

## **Cadastral web services in Spain: case of success of the cartography, from private GIS to public and free WMS, included in all the SDI.**

C. Conejo<sup>1</sup>, A. Velasco<sup>2</sup>, F. Serrano<sup>3</sup>

<sup>1</sup>*Deputy manager for information and communication technologies, Madrid, Spain.*

<sup>2</sup>*International Affairs Coordinator, Barcelona,, Spain*

<sup>3</sup>*General manager for information and communication technologies, Madrid, Spain  
Spanish Directorate General for Cadastre*

The Spanish Cadastre is an administrative register with a fiscal origin, created as a data bank to be accessed both by Public Administrations (national, regional, local) and private sector (citizens, companies). As an inventory of real estate, it contains physical information (surface area, location, use, shape, boundaries, cartographic representation, crops and forest use, type and quality of constructions, etc.), legal information (identification of holders or owners: name, national identification number, address, etc.) and economic information (Cadastral value of land and buildings, valuation criteria). This Cadastral data bank includes detailed information on more than 32 million urban properties, more than 42 million rural properties and over 25 million Cadastral owners.

The principal tasks or competencies of the General Directorate of Cadastre are:

- To produce and maintain Cadastral cartography, necessary for the creation, conservation, and revision of Real Estate Cadastres.
- To perform, or otherwise, manage, control and co-ordinate the performance by third parties of, the technical work of creation, conservation and revision of real estate Cadastres.
- To research and coordinate real estate assessment systems, co-ordinate the resulting real estate values, and approves Value Proposals.
- To prepare studies and proposals of regulations and systems, relative to the tasks of creation, conservation and revision of real estate Cadastres.
- To carry out real estate studies, and to prepare and analyse statistical information contained in real estate Cadastres and relative to real estate taxation.
- To manage and make available Cadastral databases as a public service.

The Spanish Cadastre is also a database of the Cadastral values of rural and urban real estate which are the basis for the calculation of real estate tax and other local, regional and national taxes. But this is not its only purpose: it is also a territorial database allowing the location and identification of Cadastral parcels and the assignment of the Cadastral reference, as well as the supply of graphic and literal information to other public entities. The Spanish territory covers over 500,000 square kilometres. The General Directorate of Cadastre is responsible for the Cadastral administration of 95% of the territory, and the remaining 5% is administered by the regional governments of Navarre and the Basque Country.

The Virtual Office of Cadastre was created in May 2003 with the main goal of providing other Administrations with information which, until then, citizens were required to present to the given Administration after collecting it themselves from the Cadastral office. Today, the Virtual Office of Cadastre provides the following services:

- Cadastral Information Query - both alphanumeric and graphic (maps). This service allows the user to access the physical and economic features of properties as well as their owner. The data can be obtained from the address, from the Cadastral reference or code, or from a list of the properties owned by an individual.
- Multiple Query Service. Instead of making individual queries, it is possible to send a file in a pre-defined format with necessary data, and this service replies with all the requested information in a file.
- Certificate of Cadastral Data (official document with the data obtained from a previous query). This document is obtained immediately and at no cost. The Certificate bears a 16-digit code which allows the document to be recovered as originally issued.
- Exchange of information. Allowing the exchange of files, in a pre-defined format, between the Cadastre and the different Administrations as well as with other collaborating organizations, for different purposes: coordination of data bases, updating of Cadastral information, legal effects, taxation, etc.
- Web services and specially, standard Web Map Services, that served cadastral maps and allow external geographical systems to overlay Cadastral information onto their own cartographies, orthophotographies, and even for Google Earth.

### **The main content of the case**

At the end of the 80 the Spanish Cadastre is computerized and begun to obtain cadastral cartography in vectorial format, to load it in a GIS. This cadastral GIS was exclusively oriented the internal user, of the cadastre.

La Cartografía Catastral georreferenciada y en formato vectorial cuenta con las siguientes características:

Proyección: U.T.M. en los husos 27, 28, 29, 30 y 31

Sistema Geodésico: ED50 para península y Baleares (husos 29, 30 y 31) y WSG84 para Canarias (husos 27 y 28) .

Ámbito de unidades de proceso: Término municipal, dividido en:

-Cartografía Catastral de Urbana: Escalas de captura 1:500 y 1:1.000

-Cartografía Catastral de Rústica: Escalas de captura 1:2.000 y 1:5.000

### Breve descripción de SIGCA

La cartografía en OVC :Servicio de mapas Catastrales, y servicios Web de cartografía catastral. Es posible acceder a toda la cartografía catastral en Internet, para identificar bienes inmuebles rústicos y urbanos y sus características, navegar por ella y acceder a los servicios Web desde navegadores SIG estándar y páginas Web, a fin de utilizar directamente la capa catastral como una capa de información más.

WMS Catastral. Las características técnicas del servicio son las siguientes:

- Admite las versiones 1.0.0, 1.1.0, y 1.1.1 de WMS definidas en OGC:
  - o Admite los siguientes sistemas de referencia de coordenadas:
    - o Para coordenadas geográficas:  
EPSG:4230 ED50 EPSG:4326 WGS 84
    - o Para coordenadas UTM

EPSG:32627 WGS 84 / UTM zone 27N

EPSG:32628 WGS 84 / UTM zone 28N

EPSG:23029 ED50 / UTM zone 29N

EPSG:23030 ED50 / UTM zone 30N

EPSG:23031 ED50 / UTM zone 31N

Los formatos imagen admitidos son: png /jpeg /gif /bmp/tif wmf

#### Integración en infraestructuras de datos espaciales ( IDE)

EL servicio WMS que proporciona la Dirección General del Catastro, forma parte de las principales IDEs a nivel nacional. Los principales portales que acceden a información territorial y trabajan con mapas a gran escala acceden a los servicios WMS Catastrales debido a:

- que suministra información homogénea para el conjunto del territorio
- suministra información actualizada, con un nivel de detalle y calidad suficiente.
- suministra datos literales asociados a la información grafica, tales como: referencias catastrales, superficies, desglose de locales, dirección y datos correspondientes a titulares y valor catastral, para usuarios registrados autorizados a acceder a datos protegidos.

#### Servicios WFS.

Cartografía Catastral y Google Earth. La D.G del Catastro ha desarrollado una utilidad para poder visualizar y consultar la cartografía catastral sobre Google Earth. Mediante un fichero KML se hace una petición al servidor cada vez que la navegación se detiene sobre una extensión de mapa. La respuesta es una imagen con la cartografía catastral del WMS Catastral y las marcas de posición de los centroides de las parcelas que se encuentran en el centro de la zona seleccionada. Además existe una utilidad para buscar, sobre Google, las parcelas por referencia catastral. El resultado de la búsqueda es un fichero KLM con un único objeto correspondiente a la marca de posición de la parcela buscada. Al activarlo vuela hasta la zona y también tiene un hipervínculo a la información de la OVC. Además se ha puesto a disposición de todos los usuarios una herramienta que permite generar un KML, que se construye a partir de la información almacenada en el FXCC, y muestra la edificación en tres dimensiones y visualizándola sobre Google Earth .

ACABAR CON DATOS DE ACCESO, USUARIOS Y DEMÁS. EJEMPLO EN 2006 HUBO 10,5 MILLONES DE CONSULTAS AL WMS. DESDE MAYO 2003 UNTIL NOW SE HAN SERVIDO 159 MILLONES DE MAPAS EN OVC