisations - owners of cultural content, for digitising and publicising it. The Call for public organisations is currently being implemented through specific digitisation projects in more than 140 organisations (funding of 50 MEuro). Six studies have also been conducted in this framework for generating guidelines for digitisation and providing them to the cultural organisations. The Call for private organisations (public funding of 10 MEuro) will be issued in the beginning of 2005.

Co-operation

1. National networks

Before the end of 2006 there will be more than 200 cultural sites developed by the above-mentioned organisations, containing 2-D pictures, sound and music, videos, films of 16 or 35 mm, annotations,

3-D objects, animations and 3-D environments, referring to historic, traditional and contemporary cultural information. These will constitute a rich source of digital cultural content, which will be searched and retrieved through the internet. The Ministry of Culture targets, through the extension of its portal and with assistive activities, to generate a 'national' cultural network providing effective and efficient search and access to the Hellenic cultural content. Moreover, a Scientific Committee composed of the leaders of the six above-mentioned studies, described in the following section, and a representative of the Ministry of Culture, has been formed in the framework of the Information Society Programme and will scientifically assist the Programme, and the Ministry of Culture, with digitisation activities within Greece for the years 2005-2006.

2. International co-operation

A considerable number of collaborations between Greek and European organisations has been initiated within the framework of EC projects, such as the MINERVA and CALIMERA projects. The Ministry of Culture, through its NRG representation, will be collaborating, at R&D level, with the rest of European countries, aiming at:

- continuous interaction and flow of information on the various issues related to digitisation among the European countries, and internationally
- unification of developments, common platforms and common metadata for digitisation across European countries, towards a unified access to the European cultural content
- awareness raising and promotion of Greek and other European digital cultural content throughout Europe.

3. NRG and MINERVA results, interpretation and impact

The NRG and MINERVA results have had considerable impact on the current developments in the Greek cultural sector. The MINERVA and Digicult reports have been widely spread to cultural organisations during meetings organised by the National Programme for Information Society. Moreover, the MINERVA results have constituted one of the main sources of information for the development of the six recent studies on digitisation technologies and related procedures.

Main digitisation initiatives

1. National portals for culture / networked digital repositories

Odysseus is the national portal of the Greek Ministry of Culture, which provides the visitor with all main cultural information in Greece. A major upgrading of the portal is scheduled in 2005, with the new design including all recent developments in multimedia, knowledge and VR technologies. It is foreseen that the portal will be capable of effectively searching, indexing and retrieving cultural information from all networked digital repositories in Greece, so that the portal constitutes the main reference point for exploration of Greek cultural content.

www.culture.gr

2. Services for the users

The on going digitisation activities of more than 140 public cultural organisations in Greece, as well as the forthcoming digitisation activities of private



Brass candlestick adorned with inscriptions, birds, arabesques and a blazon of a Mamluk ruler, Egypt 1330-1340
Museum of Islamic Art, Benaki Museum



organisations, are expected to create, within a two year period, some hundreds of sites with cultural content all over Greece. To assist these organisations with digitisation, to reduce heterogeneity of the digital repositories and to achieve adherence to related standards and MINERVA best practices, six studies have been funded by the national Programme on Information Society, with the following topics:

- study and guidelines for digitisation of images, sound, music, videos, films
- study and guidelines for digitisation of 3-D objects
- study and guidelines for annotation and cultural metadata generation
- best practices for digitisation
- intellectual property rights and digital cultural content
- study and guidelines for cultural site generation.

The studies have been conducted by Greek universities and research organisations, including the National Technical University of Athens, the Demokritos University of Thrace, the ICS-FORTH, the University of Patras, the Open University and the Lambrakis Research Foundation, and their results are public documents being released through the www.infosoc.gr site. In particular:

a) The first study is composed of two main parts. The first examines digitisation of images, video and film, focusing on moving images. It reviews the image coding standards, mainly the MPEG ones and examines the different resolutions that can be used to digitise video and film for preservation as well as diffusion purposes. In the former case it is suggested to analyse video in standard, MPEG-2, or high definition, and film in 2K, 4K or 6K resolution. In the latter case, i.e. for

Internet access, MPEG-1/4 coding is adopted. The second part of the study refers to sound and music. Two digitisation resolution types are suggested, 96KHz for sound with high frequency range (e.g., music), and 48kHz for low frequency ranges (e.g., speech). Two file types are also examined, the digital master file (Broadcast Wav File, or WAV or AIFF uncompressed, stereo or mono) and the service files that can be either of CD quality (44.1kHz 16bit), or compressed (128 or 256 kbps MP3, AC3, Quicktime, Windows Media Audio, Realmedia). The study also refers to characteristics and usage of the different parts of digitising equipment.

b) The next study refers to digitization of 3-D objects. It defines the specifications for 3-D digitization, storage, management and presentation of cultural objects, monuments, or archaeological sites. It describes the methodologies used for three dimensional digitization of all different types of cultural content, i.e., objects, sites, etc. Various goals, such as full representation, representation for specific purposes, or generation of copies, are considered and treated accordingly.

c) The study on metadata creation and annotation refers to a variety of related issues, such as the need for cultural information migration, integration and interoperability. Both types of syntactic and semantic annotation are considered. XML is described as a common representation language to achieve syntactic interoperability. The ICOM/CIDOC Reference Model, which is currently ISO CD/21127 draft standard, is described as a means to achieve semantic interoperability. In the latter framework, thesaurus generation is described, following ISO2788 for single language thesaurus and ISO5964 for multilingual thesaurus type generation. Representation following

the RDF Schema for knowledge organisation is also proposed. Reference is made to international data standards for archaeological sites and monuments, for museum objects, considering a variety of standards such as the UK Spectrum, MPEG7, DIG35, TEI, EAD. Digital preservation is also addressed in the study.

d) The study on best practices provides a general reference to the procedures that should be adopted when designing the software, selecting the hardware and setting up the computer systems, following the best practice conclusions and recommendations defined by the MINERVA and Minerva plus projects. The case of still pictures is analysed with respect to the type of digitising equipment, i.e., scanners and digital cameras and the related procedures and digitisation stages are described.

e) The study on digital rights and IPR investigates the methodologies and the technologies that can be used for protection of intellectual property rights of digital content. All types of media are referenced, including, text, audio and video. The study focuses on watermarking technologies and on cryptography that can be used for identifying the content owner and for protecting content storage or transmission, as well as on content digital rights management. Issues that are examined are unique identification, related programming languages, metadata for managing IPR, as well as content distribution technologies. Recent developments, referring to digital object identifiers, as well as to XrML and rights data dictionary, defined in the framework of the MPEG-21 ISO standard, are described.

f) The study on cultural site creation examines the design, development and operation of cultural

websites or portals, as well as the generation of off-line presentations, in the form of CD-ROMs or DVDs. It examines the main components of websites, i.e., the content management system, the database and the search engine and investigates various issues related to the quality of provided services. Such issues which are used to evaluate the site operation are functionality, reliability, usability, efficiency, maintainability, portability, effectiveness, productivity, safety, satisfaction. The proposed framework is based on the guidelines of ISO 9126.

3. Emerging initiatives

Various digitisation developments and related cultural initiatives are going to appear in the cultural domain in Greece starting from early 2005. These involve both the public and the private domain.

The public developments, on the one hand, include the afore-mentioned 140 digitised collections of the respective cultural organisations. On the other hand, they include assistive activities taken by the Hellenic Culture Organisation SA. These are the following:

Generation of a 'digital' presentation of the History of the Olympic Games. This is to be implemented in the Museum of Olympia in Peloponnisos, with the aid of state-of-the-art 2-D and 3-D digital technology and equipment, including more than 300 digitised cultural objects.

Provision of portable systems to visitors of Greek museums and archaeological sites. This project aims at providing personalised cultural information to visitors of main archaeological sites/museums in Greece, based on presentation of digitised content.



Athens, groom and his assistant, c. 1890
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Generation of 15 digital presentations in the form of DVDs. This will be based on collection, digitisation and annotation of the respective cultural content by R&D consortia.

Redesign and Extension of the portal of the Hellenic Ministry of Culture. The portal extension will be based on the state-of-the-art of related technological developments, including the results and conclusions of the above-described scientific and technological digitisation studies.

A new call is being issued for private organisations possessing cultural content to digitise their content; it is expected that more than 100 organisations will participate in this call, which refers to small-budgeted projects that will enhance digitisation activities within the private domain.

Another important study that is currently carried out by the Greek E-Business Forum, supported by the Greek Ministry of Culture, is to investigate how the digitisation projects and activities in Greece will affect the business models currently used in this domain. On the one hand, cultural content owners and content providers are interviewed to identify views, practices and expectations from their side; technology providing companies are contacted, on the other hand, to figure and provide awareness of the new possibilities arising for constructing, operating, maintaining, networking and upgrading the digital content repositories.

The results of this study are expected to assist the Ministry of Culture to design its forthcoming policy as far as digitisation and associated services are concerned, while alerting cultural organisations and companies for the related prospects and evolving possibilities.