INSTITUT CARTOGRÀFIC DE CATALUNYA

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INSTITUT CARTOGRÀFIC DE CATALUNYA

NEWSLETTER

GEOSERVICES OF THE ICC: IMMEDIATE AND FREE OF CHARGE ACCESS TO THE CARTOGRAPHIC DATABASES OF THE ICC

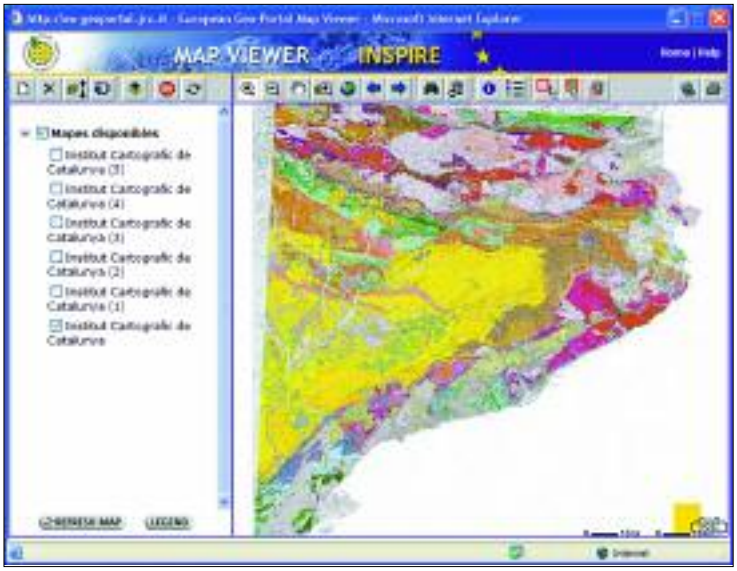
Since the ICC introduced the policy of distributing cartographic data free of charge (in 2003), the number of copies of these data in other local or corporate servers has increased considerably. In this way internal access is provided to a reference cartographic database for applications that require a location geographic information system.

This replication has the effect of reducing the availability of the data, because many resources have to be assigned to managing and updating them, and because the servers are occupied by a huge amount of Gigabytes. This situation changes when remote access to the information becomes possible.

This fact, jointly with the development of the standards required to ensure the interoperability between data and applications (Open GIS Consortium, OGC), and the existence of a good Internet-based communications infrastructure, have lead the ICC to take further steps to distribute geocartographic information from its servers to external users, while avoiding a need for ICC data to reside on all the external servers.

"THE DATA WILL RESIDE AT THE ICC AND USERS WILL ACCESS IT REMOTELY AND TRANSPARENTLY"

The recommendations of the European Union through its directive proposal INSPIRE encourage and oblige us to take this new step in providing society with geographic information with the creation of the GeoServices.



The GeoServices made available by the ICC are tools that will allow geocartographic data integrators (GIS users, institutional web pages and geoinformatics developers, etc.) to have immediate access to the completely updated geographic information. This ICC guarantees all the users have the same data that CC itself.

"THE GEOSERVICES OF THE ICC ALLOW IMMEDIATE ACCESS TO THE FULLY UPDATED GEOGRAPHIC INFORMATION"

These services are aimed at all users of ICC data, regardless of whether these data is to be used in internal applications (departments of

SUMMARY

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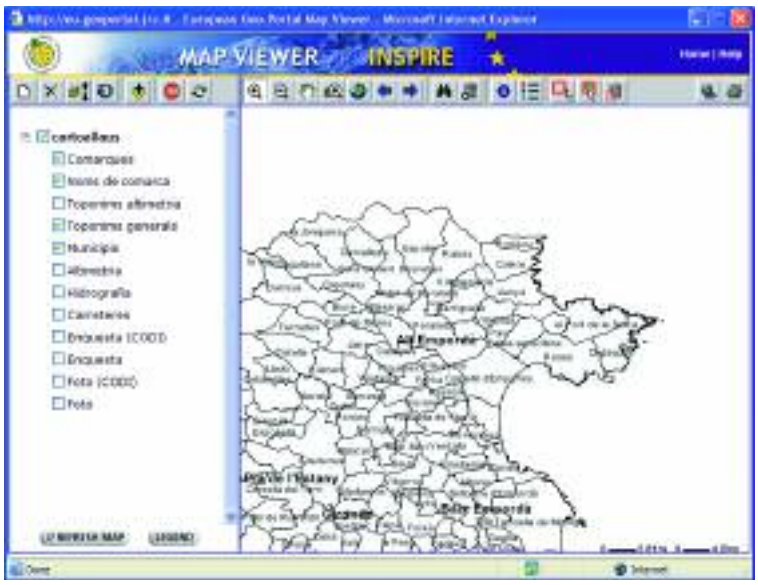
Generalitat de Catalunya
Institut Cartogràfic de Catalunya

DECALOGUE OF GEOSERVICES

01. **Most updated data, immediately available.**
02. **Saving** of costs related with the environment where the data are loaded and served (GIS, Internet image server, etc.): acquisition, maintenance, staff, etc. An exhaustive American study quotes savings of up to 26%.
03. **Saving** of costs related to data management: loading, copies, indexes, metadata, incidents, etc., and freedom from any responsibility to enforce the rights of the producer (ICC or others) in the case of copies.
04. **Compatibility** with the Web-based geographic applications developed by other users for the private sector and for the various administrative bodies.
05. GeoServices that can be integrated into "geo" applications **without the need to be developed** in GIS environments.
06. **New applications, richer and smarter,** to access to other data and functions GeoServices (postal address search, for example) of both the ICC and other departments of the Generalitat de Catalunya.
07. **General architecture** compatible with the new development paradigms of computer applications based on Web services.
08. **Work in a standardized environment** for geoinformation (ISO, OGC, etc.), in accordance with the INSPIRE directives.
09. **Discovery of and access** to data and GeoServices through standardized metadata.
10. Definitively, **a continuous and immediate view of the territory** with almost no effort, without the current obstacles of countless data sources and the non-compatibility of data and applications.

the Generalitat, town and regional councils, and public administration in general; information services related to the territory in the private domain: fleet monitoring, geomarketing companies, events control and territorial access points) or in external applications that follow the compatible OGC standards and which have a small programming capacity (Javascript, PHP and .NET environments).

The available GeoServices at the ICC web site since May 2005 are WMS (Web Map Services) and WFS (Web Features Services). The latest releases of the ICC cartographic databases which they offer access to, are:



Raster data (WMS):

1. Orthoimages in color of Catalonia 1:5 000.
2. Orthoimages in color of Catalonia 1:25 000.
3. Topographic map of Catalonia 1:5 000.
4. Topographic map of Catalonia 1:50 000.
5. Topographic map of Catalonia 1:250 000.
6. Geological map of Catalonia 1:50 000.
7. Geological map of Catalonia 1:250 000.
8. LANDSAT satellite image of Catalonia.
9. Coverage of the photogrammetric flights of Catalonia (flight indexes).

Vector data (WFS):

10. Topographic database of Catalonia 1:50 000 in GML format.
11. Administrative boundaries of Catalonia (municipalities and *comarques* [administrative divisions in Catalonia]).
12. Sections of the various cartographic series distributed by the ICC.
13. Survey points of the Utilitarian geodetic network of Catalonia.
14. Coverage of the photogrammetric flights of Catalonia (flight indexes).

The access to these ICC's data through the GeoServices will lead to the following savings for users:

a) saving in the costs incurred by the maintenance of high-capacity storage hardware (at the same time freeing large quantities of disk space that may be used to store the users' own information),
b) saving in processing, given that the requests for information are supported by the ICC servers, and
c) huge saving in terms of the considerable effort expended in internal data management (periodic replacement and updating of new versions, back-up copies, format changes, standardization, continuity, etc.).

Therefore, the GeoServices allow the use of geocartographic resources without the need to invest in software and specialized staff in GIS, ensuring a long life of the generated application, which is guaranteed by the use of regulations in accordance with the standards in force (ISO, OGC). Furthermore, this compatibility makes it possible to access other GeoServices through the IDEC (Catalan Spatial Data Infrastructure) and, thus, exchange information with the other organizations that joint the aforementioned standards.

The geocartographic data provided by the GeoServices keep on being protected by the copyright rights and cannot be sold or traded. The ICC shall not be responsible for information that may be inferred from the improper or illegal use of the information supplied, which is regulated by the same conditions of use as those by which it is currently bound. The legal position is the same, but with no cost.

The remaining users of ICC's data will continue having access to the viewing and downloading available services through the well known CFAF service (Catalonia sheet by sheet), available at the ICC web site, or they will be able to have direct access to the data through a request to one of the ICC customer service centers.

The ICC plans to extend the set of GeoServices provided through its web site, incorporating all the maps from its public access catalogue and introducing the possibility of access to a package of value-added services relating to this cartography, such as the searchs of coordinates and kilometric points on a road or the magnetic declination on the cartography, for example.

Contact addresses:

ICC – www.icc.es
OGC – www.opengeospatial.org
INSPIRE – www.ec-gis.org/inspire

RESEARC

EURMET. URBAN EX IN SOUTH-WEST EU

In 2003, the ICC, the Université de Toulouse Le Mirail, the Centre Política de Sòls i Valoracions (CPSV-UPC, Center for Land Policy and Valuations) and the Universidade Nova de Lisboa received a grant from the FEDER of the European Union (INTERREG IIIB program) to undertake the EURMET project. This project will be completed in December 2005.

"THROUGH THE ANALYSIS OF SPOT IMAGES OF 10 EUROPEAN CITIES, THE EURMET PROJECT AIMS TO IDENTIFY THE NEW PERIMETERS OF URBAN AREAS ON THE BASIS OF SPATIAL ORGANIZATION AND ECONOMIC AND SOCIAL CONTENT"

The 10 cities in question are: Lisbon, Porto, Bordeaux, Montpellier, Toulouse, Clermont-Ferrand, Madrid, Barcelona, Seville and Valencia.

To achieve the aim of this project, the division between residences and activities located in the outskirts of metropolitan areas has been measured; the criteria for locating the various uses of urban space have been identified; the dysfunctions related with the lack of adaptation of management perimeters within the actual limits of urban space have been pinpointed, and acknow-

AIBBORNE LIDAR: A CONSOLIDATED OPERATIONAL TECHNOLOGY

In November 2001 the ICC purchased the Optech ALTM 3025 airborne lidar system. The principal aim was to purchase new technology that would reinforce primary data capture.

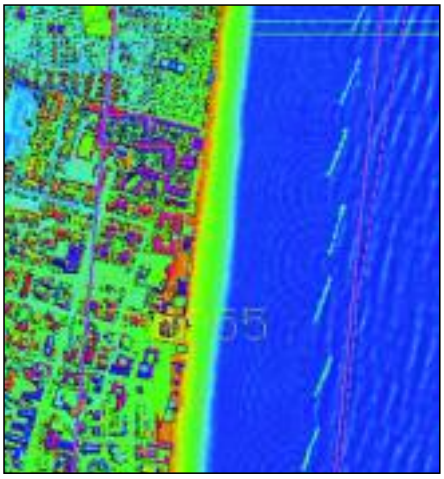
The first project for the lidar of the ICC, commissioned by the Agència Catalana de l'Aigua (ACA - Catalan Water Agency), was to generate high-precision terrain models for flood studies (see ICC Newsletter No. 21).

"AS THE LIDAR TECHNIQUE HAS BEEN SPREAD, THE ICC HAS BEEN RECEIVING ORDERS OF DIVERSE CLIENTS"

The principal application has been the generation of high-precision terrain models, be these for flood risk studies, as in the case of the projects for the Balearic Islands, Almeria and the River Savio (Italy), or for constructing the terrain model of an entire territory, as in the case of the projects for Guipúzcoa.

Another important application of lidar is coastal studies. Coastal areas are subject to many changes as a result of storms and materials swept along by rivers. In these areas lidar offers many more advantages than photogrammetry. The most notable coastal projects have been the models made of the coast of the region of Emilia-Romagna (Italy) and the Ebro Delta (ACA).

There are other lidar applications that are worthy of mention, namely forestry applications and the mapping of power lines. Lidar can measure points on both land and vegetation, buildings, power lines, etc. This makes it very easy to obtain the heights of trees and areas covered by leaves and to obtain very valuable data that can be used to determine other forestry and environmental parameters, such as biomass, stored CO_2, etc. With respect to power lines, distances from the conductors to vegetation, buildings and the ground can be measured, thereby checking that regulations are met and that there is no risk of these conductors making contact with vegetation. The ICC has already carried out pilot tests of these applications.



Picture granted by Regione Emilia-Romagna

CH AND DEVELOPMENT

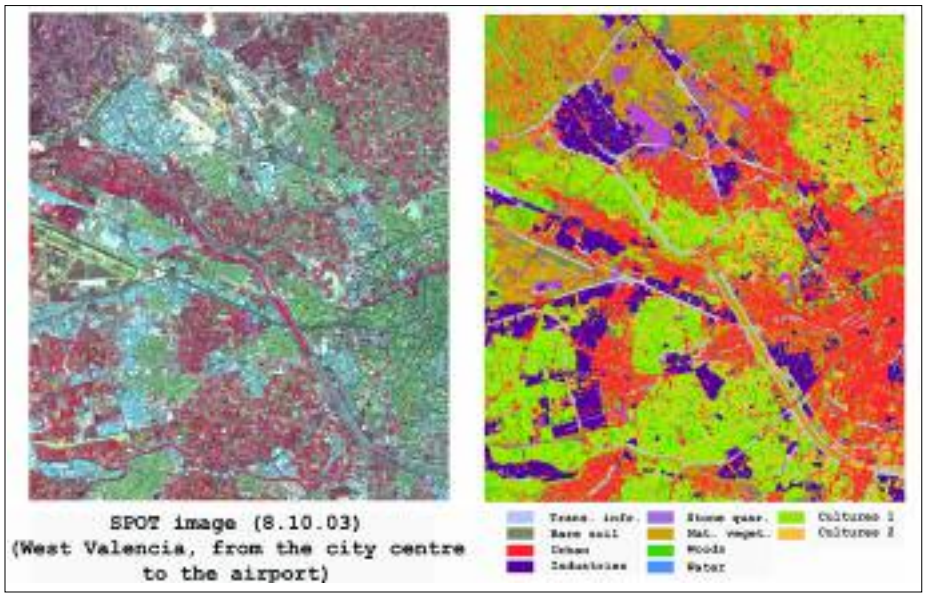
XPANSION OF METROPOLISES UROPE

ledgement has been made of the degree of adaptation of territorial planning policies with respect to the processes by which outlying urban development is spreading.

EURMET contributes the development of a tool based on remote sensing to provide support for urban planning of the outskirts of large European cities.

The main task of the ICC in this project has been to process the SPOT-5 satellite images of the Spanish locations.

The symposium for the presentation of the final results of the project will be held at the headquarters of the ICC on 14 and 15 December 2005.



SPOT image (8.10.03)
(West Valencia, from the city centre to the airport)

ICA AWARDS 2005

On 9-16 July 2005 the 22nd International Cartographic Conference (ICA/ACI) was held in La Coruña (Spain).

As at previous conferences, the ICC played a very prominent part in this event. On the one hand, ICC staff presented 6 papers (see ICC Newsletter No. 23), and on the other hand, the Official Committee of the International Cartographic Association presented an award for the *Mapa del relleu submarí de Catalunya 1:250 000* (Submarine Relief Map of Catalonia - see ICC Newsletter No. 21) in the "Others" category.

Furthermore, the Technical General Subdirector of the ICC, Mr. Josep Lluís Colomer Alberich, was declared an Honorary Fellow of the ICA in recognition of his outstanding contribution to cartography.

It is of note that our cartographic products have received awards from the members of the ICA/ACI at the last seven conferences.

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BRIEF NOTES

AWARE PROJECT

In July 2005 the ICC commenced the European project AWARE (2005-2008), together with 9 European institutions.

The aim of this project is to offer innovative tools for monitoring and predicting water availability and distribution on those drainage basins where snowmelt is a major component of the water balance using satellite images and the application of simulation models.

The ICC is responsible for the development of a GeoService which, in accordance with all the requirements of the INSPIRE program, will be capable of analyzing global and local data in order to calculate, file, update and distribute the information drawn from data on snow.

VISSIR APPLICATION FOR INTERNET

In July 2005 the ICC made an application available on the Internet for viewing the topographic maps 1:50 000 and 1:250 000, the orthophotos 1:5 000 and 1:25 000 and the geological maps 1:50 000 and 1:250 000 in raster format, with a high degree of quality.

The innovative feature of VISSIR is that the information is continuous, that is to say, there are no breaks between the sheets.

This information is accessible from an ad hoc application developed by the ICC which supports searches in the toponymic database of Catalonia 1:50 000 for more than 55,000 toponyms, distance measurement and transparency with other layers of the server.

This application also offers the possibility of viewing the results with the Lizardtech plug-in. Furthermore, it is accessible as a WMS service (see the article on the GeoServices of the ICC).

WORKSHOP ON REMOTE SENSING IN PRECISION AGRICULTURE

On 17 May 2005 the ICC took part in the Workshop: Remote sensing in precision agriculture, held at the Departament d'Agricultura, Ramaderia i Pesca (DARP, Department of Agriculture, Livestock and Fisheries).

Precision agriculture applies the most innovative electronic sensing and satellite image technologies in order to obtain precise information about crops, as a result of which these may be treated according to the situations detected (fertilizer needs, water availability, vegetation grown, among other factors).

IV THEORETICAL AND PRACTICAL TRAINING COURSE ON ADVANCED CARTOGRAPHIC TECHNIQUES: Generation of orthoimages and their use with land registries

On 7-18 February 2005 the IV Theoretical and practical training course on advanced cartographic techniques: Generation of orthoimages and their use with land registries was held at the headquarters of the ICC. This course was aimed at DIGSA cartographic institutions (directors of geographic institutes in South America, Spain and Portugal) and it formed part of the series of training sessions devoted to advanced cartographic techniques. (For more information about the other three courses, see ICC Newsletters Nos. 15, 17 and 21, respectively).

"THE AIM OF THE COURSE WAS TO PROVIDE A BROAD OVERVIEW OF THE PROCESSES INVOLVED IN THE GENERATION OF ORTHOIMAGES FROM A PRACTICAL POINT OF VIEW AND TO SHOW HOW THEY ARE USED IN A GEOGRAPHIC INFORMATION SYSTEM (GIS) FOR LAND REGISTRY PURPOSES"

The course was aimed at engineers and graduates from DIGSA cartographic institutions with a knowledge of cartography, be they management staff or personnel engaged in the development of GIS applications or in orthophotographic production and distribution, or specialists in related disciplines wishing to complement their training.

The course covered digital image capture, orientation, elevation models, the generation of orthoimages and their use with land registries.

The course lasted two weeks and was complemented by the opportunity to attend the 6th Geomatics Week (see ICC Newsletter No. 23), which included technical sessions on high-resolution sensors and their applications, in addition to specialized symposia. The total duration of the course was 60 hours, divided into theoretical and practical sessions lasting 6 hours a day.

The training was given by professionals at the ICC who are experts in the field of photogrammetry, image processing and geographic information systems. Furthermore, the course received the collaboration of the Instituto Geográfico Nacional and the Centro Geográfico del Ejército.

A total of 25 technicians took part, from 9 different countries: Bolivia, Brazil, Chile, Colombia, Ecuador, Panama, Portugal, Uruguay and Venezuela.

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