Portugal

Lídia Jacob
Portuguese Representative of NRG
and MINERVA Plus

1. Information and Knowledge Society: some national initiatives

In January 2005, the UMIC, <http://www.umic.pt/UMIC>, that was operating since 2002 as the Mission Unit for Innovation and Knowledge (as explained in the last reports), changed into a public institute with administrative and financial autonomy, within the Ministers Council Presidency. Actually known as the Knowledge Society Agency, UMIC is the Portuguese public agency that plans, coordinates and projects development within Information Society, including all the measures related with the e-Government.
The Portuguese Government launched at the end of July 2005 the Connecting Portugal Initiative: <http://www.infosociety.gov.pt/connecting_pt.htm>, and the role of UMIC was reinforced. The Connecting Portugal is a relevant part of the Portuguese Technological Plan that is related to the Information Society matters. The most important goals are the spread of ICT in Portugal fighting the info-exclusion, through the development of different social and educational projects, such as the Digital Cities and Digital Regions – the investment in this area is over 200 million Euros and the project involves e-Gov solutions within the local and regional public administrations in cooperation with small and medium enterprises, and offers different services to the population. Among lots of others:

- the b-On: online Knowledge Library
  <http://www.b-on.pt>
- the Citizen's Portal
  <http://www.portaldocidadao.pt>
- the Public e-Procurement
  <http://www.compras.gov.pt>
- the Science Alive (Ciência Viva)
  <http://www.cienciaviva.pt>

Approved in 2005 the above-mentioned Portuguese Technological Plan-2005/2009- <http://www.planotecnologico.pt/index.php?page=1&lang=en> follows all the key issues appointed by the Lisbon Agenda. This Plan intends to change and transform Portugal into a modern knowledge society by mobilizing all citizens to these matters, stimulating the innovation initiatives, promoting the scientific and technological development and qualifying the human resources. In order to achieve better results it was decided that the National Coordinator of the Lisbon Strategy would also be the Coordinator of the Technological Plan.
The Portuguese Technological Plan has three action axes: Knowledge, Technology and Innovation, and all the specific measures are organized within each one of them. The Ministry of Culture has several mesaures included within the Technological Plan, such as the Digital Libraries; the Digital access to cultural contents and the Digital Cinema network, to mention only some.

2. Information and Knowledge Society: digitisation policies within the Portuguese Ministry of Culture

2.1. Movable and immovable heritage

2.1.1. The museums

STRUCTURAL PROJECTS ON MOVABLE HERITAGE

The Portuguese Institute of Museums
The Portuguese Institute of Museums (Instituto Português de Museus-IPM) coordinates 29 museums covering art, archaeology and ethnography, where visitors can find outstanding examples of Portuguese heritage. The Portuguese Institute of Museums fosters a digitisation policy that furthers beyond the museums under its direct coordination and is defined by the following general principles:

- Rehabilitation of museological spaces and of enhancement of presentation of museum collections.
- Study, cataloguing and management of collections
- Safeguard and diffusion of the cultural movable heritage
- Production and disclosure of standards and guidelines in the various areas of the museological practice, envisioning the promotion of good practices.
- Enhancement of museums and structuring of the Portuguese Network of Museums
- Internationalisation of Portuguese museums.

In order to achieve these goals the Portuguese Institute of Museums has set in place different ongoing long term projects, such as Matriz and MatrizNet, that will during 2006 encompass significant technological updates that will allow a much more agile availability of information through the Internet and also an economic sustainability of both projects.
`<http: www.ipmuseus.pt>`

MATRIZ – Digitisation of Museum Collections and MATRIZNET - online publishing of museum collections
The digitisation of all information concerning IPM museum collections is an ongoing project. Matriz was updated in 1999, and a new update will be completed in 2006, altogether with its online interface (MatrizNet). At the present a total of 250,000 PMI museum objects have been digitised, 30,000 of which are published online through MatrizNet. Since 1999 Matriz allows not only the cataloguing of museum objects but also their management, thus providing the complete computerization of all museum activities, from museum items accession to loans, conservation, restoring and many other daily museum management procedures.
The digitisation of IPM's museum collections, namely in what respects human resources, was supported financially between 2001 and 2005 by POSI (Operational Program for the Information Society), which largely contributed to the increase of those museum digital contents.
The digitisation of its museum collections is also supported by IPM through the production and publishing of key standards and guidelines for the cataloguing and documentation of museum objects. Until now IPM has published seven volumes of these guidelines series, and in 2005 five more, to be printed in 2006, have already been prepared, thus supporting the documentation of museum objects from Fine Arts

and Decorative Arts to Archaeology and Ethnography. In 2005 the Framework Law for Portuguese Museums (Law nr. 47/2004), began to be applied. The law, the first of its kind in Portugal, clearly specifies the importance of inventories, namely of digital ones, thus promoting the qualification of Portuguese museums and also the standardized procedures in this field.
The inventory databases of the IPM museums were made accessible in 2002 to all citizens through MatrizNet `<http://www.matriznet.ipmuseus.pt>`, a Web search engine that enables users to freely research items within those collections. MatrizNet, the public interface of Matriz, materialises a major goal defined by the Portuguese Institute of Museums in what concerns online publishing of its museums collections.
This online free-access search engine constitutes the major digital library relating to Portuguese movable heritage. Since it was first published in 2002, with the financial support of POSI (Operational Program for the Information Society), it was integrated in the eEurope Action Plan in what relates to the production of European digital content for the world networks and is also integrated on the Internet Initiative in what concerns the digitisation and accession of public content, namely from museums.
In 2006 the online information will be substantially enhanced in the sequence of both Matriz and MatrizNet technological update. This project will be developed on a business model which results of a cooperation between the PIM and the private sector, and one of its main aims is the cost-reduction of both projects economic sustainability.
Online publishing of the digital library on IPM's museum collection is evidently integrated in the strategy of the Portuguese Institute of Museums to assure its presence, as well of all the museums it coordinates, in the Web. Besides PMI's Website `<http://www.ipmuseus.pt>`, twelve of its museums have their own Website in the Internet, thus promoting their collections and their activities to all sorts of public. In 2005 IPM has promoted the development of new nine other museums Websites, in an action financially supported by POSC (Operational Program for the Knowledge Society). The development of the new Websites of these nine museums will be completed in 2006. These museum Websites were conceived taking in account a common architectural basis, without betraying the specific identity of each museum, from

which one may immediately perceive its mission, type of collection, programs and activities. This common structure reveals what is widely accepted as being the duties of museums towards its publics. As to PMI's Website, it reveals to be a portal that works not only as an information resource provider for the general public, but also to museum professionals.

National photographic inventory of the museums
The Portuguese Institute of Museums is responsible for the production and management of photographic records of the objects that belong to the collections of its museums. The national photographic inventory database is an important resource either for museum professionals, art historians and both national and world-wide publishers, and the production and management of its images by IPM's photographic agency is of utmost importance in order to assure the quality of the printed diffusion of the museum' collections, as well as the management of the copyrights of the images. The national photographic inventory also supports the production of museum object images that are loaded into each Matriz register and published through MatrizNet. The digitisation of the national photographic inventory began in 2001 and in 2005 was extended to infrared reflectography and X-ray images. In 2006 the database will be accessible online, in order to promote descriptor-supported and faster search of the images, as well as online request of the images to PMI's photographic agency. The online publishing of this user-friendly search engine, which will also provide essential information on each museum object, is supported by POC (Operational Program for Culture).

Database for protected movable heritage
In 2003 the Portuguese Institute of Museums conceived a specific database in order to manage all the information related to the movable heritage items protected under Portuguese Law since 1930. These objects belong mainly to individual collectors, foundations, museums, and also to the Catholic Church. This database was reformulated in order to suit the parameters of the new law on cultural heritage, issued by the Portuguese parliament on 2001 (Law nr. 107/2001), which identifies different levels of protection for movable heritage. To date it contains a total of 1923 entries, distributed by several categories of items, such as Painting, Sculpture, Furniture, Ceramics, Gold and Silversmith works and Textiles. Since its

development, the various contents of this database have been updated, in order to promote the global reappreciation of the protected items and under the scope and criteria of the current law on cultural heritage.

EDUCATIONAL PROJECTS

Portuguese Museums administered by IPM have developed a number of educational projects making use of information technologies. Some of these projects are destined to be used locally, in each museum, by educational agents and their respective communities, and refer to software applications to educational purposes, digital reconstruction of museum items or archaeological structures, e.g. Other projects are developed altogether with other museums, cultural institutions or universities, on a national or an international-wide basis.

Historical carriages on the Digital highway
This European-wide projects reflects the partnership of the Portuguese Museu Nacional dos Coches (National Carriages Museum) with the Nationaal Rijtuigmuseum, in the Netherlands, and the Kunsthistorisches Museum / Wagenburg, Austria. The main results of the project consisted in the development of a portal, of a printed catalogue on collections of the three museums involved, and also in the dissemination of guidelines and procedures on the conservation, restoration and presentation of historical carriage collections, as well as the promotion among European public on the importance and attractiveness of the carriage history. The European Commission, the Dutch Mondriaan Foundation and all the museums involved, financially supported the project.
`<http://www.carriagesofeurope.com>`

Virtual show cases
The Virtual Showcases project introduced a new projection-based augmented reality display system which is suitable for museum environments as it uses real artefacts. By merging real and virtual aspects in a completely innovative way, it provides enrichment of physical artefacts with three-dimensional animated content. The final users are three museums – the Technical Museum in Vienna (Austria), the Science Museum in Bonn (Germany) and the D. Diogo de Sousa Archaeological Regional Museum (Portugal). Each museum had its associated technological and commercial partners, as the main goal of the project was the

development of a hardware and software visualisation system for augmented reality presentations in museums using real artefacts. The IST – Information Society Technologies financed the Virtual Showcases project. In the case of the Regional Archaeological Museum D. Diogo de Sousa, a virtual reconstitution of a funeral ceremony from the Roman period was created. Based on a real model that represents the archaeological remains of a tomb from this period that was discovered in Bracara Augusta, today Braga, the presentation reconstructs the funeral ceremony where the corpse was cremated on top of a wooden pyre. The entire ceremony is shown through a series of animations and augmentation with gifts such as pottery and flowers. This new approach to the exploration of cultural exhibits was targeted at younger museum visitors although the presentation is accessible to everyone that visits the museum.

The Museave-Aveiro Museum
This project aims at the development of a educational as well as entertaining product with contents related to the heritage and museum collections of the institutions involved, and it is the result of a partnership between the Aveiro Museum, the leader of the consortium, and several municipalities in its area. The Museave´s project content has three main components: a project Website, a dynamic search module and a virtual multimedia visit. Its goal is to motivate in the public, especially amongst the younger and school publics, a greater inclination for history and heritage issues and to simultaneously better acquaint them with the new communication technologies. The action of virtual multimedia tour takes place in the XV-XVI centuries and the visit takes place through four levels of information. The Museave project began in February 2005 and having completed its research and virtual visit scripts, it is now developing the application software. Its completion is due in December 2006. The educational application will be available either on-site, at the museum, and on-line, through the museum's Web page.

The Portuguese Museum Network Website
The Website, first presented on-line on March 2001, gives access to the main activities and to general information about all the 120 accredited museums including Websites and email contact references. The most significant legal documents concerning the accreditation system and the Mission Structure itself are also accessible, such as the Portuguese Museums Law (Law nº 47/2004, August 19ᶜ), the

Application form for Accreditation (both on pdf/ zip format). All regulations and documents concerning the *Museum Upgrading Support Programme* for financial support for accredited museums, and the *Museum Consultant Programme* are also available. The annual Specialist training courses programmes are also accessible, including the application forms for each training scheme. Portuguese Museum Network actions, national and international conferences about museums and heritage as well as the accredited museums activities are the key subjects for the online news area regularly updated, including information concerning exhibitions, education programmes, conservations projects, e.g. All issues of the «Portuguese Museum Network quarterly» are also published on-line (pdf/ zip for download). The bibliographic database of the Portuguese Museum Network Documentation Centre is presented online with a free-access search engine, also featuring the possibility of asking for special searches through the library specialist email, for borrow books sent by normal mail, accessing thematic organized book lists about Museology, Museum administration, Exhibitions, Education, etc. From February 2006 the online service provided by the Documentation Centre will be enriched with a quarterly «Bibliographic Bulletin». This service will be available to users who wish to subscribe a thematic mailing list – calling attention to newly acquired items offered by the Documentation Centre.
`<http: //www. rpmuseus-pt. org>`

PROJECTS SUPPORTED BY EU FUNDING OF DIGITISATION OF MUSEUM COLLECTIONS

In 2005 the POC (Operational Program for Culture) administration conceived a special program for digitisation of museum collections and digital cultural libraries (Medida 2.2.) under the theme "Information Technologies for Culture Access", for which some accredited museums applied.
We present here the list of approved projects concerning the accredited museums:

• Museu de Serralves, Serralves Foundation
• Museu de Olaria, Barcelos Municipality
• Museu Municipal de Coruche, Coruche Municipality
• Museu Municipal de Vila Franca de Xira, Vila Franca de Xira Municipality
• Ecomuseu Municipal do Seixal, Seixal Municipality.

Ecomuseu Municipal do Seixal
2003: Inventory and Digitisation of the technical and
documental collections of the Mundet factory
2004: Digitisation and study of the documental collections
2005: Study and digitisation of the building plans of the
Mundet factory

Museu Municipal de Vila Franca de Xira
2004: Inventory and digitisation of the archaeological
collections

2.1.2. The architectonic heritage

Inventorying and Digitising the Historical-Cultural Heritage
In 2005, the Portuguese Institute of Architectonic
Heritage (Instituto Português do Património
Arquitectónico-IPPAR), continued with the Project
"Inventorying and Digitising the Historical-Cultural
Heritage", started in 2001. On one hand, the Project
includes the Development of the Information System
and Heritage Management (implemented in all IPPAR
structure that has all the information concerned with
immovable goods with legal protection); on the other
hand, the public access to the contents over the site
`<http: //www.ippar.pt>`.

Digitisation Statistic (2005)
Portuguese Institute of Architectonic Heritage

Registered Immovable Goods in the Information System: 6,500	With legal protection: 4,251 Without legal protection: 2,249
Immovable Goods (digitised)	852
Protection Zones (digitised)	569
Special Protection Zones (digitised)	135
Immovable Goods (geographic indication)	582
Special Protection Zones (geographic indication)	94
Movable Heritage registered in Matriz software	Objects: 22,000 Images: 50,500
Images database: 130.500	Immovable Goods: 80,000 (10,400 in the Information System and 5,000 in the site) Movable Goods: 50,500

At the moment, there are 6,500 immovable goods
registered in the Information System, 4,251 of which
have legal protection (this number oscillate according
to the information received about the immovable goods
classification).
The digitisation process continued and the geographical
indication related to the immovable goods were made
on 1:1,000 scale. It can be found 20 maps and its
correspondent 20 historical centres in IPPAR site.
The above information satisfies the digitisation of 1,556
immovable goods, Protected Zones (PZs), Protected
Special Zones (PSZs) as well as 1,076 immovable goods
geographically indicated.
Concerning the movable goods, the digitisation has been
made in 5 National Palaces (Mafra, Ajuda, Sintra, Queluz
and Pena), all of them under IPPAR administration. The

software in use to the computerisation is "Matriz" (the
same in use at the Museums) and it has 22,000 plain-text
documents records and 50,500 images already imputed.
At the moment, there are 130,500 images records
concerning immovable goods and 50,500 related with
movable goods.
To do all the work mentioned above, IPPAR applied to
specialized workers in areas as Art History and
Archaeology and made 32 protocols with regional
Head-Masters (to use digital documents like
cartography, for example). All the work related with
immovable goods geographically indicated, Information
System updates, storages, maintenance and site
operations, are made by an external company, named
Chiron. During 2005, the IPPAR Website registered
between 30,000 and 55,000 visitors per month.

Public attend through Internet (guichet online)
This Project is funded by Operational Information Society Programme Programa Operacional da Sociedade de Informação (POSI). It concedes that the reports made by IPPAR (involving urbanistic operations on legal protection buildings, Protection Zones and Special Protection Zones) could be asked through Internet. An Electronic shop is ongoing too. The aims of this Project are the development of the technologic tools and the modification of the internal procedures within IPPAR in some specific areas: reception, analyse and decision about public needs in what about immovable goods and legal protection zones concern. Any person can access, by Internet, to:

• all forms in use on IPPAR to communicate with the public
• fulfil those forms on-line
• make a personal login (with a code and a key-word to access and consult direct into the System)
• access to his personal process, using the personal login.

In order to simplify the communication with the public, there are 5 forms on the site:

• Classification Instrution Process
• Preference Rights on Onerous Transitions/Taxes Benefits
• Previous Information/Architectonic Projects Analysis
• Heritage Protection.

In 2005, there were 60.083 requirements made by 10,716 petitioners, over the Internet. It has been developed an "Images Management System" (to be implemented) that will allow the storage and management of an unlimited digital images. The *guichet* online it's integrated in the IPPAR Web site.
<http://www.ippar.pt>

2.1.3. The archaeological heritage

The main purpose of the Portuguese Institute of Archaeology (Instituto Português de Arqueologia - IPA) is the management of all archaeological activities, by means of policies aimed at the safeguard, enhancement and diffusion of archaeological heritage. Since 1997, IPA has developed and expanded an information infrastructure, in order to make a vast amount of information available to a growing number of users. IPA's information system is based on a nationwide dedicated network, which interlinks the Lisbon head office and all of the 11 local offices and specialist departments, and can be used for data and voice communications. Technologically speaking, the network uses a structure of routers on frame relay, with an ISDN backup, hired from a private operator. The bandwidth can be constantly adapted to the traffic needs, in order to ensure a better performance. Voice communications, as well as access to Internet and mail servers, are provided through the central node, in Lisbon. Data files and directories can be shared between the head office, local offices and departments, which can log directly onto the *Endovélico* system database server, again in Lisbon. Thus, IPA's Archaeologists can access updated information at all times, and directly insert information resulting from their field work.

Endovélico - Archaeological Management and Information System
In order to fulfill its aims, IPA has implemented an integrated information system, in association with Chiron, a specialized company. The system is built upon an ORACLE database, in DELPHI language and features administrative, technical scientific and bibliographic information. The main source of this information is the Portuguese Archaeological Archive, kept at IPA. A linked GIS renders the precise location of archaeological sites, and can be used for archaeological planning, management and research. In 2005, the database included records on more than 19,200 archaeological sites (11,169 of which are georeferenced), and 4,500 archaeological projects.
In order to adapt the system to the growing daily needs of national archaeological activities, the system is undergoing a permanent optimization. In 2005, the database has grown once more, to accommodate information on nautical and underwater heritage, including sites and remains found in national or international waters, as long as their origin is Portuguese or they are located in Portuguese speaking countries. The integration of bio-anthropological data found in archaeological contexts is currently being developed, a seemingly unparalleled initiative in EU space.
As this information system is a relevant tool for all levels of archaeological activity, IPA is considering the implementation of a GIS Internet module, and the availability of images related to both archaeological sites

and field works. To this purpose, a FEDER funded project begun in 2005, aimed at digitising images kept at IPA's archives and making site locations and coordinates available. Initially, this project will focus only on sites included in the *Alqueva* dam archaeological salvage, and on IPA funded research projects, but future development may include all sites on the database. On the other hand, access to images and to territorial searches of heritage, also aim at contributing to the development of strategies and an integrated policy for cultural tourism, and to an educational change of mentalities.

The system further features a ZOPE open source Web interface, which includes an APACHE interface for searching the *Endovélico* database, through which contents are made available to professional archaeologists, public institutions, local administration services, universities, students and the public at large.

Archaeological library
The other tool that can be accessed through our Website is IPA's Library information, developed by *BIBLIOsoft* and made available online through the APACHE interface. The site also includes references to all of IPA's publications, issued in the scope of the Institute's efforts of disseminating and promoting archaeological activities, among the scientific community and the public at large. IPA's editorial policy involves the yearly average of 2 journal issues and 4 monographs. A total of 32 monographs and 16 journal issues were reached in 2005, which are accessible and may be printed directly by means of a universal html/pdf format. The Web page is also useful for the promotion of the Côa Valley Archaeological Park (PAVC). The Park aims at managing, protecting, musealising and organizing for public visit all the monuments and sites within its special protection area. All kinds of technical information are made available online, including didactic files on the rock art engravings, logistic information and visit scheduling, thus contributing to the development of local tourism. IPA's portal has had an average of 3,000 monthly requests in 2005, which represents a significant growth. Foreign request have also increased, including such countries as Brazil, France, Spain, Germany, Italy and Mexico. Steps are being taken to reach greater user diversity; access by citizens with special needs is already possible, though with limitations. An English version of the site's contents is to be developed in the near future.
`<http: //www. i pa. mi n-cul tura. pt>`

2.1.4. The Conservation Sector

Digitisation of documentary images from the photographic archive of the Institute for Conservation and Restauro – IPCR)
This project's aim was to treat and house the most relevant documentary images from the photographic archive of IPCR. Within a period of eleven months, comprehended between February and December of 2005, a total of 18,000 images and their respective negatives were housed, cleaned and digitised. The digitised images and their descriptive documentation were put into a data base (MS ACCESS).

The photographic collection of IPCRs' Technical Archive, includes different types and formats of images. This collection presents evident conservation problems (degraded support based cellulose nitrates and cellulose acetates), which need urgent intervention treatment. The housing materials are not adequate and the ambient conditions are not those recommended for this type of objects. The collection is structured according to the intervention areas operating in the Institute – Paintings, Mural Painting, Sculpture, Furniture, Textiles, Paper – and the scientific and documentary area – Radiography.

The Project started in 2003/2004, with the support of European funds obtained from the Operational Programme for Culture (POC). With the technical support of an external enterprise specialized in treatment and digitisation of photographic collections, a total of 30,000 images were treated and digitised and those images with their descriptive documentation were put into an MS Access Data Base. These images were selected from the most relevant documentary file processes of all the areas of intervention described above, and a considerable number of records were located for consultation on the IPCR's Web page `<http: //www. i pcr. pt>`. In 2005, the Project continued recurring exclusively to IPCRs' budget, due to not being able to receive further support from European funds/POC.

Having to treat a volume of 18,000 images, in this phase of the project and within a period of only eleven months, the Documentation and Archive's Department of the Institute selected 5,000 images of greater interest, which documented the intervention processes, namely images of objects, before, during and after intervention. However the total volume of the 18,000 images was, individually described, for input in the database. The digitisation aims to cover two fundamental

necessities: preservation of the originals and its network dissemination. The preservation is guaranteed by treating the original negatives before proceeding to digitisation (by cleaning procedures, removal of tags, adhesive tapes and masks as well as stabilizing glass negative proofs) and by housing the negatives after the digitisation procedure, within conservation involucres placed in a cold deposit.

Considering the different image typologies, which include different types of material supports, negative and positive copies and radiographies in different dimensions, the method of digitisation was adopted to each individual case. The digitisation of radiographies measuring up to 24x30cm, was carried out with a digital camera in premises of the enterprise Luis Pavão, Lda. The digitisation aimed at preserve the visual information with a quality and level of detail which would permit their analysis for investigation purposes and their reproduction, maintaining a similar quality to the original. The following files were created from each digital image:

- Thumbnails – reduced image dimension between 5 and 100 Kb, for visual imaging in data base and Internet;
- Jpeg format – images with approximately 1/2 Mb for printing and visual examination in the Institute's Library;
- Original digital image in Tiff format (without compression) with a weight of approximately 15 Mb having no image treatment.

As the Institute did not dispose of the necessary know-how for developing this project, an external firm was contracted – *Luis Pavão, Lda.* The conservators from this enterprise started with the cleaning, digitisation and input of the database, based on the available information, present in the hard copies of the documentary files. The IPCR conservators in order to correct errors of interpretation and fill in further details treated this information later. After this revision, the information was sent to the firm responsible for the updating of IPCR's Web page.

This IPCR's Project was designed to create a bank of images from the Technical Archive, which integrates conservation-restoration images in different formats and support materials – positive and negative images, slides and radiographies.

As a significant number of images were digitised, they now are available to be consulted and used by the IPCR conservators through the internal network facility, as well as for local users of the IPCR documentary services and for all those interested in the field of heritage conservation, who consult the IPCR Web page: `<http://www.ipcr.pt>`.

The digitisation was carried out using table scanners and the negatives were scanned using a specific scanner for transparencies.

The databases were created using MS ACCESS and include 16 tables, 5 of which can be called main tables, the other 11 are auxiliary tables.

The main tables are:

- 01 Conservation Process – refers to the conservation documentary files elaborated for each object treated at IPCR. It includes 3,480 records.
- 02 Document – refers to the intellectual division of the documentary files in the different phases of treatment. It includes 6,858 records.
- 03 Image – refers to the description of each image of the various conservation documentary files. Includes at the moment 34,001 records.
- 04 Specimen – refers to the physical description of each photographic specimen and its condition report. Includes at the moment 34,103 records.
- 05 Treatment – refers to the conservation treatment carried out on each photographic specimen that is cleaned, housed and deposited in the Cold Storage Archive. It includes 31,388 records.

The digitised images constitute an important flow of information, fundamental for a very large number of researchers, in the area of cultural heritage, curators, conservators-restorers, teachers and students of conservation-restoration and other adjacent areas of study such as history of art, amongst others.

These contents – the images and their description that have been placed on the data bases – are progressively being updated and made available on the IPCR Website. The original images are housed in acid-free involucres, after receiving conservation treatment, and placed in Cold Storage deposits.

The digital images in the different formats (JPEGs and TIFFs) are copied onto DVDs and are available at the Library. Security DVD copies are made and a digital matrix is housed in an external disc drive, stored in a safe-box.

Since the Project did not have financial support to continue its work in 2006, IPCR is at the moment involved in the process of controlling the available information of the databases and of disposing a growing number of images on the Website.

2.2. Libraries

The National Library of Portugal (Biblioteca Nacional – Bn)
During 2005 the BN made the quality control of the digitisations done in the previous year of 2004, making the necessary rectifications and being uploaded. The images of the digitised titles were delivered with proper identification in DVD support (originals and copies) and were registered in the legal deposit. Through being uploaded both its matrix and the several existing versions of the digitised titles are kept in server and a security copy is done.

Typology of the digitised titles
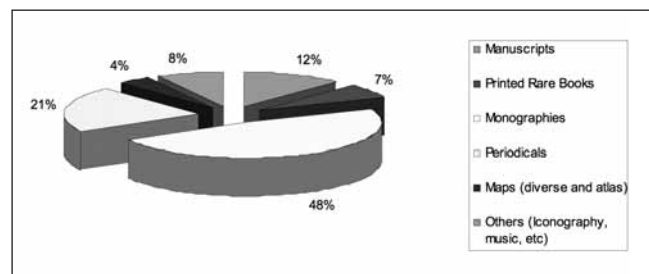
The cartography and iconography lists already online comprehend around 5,000 titles. These titles placed online are – in its majority – in the public domain and are usually available in JPG format of medium (150 dpi) and low resolution (75 to 100 dpi, depending on the legibility), located respectively in the internal and external networks. The monographs, periodicals and musical partitions are also available in PDF formats. Due to preservation reasons some titles protected by the author's were also digitised, allowing the readers who physically visit the National Library to consult the digital copy through the internal network which is also a way to preserve the book itself from handling damages.
The access is free and the user only needs to have a browser, because it's not required any extra software. The digital title is processed through the images with the support of two applications, the SECO and

CONTENTE, developed by the BN in open source.
In cartography the entire item is available as well as several versions of the different parts.
In 2005 we had 431,751 users accessing the Digital Library <http://bnd.bn.pt/>.
These BN activities were financed in 2005 by National and also European funds (these namely through the MINERVA Plus Project.

The Portuguese Institute for Book and Libraries (Instituto Português do Livro e das Bibliotecas - IPLB)
The IPLB produced and divulged through the Website <http://www.iplb.pt> various digital contents, in areas such as dissemination of Portuguese literary works and in reading promotion.
The main contents are the Portuguese Authors, Reading Support Service (SAL) and the publishers, bookshops and libraries databases, focused on a public-target of citizen in general, professors, librarians, students and agents of the book and libraries sector.
Through the International Poetry Web <http://www.poetryinternational.org>, supported by the Culture 2000 Program with European funds, the IPLB divulges on line and assures the update in English language of book excerpts of Portuguese poets.

2.3. Archives

"Torre do Tombo Online" Project
Between October 16th 2003 and June 30th 2005, the National Institute of Archives / Torre do Tombo (Instituto dos Arquivos Nacionais/Torre do Tombo-IAN/TT) developed a digitisation project named "Torre do Tombo Online" sustained by POC (Operational Programme of Culture), related with the prioritary axle 2, measure 2.2. – Application of the new technologies to culture, Action: Treatment and digitisation of the archives and bibliographic funds as well as Portuguese musical patrimony that reveals National interest in the cultural sector. Turning the important and relevant information available through Internet, was the aim of this Project. That way, the citizens are able to better understand the Portuguese and the World History.
The investments made in the Project were:

Total investment: 383,305.50 euros
Eligible investment: 167,375.5 euros
FEDER participation: 125,531.6 euros

The potential user predicted for this Project was the Portuguese tongue universe. It isn't available all the information about the application results of the Project. Concerning the contents, the IAN/TT produced more than 52,000 descriptions and digitised 330,700 images related with Oliveira Salazar archives (diary), photographic archive of Companhia de Moçambique; a part of the Corpo Cronológico documentation and documents that are integrated in Torre do Tombo Treasures (virtual collection). All of these large group of descriptions and images available in the Internet, increase the preservation capacity of the documents that are in Torre do Tombo, as well as the access to recording patrimony that is preserved in the most important historical archive in the country. Beside this, "TT Online" Project contributes for the preservation of the documents and, at the same time, the population can consult integrally what they want and need, without risk for the original documents. This documental format was the guarantee of the virtual documents repair and the reading of the parts that were un-reading in the originals.

The process for the Web contents included two main procedures: recording description and documents digitisation.

Recording description: the Project allowed the consolidation of the recording description work process that already have been made in the transformation of the production activity of the description instruments in a line work offering, in that way, a quick information to the Web users. The Recording Direction Services made a normalized description of 52,000 documents in the database "Calm", related with 72 volumes of Oliveira Salazar archives (diary), photographic archive of the Companhia de Moçambique and Grupo Entreposto; 45,000 documents from the collection Corpo Cronológico and 229 documents that are part of Torre do Tombo Treasures, to guarantee the link between images and texts/documents.

Documents digitisation: in order to a better productivity, the Project allowed the acquisition of one automatic microfilm "digitaliser". In that way, the work performance increased and the response to the users needs was faster. This equipment was a very good contribution to the preservation of both documents and microfilms and an excellent resource for their diffusion. Taking into account the several characteristics of the documents, formats and layouts (image and the style of writing, black/white and colour), the human investment was unavoidable:

knowledge in digital technologies was needed. Different shapes captured all the information contained in the documents, flatbad, planetary; automatic and manual. It was the first time that a work like this one was made in Torre do Tombo and it was necessary to create an image database (developed by DS) able to be linked to "Calm" (database for recording description).

The research of the contents and disposability are for permanent maintenance (archive documents for permanent maintenance), cultural and administrative interest.

To turn on the Project, it was necessary the acquisition of the digitisation services and material resources (hardware and software) in order to execute all the digitisation process, description, store, availability and information security. The substructures acquired – hardware (SAN, servers, hard disks, Gigabit switches) and software (images databases and script) – allowed the IAN/TT (and the country) to have a technologic substructure able to support the national recording database, the image storage related with several funds of Torre do Tombo and its access through Internet. To the workers, it was a way of breaking routines and increases the efficacy and efficiency of their activity. Because of the acquisition of the new equipment, the information access was much better than before: from 100 Mbps to 1Gbps, as well as the availability. This availability was made thanks to SAN technology (Storage Area Network), taking part of the all advantages that it gives (clustering).

The images available on Web were made by two servers, using NLB (Network Load Balancing) technology, which permitted effective and available information beside a good maintenance of the local resources. The adopted substructure allowed series of ascending and descending tones related with the computer system of IAN/TT and the digital preservation was made by raid system from SAN and by external back ups, in DTDs.

"TT Online" Project has several advantages:

- the efficacy of the information and a faster research
- a recovery of the information that is inaccessible in the original document through the virtual treatment
- involve contents to the investigation benefit and to the Culture and Patrimony knowledge. In a general way benefits the national and international community

- all the citizens can examine more than 52,000 documents descriptions in a distant way
- in an internal way, it can be found an optimise human resources, specifically the archivists that can do their work consulting the digitalised documents instead the original ones
- for the other side, they also take good part of their time and work – it increases their performance and the happiness at the work office once the technical work – reading room, for example – becomes less complicated
- some of the workers can help other sections, for example, in the description and conservation of the documentation
- the available information that can be found in the Internet represents a big contribution to the possible relation with national entities (universities, institutes or others entities from the cultural sector, scientific and cultural) as well as with the international entities in order to establish collaboration protocols.

Consulta Real em Ambiente Virtual" Project
Conception and presentation of the request to capital investment: 2005. Situation: capital investment supported by Operational Programme of Culture (POC), Proc. 4.3 – 406/05. Global Project amount: 97,368.92 euros. It will begin in 2006 and will finish in the first quarter 2007. Project summary: the main objective of this Project is to create a reference and reading room, similar to the ones that can be found in the archives real space. So, the user can access 24 hrs/day and every day of the week to all the documents they need as well as to several services that an archive can offer. The Project includes the reformulation of the Archive Website, in Porto, and an intranet development in the mentioned Archive. The presented instruments will support the virtual room. That way, the users in presence can consult the documents in the same environment (circle).
Remote availability, using Internet, 24hrs/day, 7 days a week for all the real existing resources in the reference and reading room of the Archive, specifically the search (started), the consultation of the digitalised documents, the reproductions order, acquisition of the other products (books, CDs, etc.), search request and group visits to the Archive. The same interface is in use in the Archive for both search and services request, with the consequent reduction of the ordinary paper and its

costs. Certificated documents made by digital process and electronic payment of services, are things that already can be done.
The contents research and disposability are for permanent maintenance (archive documents for permanent maintenance), cultural and administrative interest.

2.4. Cinema

Digital Net cinema
Digital Net cinema is a project developed by the Institute for Cinema, Audiovisuals and Multimedia (Instituto do Cinema, Audiovisual e Multimedia- ICAM) that promotes the expansion of Portuguese and European Cinematographic and Audiovisual creations. The public stimulation, the independence of this industry and the reinforcement of its promotion all over the country and in the others European countries, are the main purposes. This Net will link several cinema rooms to a central system witch contains digital films ready for exhibition. The Project started on 2005 and it was financed by POS_Conhecimento/UE – FEDER. The first Project stage finished with the equipment installation in the following pilot cinema rooms: Tavira, Tondela, Porto (Catholic University), Lisboa (for ICAM technologic control).
It was established between ICAM and TOBIS, S.A. (a specialised company who makes the images layout and sound control) a protocol for the films contents transcriptions in database files format in order to be seen in Digital net format in the above cinema rooms. Those cinema rooms must be on-line through ADSL access.

2.5. Photographic Heritage

The Portuguese Centre for Photography (Centro Português de Fotografia -CPF) is responsible for an important part of the Portuguese Photographic Heritage, located in the Photographic Archives of Porto and Lisbon. This heritage, which has been continually increased, currently comprises 2,225,396 photographic species, as well as a collection of historical cameras and assorted photographic material.

Digitising Collections
The process of digitising the CPF collections started the very year that this institution was created (1997), as defined in the priority programme designed to respond

to preservation demands, the public's requests and the established activities (museological and research). At present, there are 69,236 species registered and digitised in our database (18,435 in 2005).
Images are digitised according to the following quality standards:

- Archive digital files in TIFF format and 16 bit greyscale, in compliance with the IT 8.7/1 or IT 8.7/2 norms and the ISSO 12641 Standard, for 30x40 cm prints with a resolution of 300 dpi
- jpeg format files (read-only copy) in 8 bit greyscale
- Files for Internet version
- Files in RAW format
- Colour interpositives and slides in 24 bit RGB format
- Colour negatives converted in 48 bit RGB format, in compliance with the IT 8.7/1 or IT 8.7/2 norms and the ISSO 12641 Standard
- Photoshop treatment (inversion to positive, in the case of original documents in negative), correcting borders and shades
- Maintenance of the species' original order
- Metadata files in accordance with the recommendations of the SEPIADES Project.

The outcome of this work is rendered available to both researchers and the general public in the form of databases which are accessible in the terminals of the Information Units in Porto and Lisbon – the project for a future online access through the Website `<http://www.cpf.pt>` (active since April 2004) has already been approved by POC (in November 2005) and will be operational in 2007.
CPF keeps up a service of copy supply (in both digital and analogical formats) of all the images whose copyrights it holds. The grant of the images involves signing a lease/term of responsibility and the payment of a fee for each new use. The request for copies can be submitted in Porto, Lisbon or at a distance.
In 2005, CPF developed the Photo Camera Collection database, which includes images, and will be available for public consultation in terminals in March 2006.
The Centre's library, named Pedro Miguel Frade, is open to the public in Porto. A place of free and reserved access, the library boasts 9,432 volumes (1,109 new titles in 2005) and a consultation database.
The Portuguese Centre for Photography provides easy access to its Photographic heritage by means of a digitisation process. Since this heritage includes

different photographic processes, with various types of basis (glass, plastic, photographic paper, etc.) and polarity (negative, positive), our technicians work with a set of procedures that allow the transfer onto digital format. The technology in use is based on scanning devices connected to personal computers equipped with digitisation and image treatment software.
The Portuguese Centre for Photography keeps all digital information in both disk format and hard disk, so that all data can be duplicated periodically.

2.6. Local and Regional Projects

A cultural inventory of Algarve– the RADIX Programme
The existing database related with RADIX programme is a database where it can be found several information about history, ethnography and archaeology from Algarve as well as cultural activities developed in Algarve, too. This information will be available to the citizens in: `<http://radix.cultalg.pt/index.html>` as soon as possible. RADIX programme isn't a management system but a reinforcement of the cultural part to the tourist motivation. Basically, RADIX was thought for a non-specialized population in order to help them to find cultural information, without demand special knowledge, as the same time that gives the source for the increase of cognisance.
To the specialized citizens, RADIX allows the attachment of complete texts and images, which naturally includes digitised contents.
It's continuous the work making to the progress (development) of RADIX application. The intention is also to translate the contents (for English tongue or other) available in the database.
RADIX it's a relational database in a MYSQL format, PHP programmed and it works in Linux operational system. The information can be imputed through Internet, from all part of the world and by any entity (as long as accredited). The costs are the same as a local phone call. Beside the existent information in the application, RADIX also allows the link with different formats of multimedia registries: text files (*.doc – from Word programme), *.xls (from Excel programme), image files (*.psd – from Photoshop programme), sound files (*.wav) and video files (*.avi). In sum we can say that RADIX will permit:

- Informative universe: it allows the scattering and motivation to the Portuguese culture and knowledge

- Relationship: relates the records between them what gives the user the possibility of "sailing" among the records
- Loading Philosophy: it's open and it's a decentralized organization. After being accredited, any entity can input their own information by using Internet to access directly to the server
- Organization of the information: "trees" of specific classification organize the system. Accordant to the type of records, the system allows finding the information without knowing the name of the object to be searched but only by the categories of the theme wanted
- Universal Internet Access: different publics from different cultures are expected
- Quality of the information: It's made by specialized people and guarantees the high quality of the information received
- Advantages reversibility: it allows, to the entity that does the records input, recycling the information previously done through the interrogative applications from the RADIX database (imported or not) and through the XML applications
- Multimedia character: the system allows the addiction of several digital formats (sound, fixed images and moving images).

3. NRG and MINERVA results at national level and their impact on the institutions

NRG has been a cluster in what concerns information society within the cultural domain, especially due to the great opportunity to share experiences and exchange knowledge based on our National experiences. In fact we have been able to always surpass obstacles and barriers caused, for instance, by different cultural roots, different languages, diverse public rules and public administrations, various national and regional policies, etc, because we – the NRG members – have a goal based on the Lund principles now renewed with the *Dynamic Action Plan* (DAP).

That common goal or purpose that unified us is the need of a common platform of co-ordination, in order to generate stronger links between Member States digitisation initiatives, EU networks and projects, because, as specified in the *Dynamic Action Plan*: «Europe's cultural and scientific knowledge resources are a unique public asset forming the collective and evolving memory of our diverse societies. Resource discovery, accessibility, usability, interoperability authenticity, quality and trust by all users of the Information Society are essential requirements for the delivery of digital cultural information and services [...] Cultural institutions such as libraries, museums, archives and natural and environmental heritage bodies are essential contributors of digital content, but they need to be mobilised and effort must be co-ordinated to make best use of existing technologies and to contribute to the creation, use and delivery of local cultural content that meets the needs of all citizens».

Several times something that seems difficult in a first sight it's after all so easy to implement just because a colleague from other Member State pointed us a better way they already experimented. By carrying on and out all the experiences made by our national bodies we are spreading knowledge and also profiting from external advises that came from the other national representatives since each one of us proceed as a kind of *team pivot* inside the respective Ministry spreading information, for one hand, and collecting data to inform the other NRG members and indirectly the European Commission.

I feel that the real importance of this *platform of knowledge* it will only be perceptible in a few time in the future, however the fruits are already at our disposal, namely trough the extraordinary meetings we had, organized by the last Presidencies, the work done by e-mail and mostly because of the work produced within MINERVA and MINERVA Plus. All the MINERVA publications are a success among the cultural institutions in the Ministry of Culture: we distributed all the titles and as they are not enough for everybody who ask for it, the interested ones made downloads trough the MINERVA Website, what is extraordinary!. Due to that success we are translating to Portuguese the MINERVA publications and soon they will be available in the Website of the Secretary General of the Ministry of Culture. Recently we have being informed that in some training activities within the regional and local museums the trainers will use the MINERVA publications we send them before, such as the *Technical Guidelines for Digital Cultural Content Creation* and the *Handbook for Quality in Cultural Web Sites: improving quality for citizens.*

A specific Website with a registry of projects related with the digitisation of cultural and scientific content,

carried out in Portugal by public or private entities was build by the National Library in cooperation with the Secretary General of the Ministry of Culture: `<http://minerva.bn.pt/jsp/frontend/index.jsp>`. This site was a contribution to the European project MINERVA and the main purpose is promote all the information about digitisation, pointing also complementary resources such relevant technology, companies offering services on the area, and examples of good practices. We have also a link from the Secretary General Website to the MINERVA Website in order to facilitate a quick connection `<http://www.sg.min-cultura.pt/>`.

The Progress Report of the NRG coordination mechanisms for digitisation policies and programmes 2002, 2003 and the last one about 2004, were delivered to all the Ministerial Cabinets within the Portuguese Government, to all the institutions and bodies related to these matters in the Ministry of Culture and in other Ministries, such as the Education; Science and Higher Education, it was also sent to Universities, local Museums and Libraries, etc.

We received lots of letters and electronic messages congratulating the NRG reports we sent and also the MINERVA and MINERVA Plus publications, namely pointing the excellent quality of the editorial collection and reports and also the unique possibility they have to understand and know more about cultural information society issues developed all around the European Union. The feedback was – and is – very positive and we know that several institutions in Portugal use the MINERVA Website to accomplish some tasks, following the guidelines and the knowledge freely available.

The accomplishment of DAP guidelines is our next challenge, but my expectations are highly positioned just because we already have results which demonstrate that we must keep on all together: when we work looking forward the common well being the strength appears and the results are better then when we act alone.