DIGITAL LIBRARY DEVELOPMENT IN ITALY AND SPAIN

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ABSTRACT

This paper presents the background and current stage of development of digital libraries in Spain and Italy. First of all, it presents the European background of the policies and projects in the field of digital libraries and digitization, paying special attention to the MINERVA and MICHAEL projects, both of which focus on the integration of national cultural portal initiatives to promote access to European cultural heritage. Secondly, the paper describes the situation of Italian and Spanish libraries with respect to technological aspects and the most important Italian and Spanish experiences in areas such as catalogue integration, digitizing of special collections and types of documents (books, music, graphics, etc.) and the creation of special portals (for children, with academic publications, etc.). Finally, it draws some conclusions on the reasons for this situation and discusses future tendencies.

Keywords: digital libraries, digitization, European Union strategies, Italy, Spain.

1. INTRODUCTION

The main objective of this paper is to present the background and current stage of development of digital libraries in two European Mediterranean Countries (Spain and Italy). It focuses on analyzing the role of digital libraries in the information society and detects the most important issues that prevent a more efficient and faster development in these countries.

First of all, the paper presents the European background of the policies and projects in the fields of digital libraries and digitization. The objectives of the MINERVA project are to coordinate national programs, identify good practices and define guidelines on digitization

management and quality for websites. The MICHAEL project focuses on the integration of national cultural portal initiatives to promote access to the European cultural heritage.

Secondly, the paper will discuss the role that should be played by digital libraries as part of the information society. With this approach we will analyze the relationship between libraries and e-government, the actions undertaken to improve the flow of and access to digital information, the function of digital libraries in the conservation and preservation of bibliographic and documentary heritage, and the actions taken to support informational literacy and to overcome the digital gap. Examples of each of these topics will be shown in order to illustrate the trends and the projects that are implemented in our countries.

The text was mainly based on general reports on developments in digital libraries and digitization in Spain and Italy. It also draws on the experience and knowledge of the authors concerning many of the initiatives that are described.

This paper does not attempt to be exhaustive, but merely to present an overview that indicates the major lines or tendencies in the field of digital libraries in Spain and Italy. It is therefore quite possible that readers will find experiences and initiatives that are not mentioned.

2. THE EUROPEAN BACKGROUND

The development of digital libraries in Europe has a firm basis in different programs funded by the European Union in general, or by one of its countries in particular. We will point out two of these.

Firstly, the "Telematics for libraries" program created by the European Union was operative between 1990 and 1998 and funded a great number of projects and actions aimed at facilitating the digitization of European libraries. (A description of all the subsidized projects can be found at URL <http://www.cordis.lu/libraries/>).

The second is eLib (Electronic Libraries Programme, <http://www.ukoln.ac.uk/services/elib>), which was set up in Great Britain on the basis of a report by Brian Follett presented in 1993 to the Joint Funding Council's Libraries Review Group, and ended in 2001. It provided an outlook on the future of digital libraries and also attempted to identify what the library of the 21st century would be like. Though it ended some years ago, it is of great interest because of its conception as a plan and because it refers to some of the products and services that were developed with its support.

A total of three calls for proposals were made (the first in 1995), and 70 projects related to digital library initiatives were subsidized. Some of the priority areas were the following: distribution of electronic documents, creation of subject portals (including the famous Sosig, Omni and Bubl), electronic journals, digitization of text and images, hybrid libraries (integrating printed and digital information) and digital preservation.

At present the European Union has two important programs that foster the creation and dissemination of digital content. The first is the Digital Heritage and Cultural Content program (<http://www.cordis.lu/ist/ka3/digicult>), which has the following priorities:
- To ensure access to collections and materials of libraries, museums and archives.

- To increase the performance and efficiency of the content by means of powerful interfaces and management and processing techniques.
- The preservation of and access to multimedia content (electronic documents, etc.).

The second important step is the e-Content program (<http://www.cordis.lu/econtent/home.html>). This is one of the lines of action of the e-Europe program (<http://www.eeurope-standards.org>), an action plan for creating European policies with regard to the knowledge society. Like the first, it depends on the Directorate General for the Information Society (European Commission) and covers the period 2002-2005.

Its main aim is to promote a greater availability, use and distribution of European digital content and to promote linguistic and cultural diversity in the global networks. Its two main lines of action are:
- To improve the access to and increase the use of information in the public sector.
- To reinforce the production of content in a multilingual and multicultural environment

In accordance with the e-Europe 2002 Action Plan, the European Commission and the Member States have established co-ordination mechanisms for digitization policies and programs across Europe.
An up-to-date recognition of such policies and projects in the field of digitization in Europe emerged from the MINERVA (MInisterial NEtwoRk for Valorising Activities in digitations) project (<http://www.minervaeurope.org>), based on the Lund Principles (coordination of policies for digitization, exchange and promotion of good practices, visibility and accessibility of the digitized cultural and scientific heritage of Europe, see <http://www.cordis.lu/ist/directorate_e/digicult/lund_principles.htm>).

At the moment, the emerging issues can be stated as follows:
− Decentralization of responsibilities and resources is a reality for many countries but with different approaches.
− Cultural portals are the reference access-points for thematic users or for tourism; networks for citizens and 'community memory' are important in helping to build communities and to develop bridges between different communities.
− E-learning is a pillar of the information society and the first broadband services are being developed in this field.
− The digitization of audio and video archives and the development of online electronic magazines are important drivers in the adoption of broadband.
− Hybrid collections are emerging from the mix of physical and digital libraries; they enrich each other and are transforming cultural organizations and paradigms.
− Web archiving and harvesting strategies under study and testing are facing the challenge of preserving temporary web contents.
− Microfilming is being replaced by digitization as a primary form of reproduction but its role as a backup device is being reinforced; technology migration is at the heart of strategies for preservation.
− Despite the existence of Intellectual Property Rights (IPR) legislation and digital rights management technologies, IPR remains a significant barrier to progress, in particular towards accessibility or online availability of resources.
− Suitable business models are needed to promote the start-up of commercial applications and produce revenues.

These issues are seen from a perspective of a growing integration among libraries, archives, museums, and other cultural institutions, each of which produces and processes documents of a specific nature. Therefore, the above-mentioned objectives and interoperability between heterogeneous information systems requires that librarians become familiar with MMIR (MultiMedia Information Retrieval) technologies, the organic complex of Visual Retrieval (VR), Video Retrieval (VDR), Audio Retrieval (AR) and Text Retrieval (TR) systems.

Increasingly large and heterogeneous collections of digital resources are being created.
The 2nd NRG (National Representative Group) Report presents an updating overview of activities in 27 countries: 15 EU State members (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom), 10 new accession States (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic, Slovenia), and in addition Russia and Israel. The challenge now is to build a comprehensive and interoperable European infrastructure which should provide quality of access and new services for the citizen.

Even if much work has already been done on metadata and standards, major future challenges include technical and organizational interoperability and multilingualism.
The starting point is the creation of a collection inventory. MICHAEL (Multilingual Inventory of Cultural Heritage in Europe, <http://www.michael-culture.org>) emerged from the joint efforts of Italy, France and the United Kingdom in the field of interoperability and the inventories carried out for MINERVA.

The project will define a common approach and a digital cultural heritage service model that will be applied across the participating nations; this approach reflects the agreements of the NRG for the Digitization of Cultural Heritage and in this light it should be considered as a MINERVA spin-off.

The MICHAEL project focuses on the integration and alignment of many national initiatives in the digital cultural heritage sector. The project will deliver interoperability of national cultural portal initiatives and a high-quality end-user service, which will facilitate the exploitation of European cultural content resources.

The project will establish an international online service, which will allow its users to search, browse and examine multiple national cultural portals from a single point of access. This online service will be actively supported and endorsed by the national governments and agencies responsible for cultural heritage. Based on standard and open-source technologies (XML, Dublin Core Metadata Initiative, OAI), built upon an existing platform, flexible and extensible in terms of adding more nations to the scope of the resource, it implements the newly-agreed pan-European standards and guidelines for digital cultural heritage initiatives, as approved by the NRG.

Through the MICHAEL service, the end user will be able to find and explore European cultural heritage material, which can be accessed on a multilingual basis on the Internet.

All of this bears witness to the interest that has been shown in Europe for years in preserving, conserving, disseminating and providing access to the cultural and documentary heritage.

These calls for proposals helped to create many initiatives and to establish solid links of collaboration between countries, such as those that were formed in the two above projects.

The lines of action followed in Italy and Spain that will be discussed below are directly related to these precedents.

3. INFORMATION TECHNOLOGY IN ITALIAN AND SPANISH LIBRARIES

Italy

In approximate figures, the over 15,000 Italian libraries (operated by almost 20,000 people) own almost 200 million documents; their annual intake is in the region of 7 million books, the number of users is just under 10 million a year, and they circulate around 65 million items.

Recent years have shown considerable progress in the area of cooperation, confirming at a national level the current tendencies worldwide. The developments generally involve various types of libraries and various sectors of activity, ranging from those that have already been established (such as cataloguing and purchases) to emerging activities that are more directly linked with the diffusion of the Internet (management and development of digital resources, etc.).

Access to information and the development of digital collections are by far the most important areas in the new cooperation initiatives. The university sector shows great vitality in this area, but state and public libraries have recently become more active.

The most important projects in terms of resources involved are those of the University Libraries of Bologna (see <http://www.cib.unibo.it/BibliotecaDigitale/dl1/>) and Padova (see <http://bibliomedia.cab.unipd.it/perl/mhorse?lang=it>). whose projects are managed by the academic library systems. Many Italian research and academic libraries have created institutional archives to enable the deposit of scientific publications produced within the institution. In this case open source software is the standard. Among the open archives the ERCIM (European Research Consortium for Informatics and Mathematics) project is worth mentioning because it was the first.

In Italian universities, as in those of other developed countries, the idea of creating alternative models of academic electronic publishing is being increasingly encouraged: in this field mention must be made of the initiative of the University of Florence with the Firenze University Press (FUP) project.

A growing number of Italian libraries take part in projects launched and managed by American institutions, such as the Library of Congress and OCLC, among which CORC (Cooperative Online Resource Catalog), the Global Reference Network (aimed at setting up a global digital reference service), and JSTOR (Journal STORage: The Scholarly Journal Archive).

More than 50% of the libraries (around 7,000) are completely automated and their online catalogues are growing at an annual rate of 30%. Academic OPACs form approximately 65% of the total.

In the last few years the National Library Service (Servizio Bibliotecario Nazionale, SBN, <http://www.sbn.it>) has become the largest public network of libraries in Italy, due to both the number of participating libraries (approximately 2,300) and the considerable increase in catalogue records (the national union catalogue consists of 8,000,000 titles, corresponding to over 20 million holdings). The system currently logs an average of 160,000 hits on weekdays, with peaks of over 250,000. The database implements the Z39.50 protocol.

Other cooperation projects are underway in the field of hand-press books and manuscripts.

The Registry of Italian Libraries (Anagrafe delle biblioteche italiane) database, also available for consultation on the Internet, provides general reference on the collections, services to the public and specificities of approximately 12,500 libraries.
A new release of SBN, the so-called "SBN on line", marks a real step forward towards service improvement: from a single access point, following the same procedure, users can browse catalogues of different institutions (libraries, archives, museums), then compile a bibliography according to their own specific requirements by integrating information sources, and eventually locate items, put holds on them or order reproductions.

The most important Italian public project regarding digital libraries is the Italian Digital Library (Biblioteca Digitale Italiana, BDI, <http://www.internetculturale.it>). This project, promoted by the Ministry for Cultural Heritage and Activities (Ministero per i beni e le attività culturali), was launched between late 1998 and 1999. The subsequent scenario of systems integration designed by the Tourism-Culture Network (Network Turistico-Culturale, NTC) defines a national strategy of the sector. The success of this strategy will depend on the capacity to deal with three orders of problems:
– Sharing this strategy with all levels of national and local authorities.
– Guaranteeing the participation of library services and cultural institutions.
– Defining a new cooperative environment that is able to make different institutions (archives, libraries, museums and other public or private agencies involved in the digital world), different cultures and vocabularies cooperate with one another without sacrificing their differences as well as their overall intelligence, or their ability to manage the whole.
The Institute for National Union Catalogue (Istituto Centrale per il Catalogo Unico delle biblioteche italiane, ICCU) is the technical and scientific point of reference for coordination activities and digitization policies. It has produced guidelines for scanning and creating or archiving metadata. The following standards were adopted as models for metadata harvesting: the MAG scheme (Metadati Amministrativi e Gestionali, an administrative metadata management system, see <http://www.iccu.sbn.it/schemag.htm>), the Open Archive Information System (OAIS) and the Metadata Encoding & Transmission Standard (METS).

Spain

In recent years Spanish libraries have undergone considerable development and modernization, involving the public library system, the academic libraries and the National Library or its equivalents in the different autonomous communities. This can be seen in the buildings, the equipment, the collections and the services, in the introduction and use of technologies and in human resources and management.

The public library system is the most widespread cultural service in Spain, with 4,441 points of service and collections that comprise 48,890,970 copies (representing an average of 1.18 copies per inhabitant); printed documents represent 92% of the total. The percentage of registered users (19% of the total Spanish population) is still far from that of other European countries. In 2002 the number of employees was 8,442, though 13% of them did not work full-time, and only 20% were library technicians.

The expenditure on bibliographic acquisition was € 29,905,000 in 2002, which represents € 0.72 per inhabitant. The total budget for setting up and managing public library services in Spain in the 2002 financial year was € 208,202,000.

The use of the Internet by public libraries has made great progress in recent years. In 2002, a total of 2,043 public libraries had access to the Internet (46% of the total). Of these, 1552 offered public access to their users and 2,376,788 persons connected to the Internet from the terminals of libraries (only 162 libraries made a charge for this). A total of 340 public libraries had their own web page, and 990 offered access to their catalogue online through the Internet. A project of enormous importance is the platform developed by the Assistant Directorate-General for Library Coordination (Subdirección General de Coordinación Bibliotecaria, SGCB) to foster the visibility and accessibility of Spanish public libraries on the Internet. The Website Generator (GSW) is an Internet tool to allow libraries to generate their own web content and to maintain and manage their website.

Academic libraries have more resources (economic and human), which is why they are more developed technologically. In recent years several library consortia have been set up (Catalonia took the lead and was followed by others in Madrid and Andalusia). Academic libraries have a large part of their collections in digital format, mainly consisting of academic journals (licensed by scientific publishers or open access), but also collections of monographs, doctoral thesis and databases of all types. They thus have a digital collection of considerable size.

4. SPECIAL DEVELOPMENTS

After of the description of the general framework of libraries in Spain and Italy, we will now concentrate on the main experiences in these countries.

Some of the areas that are being most widely developed in digital libraries are the creation of union catalogues, the digitization of special collections, and the creation of academic journal portals and subject portals.

Integration of catalogues

In Italy, the BDI project achieved the digital reproduction of 194 historical catalogues (by author, by subject, by topography, by special sources) owned by 35 Italian libraries, for a total of 170,382 pages of catalogue and 6,920,593 cards.

A great amount of bibliographic information, much of which is not yet present in the SBN union catalogue, has been made available on the Internet in a short period and quite inexpensively.

"REBECA on line" is a national cooperative cataloguing project developed by the SGCB as a result of the work done jointly by the State Public Libraries. Any Spanish public library can download online records from this database, either through the WWW or through the Z39.50 server. The number of transactions has reached an average of 60,000 records per month downloaded directly from the Web, and 170,000 through Z39.50. In total, this database contains 526,000 records, and 340 users have passwords to access the Zweb Z39.50 Search Engine.

In Catalonia there is a Union Catalogue of Academic libraries (Catálogo Colectivo de las Bibliotecas Universitarias, <http://www.cbuc.es/ccuc>). Furthermore, a project to set up the Union Catalogue of Catalonia (Catálogo Colectivo de Cataluña), including the catalogues of the two existing public library networks (the Barcelona Provincial Council and the Generalitat of Catalonia) and the National Library of Catalonia (Biblioteca Nacional de Cataluña), is currently in the initial stages.

Digitization of various document collections

In both countries several initiatives are being carried out in order to contribute to the preservation and conservation of special collections. These include several Italian projects involving the digitization of musical documents and literary texts, and other projects in both countries involving the digitisation of old local newspapers.
Among the Italian experiences carried out at a local level during the past years, the Biblioteca dell'Archiginnasio in Bologna represents a case of the application of new digital technologies to a documentary patrimony mainly characterised by ancient library sources and special collections. The exemplary nature of the experience consists in having designed, created, and made available on its own site, under the term "Digital Library", the result of integrating the potential offered by digitising with the traditional bibliographic and library activities. There are three mainstreams:
− Access to documents increased by making available on the net the historic catalogue entirely digitised;
− Access to the special collections made up of rare printed sources, indispensable for historical studies, particularly for those concerned with local history, through the availability on the Web of digital reproductions, appropriately indexed;
− Valorisation of the iconographic and heraldic patrimony conserved in the Archiginnasio Palace, through the availability on the Web of reproductions in digital format of frescos, monuments, and coats-of-arms inserted in a database aimed at iconographic and historical-artistic type of search.

Monographs

In the case of Spain, particular mention must be made of the Miguel de Cervantes Virtual Library, which opened in July 1999 (<http://www.cervantesvirtual.com/>). This is a project for the digital publication of the bibliographic, documentary and critical heritage of Spanish and Spanish American culture, and currently serves an average of 6,5 million pages per month.

The Biblioteca Italiana project, based on the previous CIBIT (a consortium for cooperation activities among 24 universities, <http://www.bibliotecaitaliana.it>), has the aim of digitizing,

archiving and networking Italian literary texts. So far about 1,000 classics of Italian literature have been processed.

EDIT 16 (a census of Italian 16th century editions) aims to document Italian books printed during the 16th century and review the countrywide heritage. It includes editions printed in Italy between 1501 and 1600 in any language, and editions printed abroad in Italian. Besides the titles, EDIT 16 also contains information about the authors, publishers, uniform titles, printers' devices and their digitalized pictures. It can therefore be used for direct searches on authors, printers and printers' devices (e.g. printers who used a given sign or a given device, or those who worked in a given place and in a given year, or the devices having the same motto, etc.; see <http://edit16.iccu.sbn.it/>).

Academic Journals

This is an area in which several initiatives are currently underway. To a certain extent, the aim is to bring together Italian and Spanish scientific production in order to make it visible and prevent it from lagging too far behind in comparison with the well-consolidated commercial initiatives of the Anglo-Saxon journals (Elsevier, Springer, etc.) and the Open Access initiatives (BioMed, PLOS, etc.).

In the case of Spain, the eRevistas platform (<www.tecnociencia.is/erevistas>) has been created in order to bring together and facilitate the conservation of and access to high-quality Spanish scientific journals. This platform has a search system that allows access to journal titles and authors and also facilitates consultation through OAI metadata.

In Italy, the initiatives promoted by three large university computer consortia also deserve to be mentioned: CILEA in Lombardia (<http://cdl.cilea.it>), CIBER-CASPUR (inter-university coordination of databanks and on line publishing, approximately 3,000 e-journals, <http://www.caspur.it>) and INFER-CIPE (Italian Forum on electronic resources, inter-university cooperation for scientific journals, <http://www.infer.it>). They are characterized by a negotiating activity focused on IPR and represent the first coordinated and cooperative policy in the field of acquisitions.

Press

The press is another type of material that lends itself to being digitized as a means of facilitating public access and contributing to its preservation and conservation.

In Spain, one example is the project of Digitization of the Historical Press conserved in Spanish public libraries (<www.digibis.com/prensahis>). There is also a program of digitization of local collections in the Network of Libraries of the province of Barcelona, which currently has 144 titles of periodicals, newspapers and official journals of local interest going back to the 19th century. Some 30,000 copies and 270,000 pages have been digitized, and can be consulted in pdf format at <http://www.diba.is/xbcr/default.htm>.

In Italy ICCU achieved the digitization of 410,000 pages of periodical publications.

Musical documents

Scores and works of music are another type of documents that have been digitized. In Italy there have been a two interesting experiences.

The digitization of musical heritage preserved in state and municipal libraries, conservatories and historical archives (involving the digitization of 57,000 pages) began simultaneously with the digitization of catalogues. The Italian musical memory is made up of documents that contain handwritten and printed scores, opera librettos, treatises of musical theory, audiovisual and sound documents, and documents coming from theatrical and historical archives. Indeed, it forms a documentary source of primary importance in the world.

The Digital Archive of Veneto Music (Archivio Digitale della Musica Veneta, ADMV) aims to test and set up an integrated service model for research, consultation and access to documents that contain musical notation, with the possibility of going from the bibliographic record for a score to its digitized image, and to any corresponding digitized sound document, through technology of online distribution of sounds and images. (<http://marciana.venezia.sbn.it/admv.htm>).

Graphic documents

With regard to photographs, drawings, etc. we might also mention the Imago initiative, an online catalogue of graphic works (such as prints, drawings, photographs, posters, picture cards, etc.) belonging to different Italian libraries. The catalogue currently contains 100,000 bibliographic records and about 10,000 images related to the graphic works realized by Italian and foreign authors since the 15th century.

Other sectors in which the ICCU is carrying out coordination activities are those related to the digitization of photographs and cartographical material, for which appropriate workgroups have been set up.

In Spain no major experiences have been carried out by the public sector. However, there are many private photographic agencies, such as AGE Photostock, which started to digitize their collections (comprising millions of photographs) many years ago and currently sell and distribute them through the Internet.

Creation of specialized portals

Several initiatives are also related to the creation of subject portals, either aimed at a specific public or containing specialized information dealing with a given subject area.

A child audience

The portals Chilias (<www.diba.es/chilias>) and Chaval.es (<www.chaval.es>) are aimed at a child audience and offer an interface that facilitates access to all the resources and services of the network of Catalan libraries. They also contain a selection of web resources that are specially intended for this audience.

Subject portals

There are many more digital collections and projects which are noteworthy, such as the Biblioteca Italiana and Digital Math Library (DML, <http://www.cab.unipd.it/progetti/dml.php>). The aim of the DML, which is funded under the Sixth Framework Programme of the European Union, is to digitize all the scientific literature of interest on the subject. Numerous entities are involved, including libraries, universities, publishers, projects, and national and international mathematical associations.

The bibliographic information service

In addition to developments in the field of digital resources, the services offered in libraries are also adapting to the digital environment. Perhaps the most significant example is the bibliographic information service.

"Pregunte, las bibliotecas responden", is a cooperative service of bibliographic information that is available through e-mail and on the Internet. It is managed in cooperation by several Spanish libraries. The service allows any user to make bibliographic and reference queries that are dealt with by expert professionals 24 hours a day, 365 days a year (<http://www.pregunte.org>).

A similar initiative of virtual reference desk in Italy can be seen at <http://www.segnaweb.it>.

5. CONCLUSIONS

The initiatives described above affect many different areas and, as stated, are being carried out by a diversity of actors, including consortia and networks of libraries, isolated institutions and other bodies.

The main characteristic is the fact that there is practically no coordination between the actors carrying out the initiatives. In other words, there is no general policy on carrying out digital library initiatives, particularly in Spain.

A fundamental aspect that remains to be solved is the digital gap. It is already being tackled by libraries and by the public administrations by means of a variety of training initiatives aimed at the different types of audience.

Finally, there are also some areas in which little has been done so far, at least in the two countries analyzed, and which will require a major effort. Examples of these are the relation with e-government initiatives, the contribution to the creation of citizens' information portals and the incorporation of web resources in library collections, all of which have been widely developed in British and Scandinavian libraries.

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