Digital Library of Portuguese Urban Cartography
An Example of a Public Information System

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Key words: Geoinformation, Digital Database, Historical Cartography, Cultural Heritage.

SUMMARY

Nowadays the importance of a Public Information System is known by all users. In areas like Cartography, where the existing information can be found in archives and libraries in world, the advantages of an available database of different sources through Internet are unnumbered.
The Digital Library of Portuguese Urban Cartography is a database composed of texts and images of historical cartography of cities of Portuguese origins, which can be found in archives and libraries in Portugal and abroad, available through Internet and accessible to researchers and all public.
The Digital Library of Portuguese Urban Cartography aims to identify and catalogue the historic urban cartography, of cities of Portuguese origin namely those built in Portugal, Brazil, in Africa and in the East and to make this information available.
This Digital Library is intended to overcome weaknesses in the infrastructure, documentation and research in the field of Portuguese urban cartography and to be a relevant instrument in the knowledge, dissemination and study of Portuguese urban heritage.
The results generated by this Digital Library will provide a centralized public information system which allows multiple kinds of search in cartography area.

SUMARIO

Actualmente a existência de Sistemas de Informação Públicos é por todos reconhecida. Em áreas cuja a informação se encontra dispersa as vantagens da criação de uma Base de Dados e sua disponibilização na Internet, são inúmeras.
O Arquivo Virtual de Cartografia Urbana Portuguesa, consiste numa base de dados de textos e imagens, de cartografia histórica de cidades de origem portuguesa, existente em arquivos e bibliotecas de Portugal e do estrangeiro, e disponível através da Internet.
Este Arquivo Virtual tem por objectivos reunir, investigar e publicar, na Internet, a documentação existente sobre as características morfológicas das cidades portuguesas, e das cidades de origem portuguesa construídas no Brasil, em África e no Oriente.
Tornando esta informação acessível a diferentes tipos de utilizadores, qualquer que seja a sua localização geográfica, procura preencher-se uma importante lacuna infraestrutural, documental e de pesquisa no campo da história urbana portuguesa, constituindo ao mesmo tempo um importante instrumento para o conhecimento, a divulgação e o estudo do património urbano português.

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1. INTRODUTION

Throughout the centuries the man was gradual developed the ability to records facts and forwarding notes. The difficulty to preserve documents is nowadays a reality and discovering them it's also a problem.

With emerge of new information technology the digital solutions came up. The preservation of documentation can be resolved with this new document format, but the dispersion of documentation is still a problem.

The Digital Library of Portuguese Urban Cartography aims to bring this widespread documentation together by electronic means to become accessible to all kinds of users, in the world.

2. THE DIGITAL LIBRARY

The Digital Library of Portuguese Urban Cartography is a database composed of texts and images of historic cartography of cities of Portuguese origins from archives and libraries in Portugal and abroad and which are freely available on internet at http://urban.iscte.pt

The spatial and formal dimension of urban studies is important to understand the city from a historic point of view and also to understand the city today. The history city in Portugal is a relatively undeveloped field of study. The framework of knowledge is still highly fragmented and the shortcomings in the studies on the urban form of Portuguese cities are particularly significant.

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In this context, was important to develop a Public Information System with the collection of historic cartography which the specific objectives are as follows:

- Identification and Cataloguing of historic cartography of cities of Portuguese origin;
- Selection, Reproduction and Digitalization of the most relevant cartography;
- Structuring of a Database, articulating cartographic records and the respective digitalized images;
- Availability and Dissemination of this information by electronic means, namely Internet.

This Digital Library aims to bring this widespread documentation together by electronic means so that it becomes accessible to researchers and the public at large. This is hoped to overcome the serious infrastructure, documentary and research shortcomings in the field of Portuguese urban history whilst also serving as an important instrument for the understanding, dissemination and study of Portuguese urban heritage.

To users, it allows access and consults to the documents quickly and in different archives and libraries databases, at the same time.

To the archives and libraries who express their willingness to co-operate in fulfiling the objectives of this project, it brought advantages allowing their archives to be used for consultation and collaborating in the referencing, cataloguing, photography and digitalization work of cartography to be included in the Digital Library of Urban Cartography. For them it was an opportunity to modernize the available services to the public.
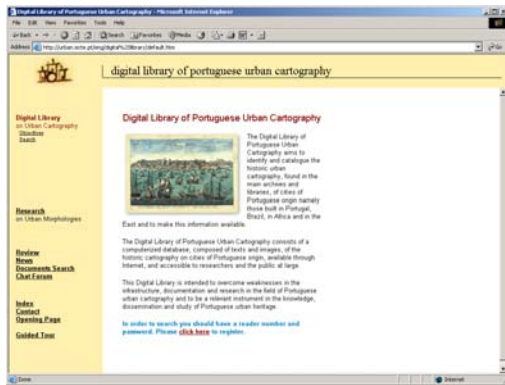
3. TECHNICAL ISSUES

The solution that was implemented brought advantages because it's an integrated project with images and cartography descriptions, done in the Porbase System, based on the Mini-Micro CDS/ISIS system.
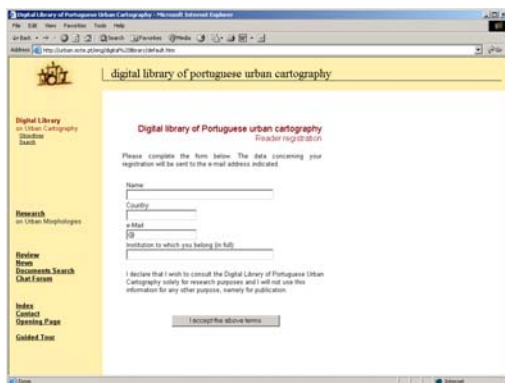
Each of the original plans was reproduced photographically on 35 mm slides and on slides with the 6x6cm format. The digitalization of the cartography is done from these slides and the files produced in the digitalization are in the BMP format. The images published on the Internet in the Digital Library result from the treatment of these files.

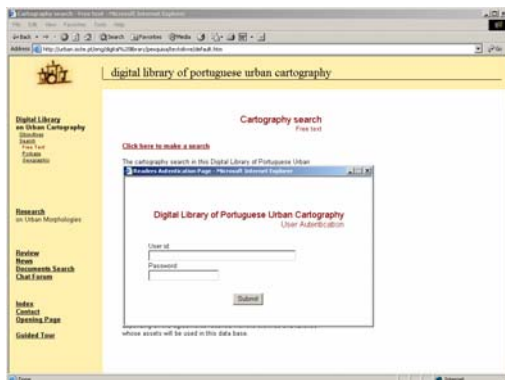### 3.1 Access to the Database

The access to the database of this Library is still reserved. It requires the registration of the reader and signing the conditions of use. Once the reader has registered, he is given a password which gives him free access to the Digital Library and use of the images for research purposes.

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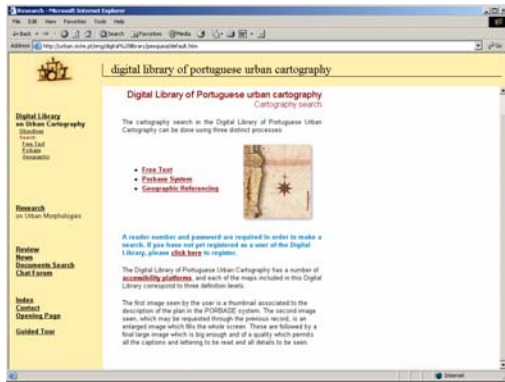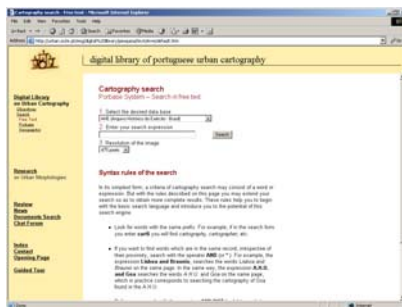
Request registration

Registration

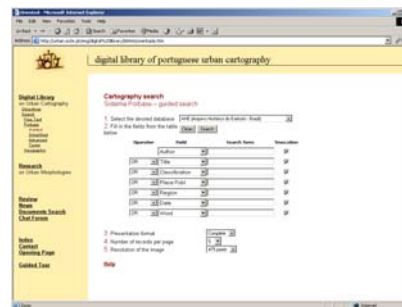*Access to database*

3.2 Types of Search

The cartography research in this Digital Library of Portuguese Urban Cartography is done through the Porbase System using the usual search tools of this system for Internet use and has two different options to search:

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- *Free Text*, search can be done simply by using a word or expression, referring to the archive, place, author or any other terms which are in the cataloguing file.

- *Porbase System*, the research has access to a cataloguing database structure which allows cartography to be searched from various fields, or from their cross referencing: archive, author, title and classification, place of publication, region, date and word. The researcher has access to the record in the different visibility formats available: description in ISBD format, complete description, shortened description, bibliographic description and shortened bibliographic description. These visibility formats are complemented by a small image of the map referenced.
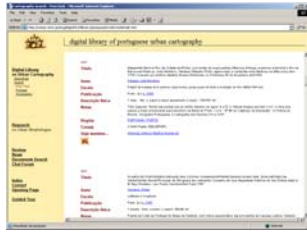

Free Text

Porbase System

Those search methods make it possible to overcome some difficulties, the different spelling of many words in cartography of different eras or different origins.

3.3 Access to Images

A number of Archives and Libraries signed a protocol between the Study Center for Urbanism and Architecture – ISCTE, where they express their permission to digitalize the cartographic documents and to include them in the Digital Library of urban Cartography.

Without Images

With Images

The technical characteristics of the images available in the Digital Library were studied in an attempt to conciliate the following:

- good quality of the images in the various accessibility platforms;
- quick access to these images by Internet;
- controlling the means of access and use of the images;
- safeguarding the interests of the Archives and Libraries.

Each of the maps has various definition and visibility levels.
The first image to be seen by the user is a thumbnail linked to the description of a plan in the Porbase system with.

Thumbnail

The second image is an enlargement, which is optimized in three different formats so that it can be seen by equipment with different resolutions. Depending on the quality and size of the original, in most cases these formats enable the details of the plans and most of the captions and lettering to be read. The last image to be visualized has the size and quality that permits all the captions/lettering to be read and all the details of the map to be seen.

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475 pixels width   *650 pixels width*   *960 pixels width*

4. ACTIVITIES IN PROGRESS

The maintenance and the improvement of the Digital Library of Urban Cartography are realized permanently, to assure the quality, the functionality and the innovation by internet. To offer always new information and knowledge our future activities are focus in:

- Continuation of the research in Archives and Libraries;
- Establish ways of co-operating with other entities who are developing activities in these areas;
- Sign of protocols with new Archives and Libraries to make their cartography assets available in the Digital Library;
- Making technical improvements to the Library in accordance with the international norms and latest technical developments;
- Study new compile methods and improved image quality;
- Develop new functionalities such as advanced search;
- Continuation of activities for the dissemination of the contents of the Digital Library.

5. FUTURE WORK

Developing news mechanisms of search in digital library, like trough a Geographic Referencing System is now the main job of our team and it will be available soon.

Making a search with Geographic Referencing gives you access to the database using maps where the places with cartography in the Digital Library are indicated. Alternatively you can locate any urban center or geographic entity in the Library.
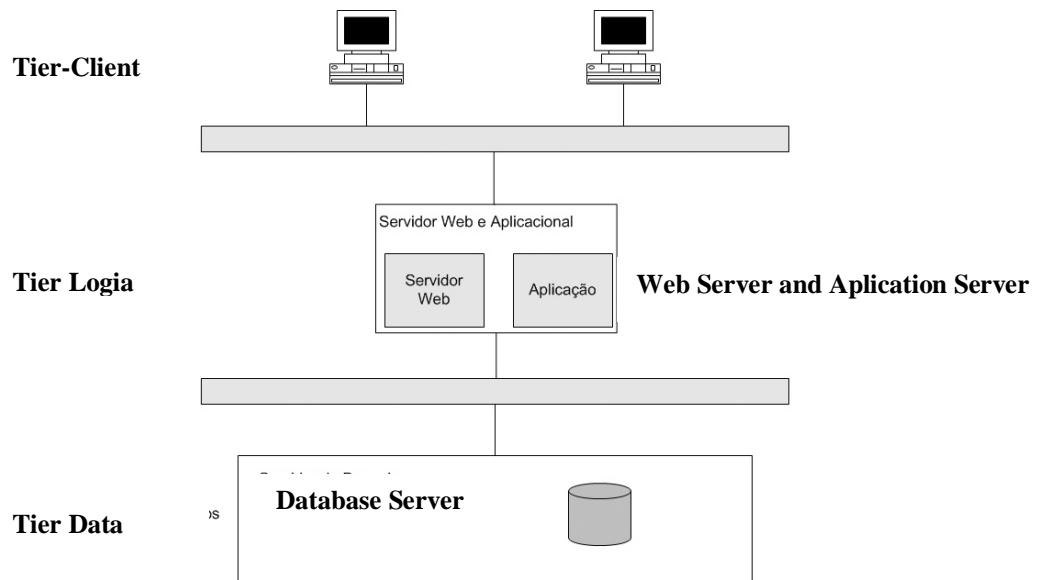
5.1 Requests of the System

The system of Geoinformation that will be implemented should comply with the following requests:

- Have all the datum related with urban cartography;
- Have a group of servers that allowed the access at the same time by different users by internet – Map server, Web server, datum server;
- Have a database structured;

Model solution to this geoinformation system become in a Clint/Server System were the request information is used through a browser and processed in the server, and then send to the remote user.
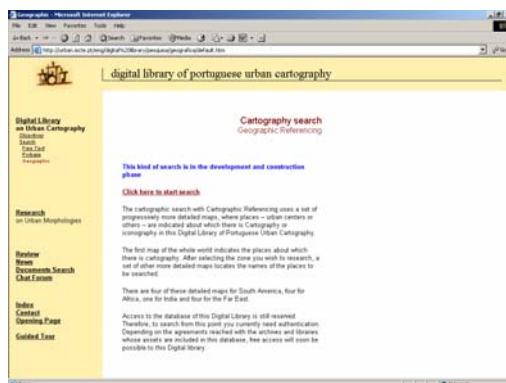
5.2 Architecture of the System

The architecture of a system can be seen like a whole of relevant models to describe an object, to permit the construction according the request of quality and to be maintained during of there life time.

5.3 Search by Geoinformation System

The search with Cartographic Referencing uses a set of progressively more detailed maps, where places – urban centers or others – are indicated about which there is Cartography or iconography in this Digital Library of Portuguese Urban Cartography.
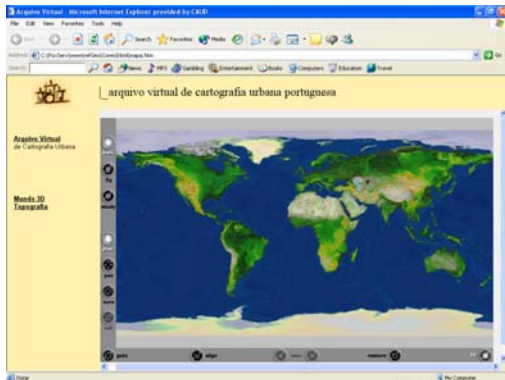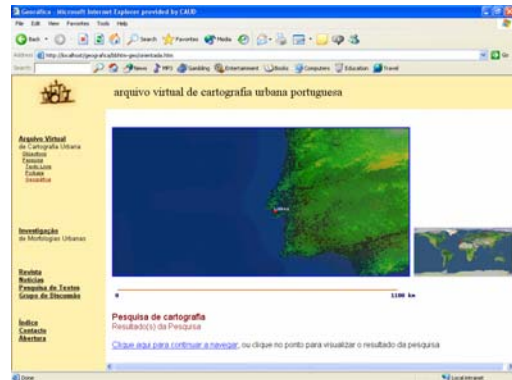

| *To start search* | *Window that permit the search* |

The first map of the whole world indicates the places about which there is cartography. After selecting the zone you wish to research, a set of other more detailed maps locates the names of the places to be searched. There are four of these detailed maps for South America, four for Africa, one for India and four for the Far East.
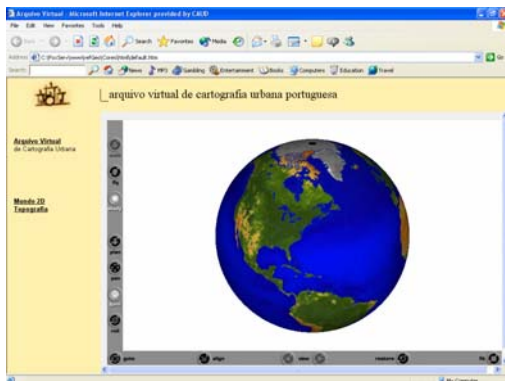

Whole World

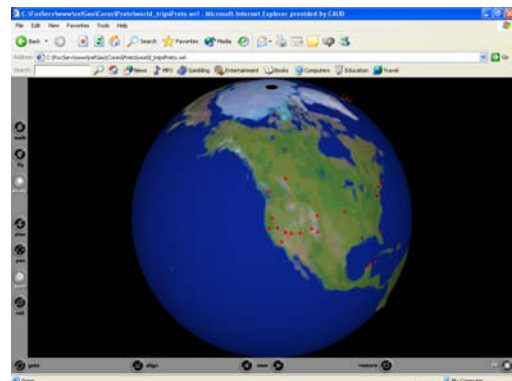
Select Zone

5.4 Developing Models

Another them in development it's the 3D Model with the possibility to navigate in the image, make search in the database and the visualization the points of search.
The language used is Virtual Reality Modeling Language – VRML and include the Georeferencing linked to the cataloguing database in the Digital Library.

Most of the VRML works with plugging to Netscape or to Internet Explorer and the one that we are testing is Cortona Player.

3D Model Navigate

3D Model Navigate - Georeferencing

6. CONCLUSION

Digital Libraries are essential to make knowledge availed in the world, in particular to developing countries that don't have easy access to traditional libraries and who can take the

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advantage of Internet to access information. With an integrated system of information it's possible satisfy all their needs and give them more than they expect.

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BIOGRAPHICAL NOTES

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