Spain

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At the policy level, the Government adopted in November 2005 the *Plan AVANZA* for the development of the Information Society in Spain for 2006-2010. The initiative aims to bring the various regions of Spain into compliance with i2010, the European Union's initiative to ensure that Europe's governments, businesses, and citizens make the best use of Information and Communication Technology (ICT). In the effort to improve industrial competitiveness, to support growth and the creation of jobs, and to address key societal challenges – all cornerstones of i2010 – AVANZA has a specific target: in 2010 the percentage of economical activities related with ICT reaches 7% of the GDP.
The AVANZA Plan includes five key areas:

• Citizen inclusion
• Competitiveness and Innovation
• Education (E-learning) in the Digital Era
• Digital Public Services
• New Digital Context includes a subarea called Digital Content which foresees the creation of a cooperation framework with the digital content industry to develop business models which allow the commercial re-use of the public sector. It also envisages the creation of digital content through digitisation and dissemination of cultural heritage, especially of heritage coming from libraries and archives.

The programme to fund the digitisation of Spanish cultural heritage (*Patrimonio*), now included in the key area of Digital Context, has launched a public call to fund digitisation and Web dissemination of cultural and natural heritage in collaboration with regional authorities. The total amount allocated is 5 M€ and regional authorities will cofund around 25 projects. Synergies with cultural tourism and educational content will be taken into account in the project selection. Funding from Spanish Information Society Agency, Red.es, will be invested in digitisation equipment, digitisation services (digital photography, elaboration of virtual visits, 2D scanning, digital video), broadband connectivity and consultancy services regarding Web usability, search engine position, accessibility and content translation to achieve multilingual quality Web content. Results from this call will contribute to create education cultural content in relation with other programmes such as *Internet en el Aula* (Internet in the Classroom).

The Ministry of Culture, which has undergone a major reorganisation, continues with major sectorial digitisation projects concerning State Museums, State Archives and State Libraries. This project, mentioned in 2002 *Report of digitisation of historical press*, lead by the Subdirectorate of Librarian Coordination, offers access to to 3 million pages from 915 newspapers kept in the State Libraries through a multilingual Website `<http://www.mcu.es/prensahistorica/en/consulta/busqueda.cmd>` which offers access, using XML MARC schema, METS and DCMI. The project will include more bibliographic material from other libraries and cultural institutions.

A. Users and content

The importance of bringing together national Spanish digitisation initiatives and digital resource discovery has lead to two inventories published in 2006: a directory and harvester of digital resources as the result of cooperation between the Ministry of Culture (Subdirectorate of Librarian Coordination) and regional authorities through the Digital Collections Working Group, and the inventory of University digital libraries (Ministry of Education).
The Directory is based in LDAP ("Lightweight Directory Acces Protocol") and offers basic information about Spanish cultural digitisation projects and initiatives. The harvester offers access to distributed digital content of these projects with metadata harvesting techniques (XML MARC Schema), METS y DCMI have metadata standards. Both have a multilingual interface

<http://www.mcu.es/roai/en/inicio/inicio.cmd>.
The Project Digital-U funded by the Ministry of
Education (*Secretaría de Estado de Universidades e
Investigación*) within 2005 Programme of Studies and
Analysis has carried out an interesting survey regarding
evaluation and promotion of best practices of the
digitisation of documents in Spanish Universities and
research centres. Evaluation has consisted in a census
of on-going projects at universities and CSIC
institutions (*Consejo Superior de Investigaciones
Científicas*), the largest public research body in Spain
which covers all fields of knowledge, from basic
research to advanced technological development.
The project census overview shows the importance of
the work regarding digitisation of cultural and scientific
content, mainly graphic material and documents:

- digitisation of thesis: Universidad Carlos III,
  Universidad Complutense and Universidad
  Politécnica of Madrid, National Distance Learning
  University (UNED) and the Consortium of University
  Libraries of Catalonia (CBUC)
- digitisation of other materials: university publications,
  archive administrative documentation, architecture
  graphic material, summaries, etc.
- digitisation of personal papers kept by various
  universities
- digitisation of ancient books which include
  manuscripts, books, press, documents, printed
  holdings, historical texts, etc.
- digitisation of images and audiovisual collections.

**Developing and sharing user needs analyses
for cultural content and services**

The initiative regarding Web position and search
engines optimization of cultural Spanish content in
Internet mentioned in 2004 report, has moved on to a
new approach. A seminar organised in December in
Casa de América in Madrid, which was attended by
several cultural institutions (*Biblioteca Virtual Miguel de
Cervantes*, University of Alicante, the Museum Thyssen-
Bornemisza, *Casa de América*, *Televisión Española*,
CINDOC-CSIC, Red.es) suggested it was time to focus
less on search engine optimization and Web position
but to improve information retrieval within Websites.
Search engines do not feature all the content you may
offer in a Website (limits due to country domains etc.)

but at the same time the user tends to leave the Website
whenever looking for more information. Therefore,
cultural Websites should work harder in retaining users
allowing them to perform successful searches through
sindication or federation with similar Websites, offering
quality content to the user.

**Recognising cultural content as a driver
for eLearning and the creative industries**

The Department of Industry, Employment and
Technological Development of the Government of
Cantabria has launched a public company for the
development of new technologies, *EMCANTA*. The
public company has launched during August 2005 a
very interesting survey titled "Cultural Heritage and
Technological Innovation" centred in the improvement
of the cultural industries in Cantabria region due to the
possibilities offered by ICT. The survey defines the term
"cultural industry" as the association of artistic creation
to a medium prepared to become a consumer good by
a very diverse public. The theoretical framework takes
into account the conclusions of Lund in order to
discover the business opportunities offered by the
combination of digital technology, cultural industry and
heritage for Cantabria region.

**Ensuring that IPR mechanisms maintain a balance
between enabling access and use whilst respecting
the right of creators**

The *Residencia de Estudiantes*, a private foundation
established by the *Consejo Superior de Investigaciones
Científicas* (CSIC), is a reputed knowledge center since
from its foundation in 1910. Until 1936 the Residencia de
Estudiantes was Spain´s main cultural center and one of
the most lively and fruitful experiences in the scientific
and artistic exchange of interwar Europe. Founded by the
*Junta para la Ampliación de Estudios e Investigaciones
Científicas*, it hosted well known residents and regular
visitors such as Spanish world famous artists and
scientists (Juan Ramón Jiménez, Miguel de Unamuno,
Federico García Lorca, Luis Buñuel, Severo Ochoa,
Salvador Dalí, etc.) and it was also a center for the
reception and development of avant-garde ideas from
the world over, some of whose originators (like Einstein,
Keynes, Gropius, Marie Curie, Stravinsky, Le Corbusier,
Bergson, Calder, Valéry, Max Jacob, etc.) visited the

Residencia. Its Documentation Centre holds an exceptional bibliographic and documentary heritage made up of more than 40 legacies and collections of personal papers, specially those corresponding to the *Edad de Plata* (Silver Age of contemporary Spanish culture corresponding to the Spanish literary generations of 1898 and 1927). Digitisation has resulted in 575,000 images, though the process of digitising material will go on until 2007. The portal of *Edad de Plata* <http://www.archivovirtual.org> already allows access to several collections and a total of several thousands images. The recent acquisition of a digital asset management tool will improve the management and dissemination of digital collections, as well as the management of intellectual property issues which condition the policy of the institution.

The Miguel de Cervantes Virtual Library (*Biblioteca Virtual Miguel de Cervantes*) has been offering contents related with Spanish bibliography for six years in <http://www.cervantesvirtual.com>. The portal offers access to public domain works and copyright material. Nowadays it offers 2 million pages and in 2005 89 million pages were visited, mainly by researchers from America, 27% from the United States. The amount of digitised works is approximately 18,000 works including not only books, but also articles, communications etc. The balance between enabling access and use whilst respecting the right of creators is achieved through a copyright protocol strict but simple, checking in case of doubts with the authors societies, relatives and heirs. The library claims the good relation with authors and publishers as increasingly authors contact the project because they do not perceive digital libraries as a threat but as an opportunity. For example one of the subportals most visited, *Primera Vista* <http://primeravistalibros.com/>, is a project in collaboration with 40 publishers to digitise and publish in Internet the first chapters of the latest books.

Mandating quality standards for content and services

The Guide for the Web pages edition and publication of the State General Administration organisms issued by the Ministry of Public Administration (MAP) has set the guidelines for the Web design regarding the following aspects: user-centred, common visual identity, accessibility, usability, coherence, interactivity, information organization, security, evaluation and improvement, adequate management. Web accessibility compliance with WAI 1(A) and WAI 2 (AA) has been set as recommended by the end of 2005.

A new institute INTECO (*Instituto de Tecnologías de Comunicación*), promoted by the Ministry of Industry, Commerce and Tourism, and located in León will include a programme to improve accessibility in relation with all aspects concerning the development of Information Society in Spain.

Cultural content portals such as the Portal of Andalucia's Museums (*Portal de Museos de Andalucía*): <http://www.juntadeandalucia.es/cultura/museos/> which was launched in 2004, incorporated pages of 21 museums, archaeological and monumental ensembles and collections gradually during 2005 and faced the challenge of Web accessibility. The compliance with WAI-A has enforced a new design and display of texts and images. Virtual visits to the galleries are still not accessible. In 2005 the educational site of the Thyssen-Bornemisza Museum, *Educathyssen* <http://www.educathyssen.org>, also renewed its design to improve usability and accessibility of its content, especially for the visually impaired.

B. Technologies for digitisation

Deployment of new technologies and common standards for digitisation

Research needs for the development of user centred services is mainly being carried out with private and public partnerships, which work together in organisations such as i2CAT in Catalonia and CARTIF in Castilla-León. i2CAT is a private non-profit Foundation whose purpose is the promotion of innovation and the research in relation with Internet of the Second Generation.

It was created by the Generalitat de Catalunya through la *Secretaria de Telecomunicacions i Societat de la Informació* (STSI) and CIDEM, with *Universitat Politècnica de Catalunya* (UPC) and la *Fundació Catalana per a la Recerca*. Several entities and companies from public and private sector also are part of i2CAT foundation. Cultural content in the Internet has been one of their fields of action and projects have ranged from opera, Catalan language and culture and exchange of digital content among a network of cultural institutions.

The *Opera Oberta* project, as a part of "Digital Opera: The *Liceu* at the University", is a good example of the mobilisation of cultural institutions to make best use of existing technologies to enable digital access by all citizens. On 18 December 2001, the Barcelona's Opera House *Liceu* Theatre organised the inaugural broadcast of the opera *La Traviata* on HDTV. The opera was broadcast on HDSI between the *Liceu* and CINESA Diagonal and as multicast MPEG2 at 10Mbps between the *Liceu* and various Catalan universities. The technology used during the first scenario entailed a 1.5Gbps transmission over an optical provider, using DRAC equipment developed by TVC and UPC. The opera was broadcast over IP to the universities using Optibase equipment, which compressed the signal up to 10Mbps. *La Traviata* was broadcast live to the universities of Girona and Lleida, UPC and the Municipal Theatre of Terrassa. Several live operas from "*Liceu*" have been since then broadcasted to more than 40 Spanish and Latin American universities as part of their curriculum with the participation of RedIRIS, the Spanish Academic Network which has provided a connectivity service based on the DVB over IP European standard. CARTIF Foundation is a non-profit association of applied research and technological innovation, created in 1994 in Valladolid. The Laboratory of 3D+Color Digitising at CARTIF Foundation <http://www.cartif.es/3d> is involved in 3D and Colour measurement as well as modelling from reality through laser scanners since 1995 (triangulation, time of flight, and embedded on mobile robots). According to current researching areas, different projects are being developed related to new devices for 3D scanning general purposes; real colour addition to polygonal models from point clouds (though high resolution photographical images); automatic modelling strategies; and automatic registration). Some of the projects in relation with cultural heritage in the period 2004-2005 have been:

- Development of a teleoperated robotic system for the measurement and processing of 2D, 3D, colour and thermal data from elements of facades of buildings, aimed to inspection works, automatic cataloguing and duplication in the scope of construction, conservation and heritage spreading (2003-2005, Spanish Ministry of Public Works, Ref. FO-C-2002-4).
- Development of interaction techniques and 3D maps generation by means of mobile Robots (2002-2005,

Spanish Ministry of Science and Technology, Ref. DPI2002-04377-C02-01).
- Development of techniques for three-dimensional and colorimetric data processing from outer and inner spaces (2005-2008, Spanish Ministry of Industry, Tourism and Commerce, Ref. DPI2005-06911).

In addition, a major importance contract was signed in 2004 with the Romanesque Studies Centre, to apply 3D+Color digitising techniques to churches of this style in the northern Spain as future Unesco Human Heritage area. The R&D activities involved in all of them are focused on building photorealistic digital models for a new approach to Reverse Architecture operations and Cultural Heritage preservation though data processing, generation of standard formats and tools for analysing and navigating around objects and environments (alone or in a context) in a realistic, easy-to-use, intuitive, interactive and attractive way. This will allow the coexistence and synergy of scientific, educative and recreational activities.
The Biblioteca Virtual Miguel de Cervantes is working in the field of improving digital edition regarding research in OCR and has developed software to create digital facsimile, called FacsBuilder2 which automatically generates this type of editions.

C. Sustainability of content

The *Biblioteca Nacional* (National Library) is developing a strategic plan to face challenges of digital asset management, digital preservation and Web dissemination. The main aim of this new policy is for the National Library to be integrated in TEL (The European Library) by 2006 and to be able to contribute to the Digital European Library, becoming a national reference. The project known as *Biblioteca Digital Hispánica* (Hispanic Digital Library) aims to promote a cooperative digitisation plan for all Spanish libraries, starting with a first selection of the top one hundred most important titles by an Experts Committee. This selection, of special interest for researchers, aims to promote Spanish cultural content and to set the way to improve the management of digital material of the Library (1,000,000 images of books, maps and musical scores along with Spanish press digitisation since

1999). On the other hand, the project will issue systematic digitisation guidelines which will help material selection, giving priority to: collections of heritage value, collections of exceptional content and collections used as basic resources for research. Therefore, technological infrastructure will be compliant with metadata standards such as OAI protocol and it will imply hardware and software major investments, the acquisition of a new management solution and digital storage enlargement.

At the same time, the National Library will carry out a cooperative digitisation plan with all the Spanish libraries – starting with a joint project with the Library of the Complutense University in Madrid – and a cooperative digitisation plan with libraries from other Hispanic countries or those with a common cultural heritage (Portugal).

D. Digital preservation

The lack of a digital preservation policy in Spain, regarding both "born-digital" material especially in libraries and digital cultural content as a result of digitisation initiatives, has been one of the main reasons for the organisation of a seminar of Digital Heritage Preservation. The working group of Digital Heritage (*Grupo de trabajo de Patrimonio Digital*), made up by the Ministry of Culture (*Subdirección General de Coordinación Bibliotecaria*) and representatives of regional authorities, has coordinated this initiative to create political and institutional awareness of the risks faced by digital material and mid-term preservation. The seminar will showcase several international initiatives such as European Web Archive, UKOLN, Koninklijke Bibliotheek, British Library, Die Deutsche Bibliothek, INESC-ID Portugal and Library of Congress as well as national initiatives (University libraries of Catalonia, National Library, Catalonia Library, Complutense University Library).

E. Monitoring

Work on quantitative accounting of growth and use of digital cultural resources, has been focused in Internet. Regarding scientific content and Internet, the

"Webometrics World Universities' ranking on the Web" was presented in December 2005. The initiative has been developed by the Laboratorio de Internet `<http://internetlab.cindoc.csic.es>`, a working group devoted to the quantitative study of the Internet and specially the process of scholar communication in the Web. This working group is a research group of the CINDOC - CSIC.

Internet Lab is currently working in the development of a virtual observatory of the presence in Internet of scientific-technical activities institutions, organizations and researchers worldwide. The ranking will be offered every January and July at `<http://www. webometrics.info/>` with the ranking of universities and research centres worldwide according to webometric indicators of their institutional Web domains. The goal of this project is to establish an academic ranking combining several Web-based indicators that correlate with scientific performance and impact of the universities and research centres analysed. The ranking is based on a combined indicator that takes into consideration the volume of the published material on the Web, and the visibility and impact of these Web pages measured by the "sitations" (site citations) or links they received (inlinks).

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

Spanish participation in the National Representatives Group has been important to create awareness of the importance of monitoring the digitisation of cultural heritage. The National Library (*Biblioteca Nacional*) and Red.es will continue to work together to disseminate the results of MINERVA, and have established a factual cooperation to improve Spain contribution to European Digital Library. The 2006 call to fund digitisation projects of the programme *Patrimonio* hopes to avoid mistakes and foster cooperation between the main cultural institutions and small and medium-sized cultural institutions which are generating digital content.