REPORTS ON THE CADASTRAL SYSTEMS
OF THE E.U. MEMBER STATES:

AUSTRIA
BELGIUM
CZECH REPUBLIC
GERMANY
ITALY
SLOVAKIA
SPAIN
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OVERVIEW ON THE CADASTRAL SYSTEMS OF THE E.U. MEMBER STATES

PCC

CADASTRAL INFORMATION SYSTEM

a resource for the E.U. policies

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PERMANENT COMMITTEE ON CADASTRE IN THE EUROPEAN UNION

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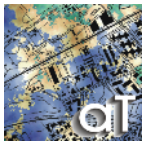

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PCC

The last decades were characterized by a rapid evolution of the land information systems pushed by the need to assure more efficiency and effectiveness to the land management activities. In this context the political, economic and governmental Institutions, both nationally and internationally, became progressively aware of the importance of cadastral information, including technical, economic and juridical data, as well as of the role undertaken by the cadastral system as a support tool for the land planning, administration and, more in general, management activities.

In the European Union framework, land information has a great significance, being a tool for implementing specific policies, first of all the agriculture and environmental ones, and because of the awareness of its role in the economic development of each Country. Moreover, the availability of real and complete land information is needed for the fulfilment of the free movement principle, that is one of the European Union pillars.

For the above mentioned reasons, on one hand the design and implementation of a modern and computerized cadastral and real estate registration system were included in the governmental priorities of several Countries - E.U. candidates, in transition, or developing - on the other hand a significant increase can be noticed in the initiatives aimed at improving the mutual knowledge, the access to and exchange of current information, in order to foster the implementation of pan-European information services, too.

Within these initiatives, one of the most important was the creation, in the year 2002, of the Permanent Committee on Cadastre in the European Union, association that joins together the E.U. Member States cadastral official institutions, whose mission is to create an adequate space to promote the mutual knowledge and the comparative analysis of the respective cadastral systems, as well as to support the initiatives promoted in the cadastral field by the European Union or by the Member Countries, proposing itself as a single and authoritative reference body towards the European Union institutions, by means of shared strategies and actions.

The editing of this PCC official document on the Member States cadastral systems "Cadastral information system: a resource for the E.U. policies" is part of the activities promoted by the *Agenzia del Territorio* during the current PCC Presidency period.

In its first edition, the document includes eight monographs drawn up by experts of the national cadastral institutions of Austria, Belgium, Czech Republic, Germany, Slovakia, Spain, Sweden, in addiction to Italy. These monographs, organized according to a common scheme agreed with the Committee members, highlight the main characters of the different systems, underlining their primary and emerging purposes, information contents, evolution processes, services provided to public and private users, as well as the links with the real estate rights registration system and the real estate taxation system.

With regard to this, the PCC wishes that this document can represent a useful knowledge tool both for the European Union and for the Member Countries institutions, and strengthen the role of cadastre in the national and European development policies, by means of an in-depth knowledge of cadastre and its data bases potential.

Having this in mind, the PCC will take great care in carrying on this work, in order to draw up the monographs concerning the other Countries and provide complete information on cadastral set up inside the European Union.

Rome, November 26th, 2008

Gabriella Alemanno
Director of *Agenzia del Territorio*
President of PCC
1st July – 31st December 2008

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THE CADASTRAL SYSTEM IN AUSTRIA

BEV - Federal Office of Metrology and Surveying

www.bev.gv.at

December 2008

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1 BACKGROUND INFORMATION

Austria is situated in southern central Europe, covering part of the eastern Alps and the Danube region and, although land-locked, it borders on the Mediterranean area. The country has a wide variety of landscape, vegetation and climate, and situated as it is at the heart of the continent, it has always been a junction for communication links between the trade and cultural centres of Europe.

Austria is a federal state with a total area of 83,858 sq. km, consists of nine provinces and has a population of 8.1 million.

Austria has common borders with eight other countries. The borders have an overall length of about 2708 km.

1.1 Current Political and Administrative Structures

The Austrian constitution is based on the Federal Constitution Act of 1920 as amended in 1929 and on the principles of democracy, the republic state form, federalism and the rule of law.
The constitution also includes a number of instruments of direct democracy, such as popular initiatives, plebiscites and referenda. Fundamental rights and freedoms have always been of the utmost importance and continue to be accorded height priority in the Austrian constitution.

2 Historical Outline of the Cadastre

In 1718 the Austrian Administration introduced a registration system for all buildings and parcels based on a surveying and mapping in the field within the Italian provinces, which then belonged to Austria.
The so called „Censimento milanese“ was designed and organized by Johann Jacob Marinoni (1676-1755). Within three years he managed the survey (including local triangulation) of 20 000 qkm (which is as large as Lower Austria) only and produced maps using the plane-table method of surveying. In addition, the land was evaluated with respect to three classifications (good, medium and poor soil) and the taxation of the land was subsequently based on its' net yield.

Plane table of Marinoni

Surveying method

In 1817 Emperor Francis I of Austria ordered through the 'Grundsteuerpatent' (Land Taxation Law) the surveying of the whole monarchy. Between 1817 and 1861 approximately 50 million parcels in 30,000 municipalities were surveyed and mapped. The surveying of about 300 000 km² was also achieved using the plane-table method and based on triangulation points. For the evaluation of land within the 'Stabile Cadastre', the land was classified within 14 land-cover categories (e.g. field, garden, meadow, vineyard, forest, lake). Each category - specifically for each municipality - was subdivided into different classes of net yield. This was the first systematic registration of objects (parcels) of the whole country based on field survey.

Initial Cadastral map (1:2880, about 1850)

In 1871 the Land registry system was added to the Cadastre introducing legal processes for documentation of owners and mortgages in Austria and in 1883 the maintenance of the Austrian Cadastre, the so called "Evidenzhaltungsgesetz", was enacted. This law regulated that all changes in parcels (boundaries and/or ownership) have to be registered in the cadastre and the Land Registry. Since that time, there has been a constant process of updating of the Austrian cadastre. The register was structured in 3 pages: (a) page A for objects, (b) page B for owners and ownership and (c) page C for obligations. The concept of this structure as well as the dual system of land register and cadastre is still in use nowadays known as Central European Land Registry system.

Cadastral map (1:2880, about 1970)

In 1969 Austria enacted the Surveying Law and established the fundament for the functions of the surveying authorities. Within this law the parcel cadastre was extended to a legal boundary cadastre which represents a legally binding proof of boundaries of parcels and secures individual rights on boundaries. Within the "Cadastre of boundaries" the state guarantees the boundaries of a parcel. The requirements for receiving of the qualitative attribute are a written consent of all owners neighbouring the specific parcel, a precise survey of the whole parcel and the documentation in a surveying document. Within the last three decades, the Austrian cadastre and land register have been converted into a digital common data base (Grundstücksdatenbank). In addition to all the benefits of digital databases (access, queries, etc.), the redundant information within the cadastre and land register (cadastre being a complementary register to the ownership register and vice versa) has been eliminated. The unified data base has completely replaced the analogue registers and since beginning of 1990ies access by web based services are offered.

In 2004 the unified Address Register was added to the Real Estate Database System, in 2008 the BEV-Portal "e-geodata Austria" was launched.

3 STRUCTURE AND ORGANIZATION

Land administration in Austria (the Cadastre, the Land Register, Land Valuation and others) is regulated by laws and by decrees, which guarantees the stability of the system and integrated within a legal framework.
Institutional structure of Land Management Sector; the Key Players in the land management sector and their responsibilities:

Ministry of Justice	Land law
Court (District Courts)	Land book
Ministry of Finance	Valuation of land
Ministry of Agriculture and Environment	Law on land-consolidation
Ministry of Interior	Register of inhabitants
Local Agrarian Authority	Land consolidation
Ministry of Economics and Labour	Surveying and cadastre act
Federal Office for Metrology and Surveying (BEV)	National Agency for Cadastre, Topographic Mapping and Metrology
Cadastral Office (Vermessungsamt)	Cadastre

It is worthwhile mentioning the bodies appointed to supervision and verification of Land Registry and cadastre operations. The activities of Land Registries are subject to verification by local courts of justice, since the independence of each single district is assumed as a principle. Cadastral surveying, on the other side, is in the responsibility of the cadastral offices, which is coordinated by the BEV ("Federal Office for Metrology and Surveying").

3.1 The basic system of land administration

In Austria all real estate has been brought under the present system of land registration. Data about Real property units, real property rights and holders of property rights are administrated and maintained by Cadastre and Land Register with shared tasks and responsibilities in land administration.

Cadastre and Land register- shared tasks

Each legal entity is mandatory identified by a property number ("Einlagezahl") and is made up by one or more parcels. The same applies for real property units. Consequently these unique identifiers for all these data categories are also used by other registers.
The legal task is provided by about 140 „Land Register Offices"(„Grundbuch") under the Ministry of Justices which are combined with the local courts. Land registry Offices are maintained within the local court by 3-5 persons. A judge from court is supervising this team.
The technical task is provided by 41 „Cadastral Offices („Vermessungsamt") coordinated by the BEV- the „Federal Office for Metrology and Surveying" under the Ministry of Economics and Labour.
Cadastre Offices are responsible for the registration and maintenance of objects (parcels, buildings, land cover...) as well as the documentation of land cover and soil quality.
The Land Register Offices as well as the Cadastral Offices are part of the public administration.

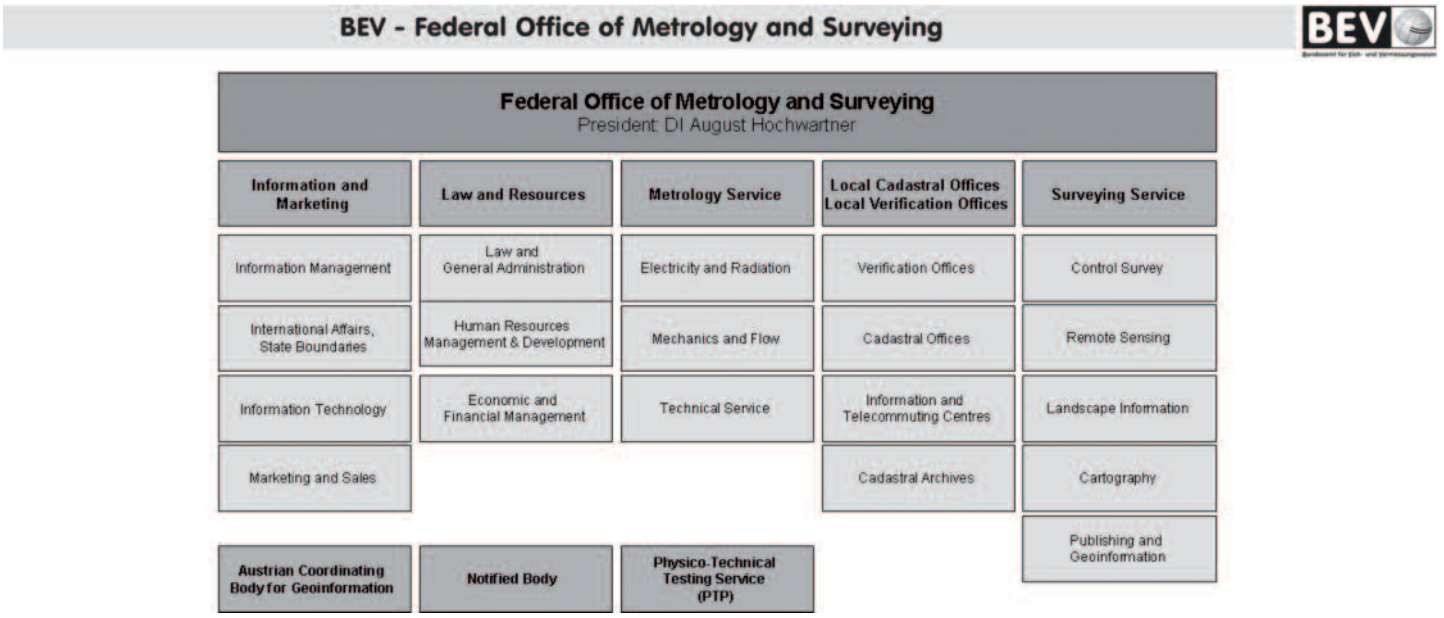
3.2 The BEV – The Austrian Federal Office for Metrology and Surveying

The BEV as the National Cadastral and Mapping Agency (NMCA) is a subordinate authority of the Federal Ministry of Economics and Labour. The tasks cover surveying and geoinformation, and metrology and verification. The central office is based in Vienna, and there are 67 regional offices in all nine Austrian Provinces.

The main tasks in the field of surveying and geoinformation are control survey, compilation and maintenance of the cadastre in order to document the spatial allocation of property rights on land, and the topographic survey. The results are national spatial base data and form the foundation of the Austrian spatial data infrastructure.
The scope of application includes land use planning, vehicle telematics, road traffic management, environmental and nature protection, national defence, national security as well as agriculture and forestry.
The metrology service of the BEV consists of the National Metrology Institute (NMI) and the national legal metrology authority of Austria. In its capacity as an NMI the BEV is responsible for the maintenance and development of the national measurement standards for the legal units of measurement. The metrology authority implements actions within the scope of legal metrology, which ensure that all measurements necessary to protect and secure the economy and society are sufficiently accurate and comply with the legal requirements.

Performing these tasks secures the metrological infrastructure in Austria and is a prerequisite for industrial production, for trade in measurable goods and services as well as for the protection and safety of human beings and the environment.

Organisational structure of the BEV



3.3 The cadastral offices

All over Austria 41 Cadastral offices are within a defined district legally responsible for maintaining the information of the cadastre. A cadastral office is headed by an academic with an university degree in surveying. The staff in all cadastral offices is about 550 persons.

In general the main duties and responsibilities of a cadastral office are:

- Customer service: customer advice and sales service;
- Official acts: certifications of applications;
- Maintenance of the cadastre (cadastral databases, Real estate database, cadastral map, ..);
- Basic network for control points: maintenance of control point network,GPS- measurements, etc.

Within their tasks the surveying offices are the regional representative of the BEV and have a close cooperation with the local authorities, especially with land register offices and the local communities.

3.4 Private Sector Involvement

In Austria you have to be authorised to produce surveying documents for registration in the cadastre and in the land register: the cadastral authority itself, licensed surveyors, a few governmental authorities and the provincial agrarian authority. To be authorised for cadastral surveying certain legal requirements has to be fulfilled:

- University degree in surveying;
- Professional practice;
- Licensing Examination.

Private licensed surveyors are within the cadastre in charge of surveying parcels, subdivision of parcels and recovering boundary points. They are commissioned and paid by the owner of the parcels. Within their tasks they also try to reach conformity with local construction authorities (Baubehörden) and regional planning authorities (Raumordnung). Notaries (private but licensed) are offering their service for transfer of ownership, inheritance, mortgages and others.

3.5 Professional Organization or Association

Licensing: Any Architect, Surveyor or Chartered Engineering Consultant has to apply for an authorisation at the Chamber of Architects and Consulting Engineers (Bundeskammer der Architekten und Ingenieurkonsulenten).
The Chamber of Architects and Consulting Engineers with subunits and the regional branches are public law bodies and the statutory professional representation associations of state-authorized and certified technical consultants (architects and consulting engineers with over forty authorizations for technical, scientific, mining and agricultural disciplines). There are about 300 licensed surveyors (Ingenieurkonsulenten für Vermessungswesen) registered as member of the chamber.
It is the duty of the chamber to represent and promote the professional, social and economic interests of the technical consultants and to monitor fulfilment of the professional obligations of the technical consultants.

3.6 Licensing

The access to the Austrian profession "Ziviltechniker" (comprises Architects and Chartered Engineering Consultants) is regulated by a federal law (Ziviltechnikergesetz) requiring the following qualifications:

- University degree in surveying, architecture; technological, scientific and mining areas; areas connected with environmental and soil sciences;
- Professional practice of at least three years (after graduation). One of these three years has to be passed as an employee working under the instructions of the employer;
- Licensing Examination ("Ziviltechnikerprüfung").

The Licensing Examination is a public oral examination and there are no remedies against the decision of the commission. Every candidate has to demonstrate in the Licensing Examination sufficient knowledge in the following areas:

- Austrian administrative law which includes especially the scope and basic knowledge of the different regulations;
- Business administration, especially basics in the fields of cost accounting, organization, personnel matters, investing and financing etc.;
- Legal and professional regulations of the special professional field (e.g. architecture) · Professional laws and ethics of the profession.

The authorization for professional practice ("Befugnis") is awarded by the Federal Ministry of Economics and Labour. For either architecture or one of the more than 40 specialization of Chartered Engineering Consultants an own authorization is required. Both, natural persons and business associations of architects and engineers may hold an authorization.
Before making use of the authorization the applicant has to take the oath that he/she will observe the law, his other responsibilities and the duty to keep confidential.

3.7 Education

At university level two universities in Vienna and Graz offer education in geodesy, geoinformation, land management and surveying in a full program. The study is made up of six terms (semesters) Bachelor study with a following Master's study with duration of 4 semesters. Besides, the baccalaureate is concluded with the academic degree Bakk.techn and the Magisterium with the graduate in civil engineering Dipl.-Ing.

4 THE CADASTRAL SYSTEM

The Austrian system is a “title registration”. The registered owner has public faith of being owner. The title registration is in the land registry is operated in close cooperation with cadastre.
The Austrian cadastre is used for multiple purposes and serves as the basic system for a lot of public or private applications, such as zoning plans, Provincial Geographic Information Systems as well as for IACS (Integrated Agricultural Control System).

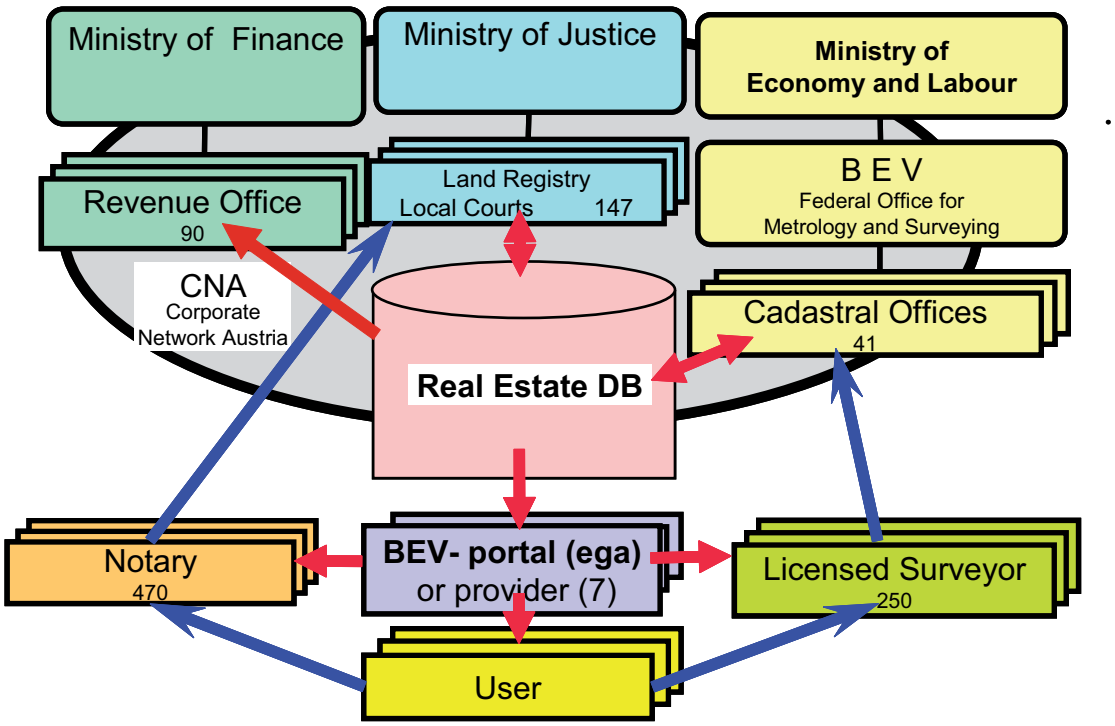
Land register and cadastre are fully independent in organization, personal and financial matters but they are unified in a common data base, the “Real Estate database” (“Grundstücksdatenbank”). It contains both, the information from land book and the cadastral register. Each land register office and cadastral office maintains the data (within its jurisdiction in the data base. The technical support of this central organized data base lies in the responsibility of the Federal Office of Surveying and Metrology (BEV). All information in the records is fully open to the public.

There is an open access to the information by using modern web based services. All land book courts, cadastre offices, notaries, licensed surveyors, banks and many others have online access to the database.

4.1 Cadastral Concept

A plot of land (parcel) shall be the part of a cadastral community referred to as such with an individual number in the cadastre. Cadastral units shall be those parts of the surface of the earth explicitly registered as such in the cadastre. Therefore a plot of land is a part of the surface of the earth with an individual number (unique identifier).

Players and Data Flows within the Austrian Real Estate Data Base



4.2 Content of Cadastral System

Basic register units and attributes

The Real Estate Database (Grundstücksdatenbank – GDB) contains data from cadastre as well as from Land registry.

4.2.1 Cadastre attributes

- Number of the parcel (Grundstücksnummer);
- Area of parcel (Flächenausmass) – FLÄCHE ;
- Address of parcel (Grundstücksadresse) – GST-ADR;
- Type of land cover and sections of land cover (Benützungsart) – NUTZUNG;
- area of each section of land cover (Benützungsabschnitte);
- other specific attributes of the parcel (Sonstige);
- surveying (control) points (Festpunkte);
- yield figure (Ertragsmesszahl);
- file number of the surveying plan that was the basis for updating the map (technischer Veränderungshinweis) – VHW.

Extract from the Real estate database

```
AUSZUG AUS DEM GRUNDSTÜCKSVERZEICHNIS                NUMMERIERUNG: fortlaufend
KATASTRALGEMEINDE: 31133 Zahling                           GRENZKATASTER: TNA
VERMESSUNGSAMT: Oberwart
************************************************************************ 2008-11-27
EINGABE: 3240 3245 3289
********************************************************************************
   GST-NR  G    MBL-BEZ BA (NUTZUNG)          FLÄCHE    EMZ       VHW GB-NR   EZ
  3240       7422-80/4 Landw. genutzt            887         499/2003          71
  3245       7422-80/4 Landw. genutzt           9731   3193    2/1967          71
  3289       7421-08/2                          1887         499/1994          70
                     Baufl.(Gebäude)    T       661
                     Baufl.(befestigt) T       1226
                     Am Haarberg 7
********************************************************************************
   EZ  LNR EIGENTÜMER
   70    5 ANTEIL: 1/2
           Pummer   Christine
           GEB: 1954-02-07 ADR: Zahling 160   7562
         6 ANTEIL: 1/2
           Pummer   Rudolf
           GEB: 1950-12-02 ADR: Am Haarberg 18, Eltendorf   7562
   71    6 ANTEIL: 1/2
           Ernst   Julius Dipl.-Ing.
           GEB: 1959-02-28 ADR: Eltendorf 16   7562
         7 ANTEIL: 1/2
           Ernst   Cornelia Mag.
           GEB: 1961-11-16 ADR: Eltendorf 16   7562
***************************** 2008-11-27 10:08,24081 BA ********** ZEILEN:   28
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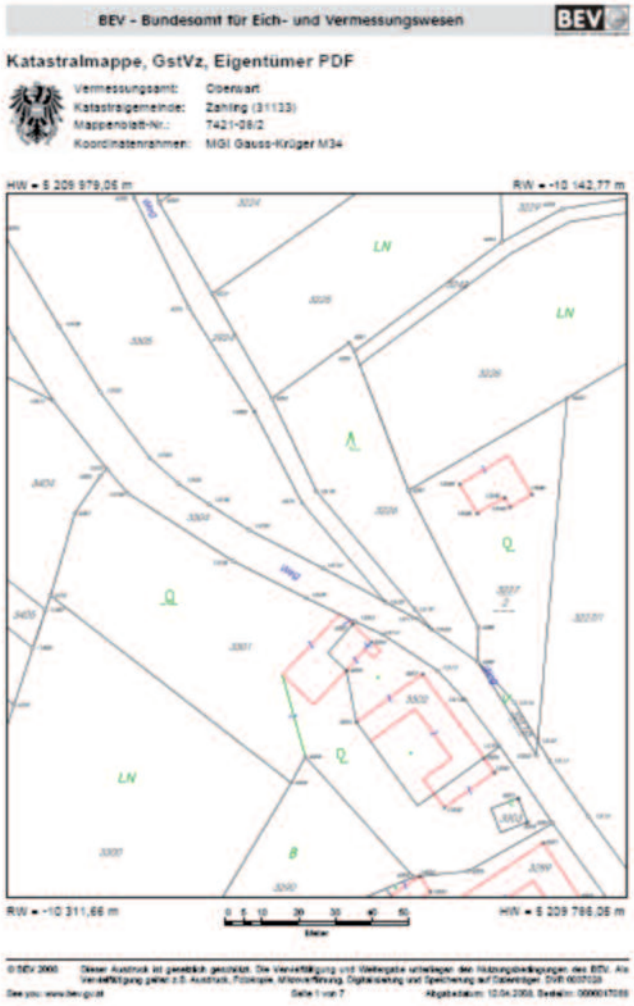
Extract from the cadastral map



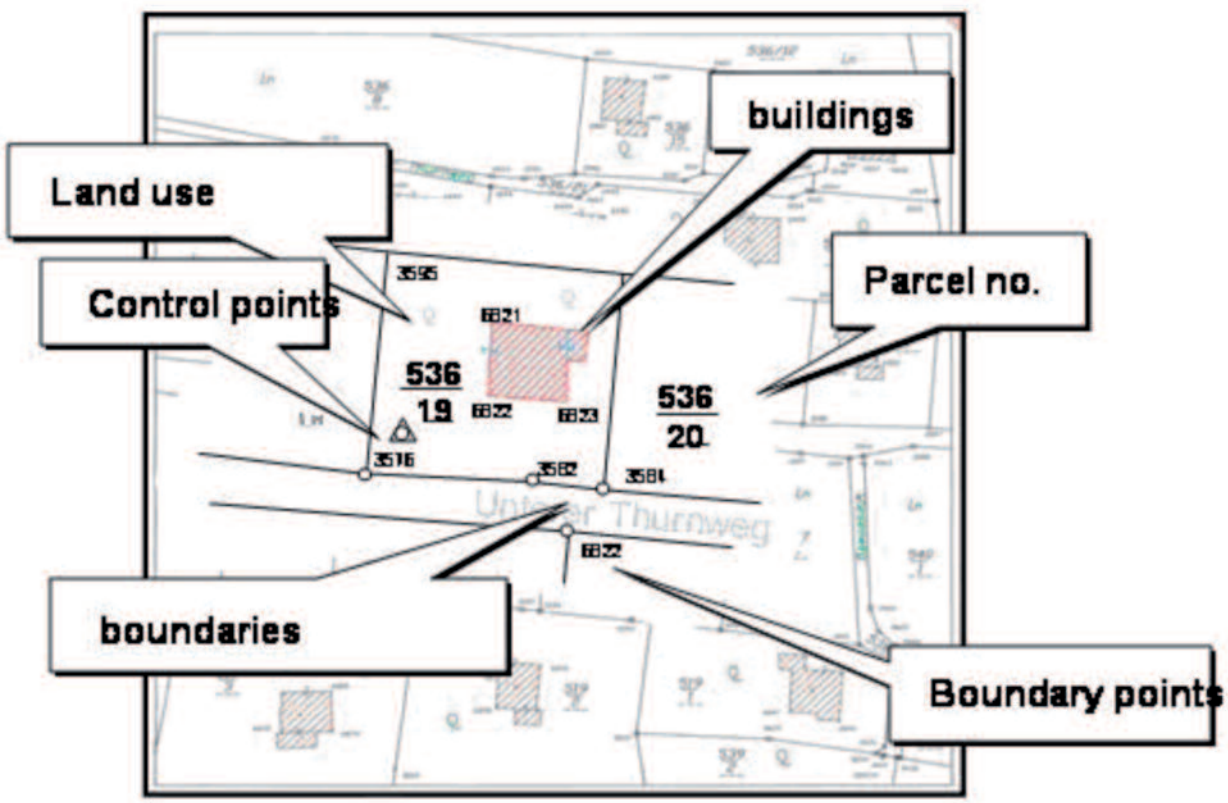
4.2.2 Cadastral Map

The Cadastral Map (Katastralmappe) is the "graphical part" of the Cadastre. It shall make visible the position and description of the parcels and the boundaries between the different types of land cover. It also contains information on point numbers of the boundary points, surveying points and other descriptions.

The Cadastral Map has been developed since 1817 in paper form for the whole area of Austria. Since 1987 the map has been digitised and by the end of 2004 the whole Cadastral Map is countrywide available in a digitized vector format (Digitale Katastralmappe – DKM). The data of the Cadastral Map is consistent to the information of the databases of the Cadastre (parcel database, database of coordinates). Similar information is taken together in layers. It is used as a basic information system for numerous applications such as urban and rural planning, facility management etc.

Cadastre Map data is available for the whole of Austria from 1817 to date. Historical (analogue) data is available in paper form or on micro fiche in the Federal Office of Metrology and Survey (BEV). The Digital Cadastre Map (DKM) is available also via the Internet.

Contents of a Cadastral Map



4.3 Role of the Cadastre Layer in SDI

Austrian surveying legislation stipulates that the boundary cadastre must be managed by computer-aided methods on the basis of the real-estate database.
The real-estate cadastre is used for the binding verification of real-estate boundaries and for visualizing types of land cover, area dimensions and other specifications in order to facilitate the identification of plots of real estate.

The area-wide data of the real-estate register is stored centrally together with the entries in the land register in the Real estate database. It is managed in distributed mode by means of remote data processing by the surveying offices and land-register tribunals in a manner assuring that the statutory responsibilities are honoured. The cadastre and land register forms the nationwide soil information system which refers to soils and to real estate.

Data about land are accessible to everybody in Austria. This fact is one of several reasons why data managed by Land Register and Cadastre are used for so many different customers. As a result of that multipurpose use of data not only cost recovery is guarantied but also the demand to use common and unified data for management, administration, documentation and individual security is satisfied. Examples for users and demand are given in the following part.
The direct access via computer and public network or via Internet is very popular. This method of access to data is used by notaries, credit institutes, licensed surveyors and other professions. Data on tape or any other digital medium are frequently requested by users which are interested in larger areas or for planning purposes.

The typical individual client however is still going to the Offices to get the information needs printed on paper to get information about individual civil rights, subjects or objects.
The general plan about urban and rural planning over a longer period is based on cadastral data. This demand of local authority allows a definition of proposed land use; the assignment or allocation of a specific parcel for is pointed out in the Zoning Map which has two different functions:

- Regulation function: Each assignment/allocation is related with different ownership-rights (e.g. the dedication "Greenland" implicates a building ban for the parcel);
- Development function: Each assignment/allocation shows the potential use of parcels that must not necessarily be identical with the actual use (e.g. a parcel dedicated as "Building Area" is used as agricultural land at the moment).

For parcels in rural areas the Austrian Cadastre contains an index that depicts the soil quality (Ertragsmesszahl). Soil quality is valued by soil experts of regional Tax Offices which are provincial departments under the Ministry of Finance. The valuation is based on the nature of soil, on the topography (relief) and site of the area, and finally on the water and climatic conditions of the site. The results of valuation are visualized in analogue and digital maps, the so-called Soil evaluation maps. The final soil quality index of a specific parcel that serves as the basis for the taxation of farmers and agricultural enterprises is derived by the intersection of this soil valuation data set with the digital cadastral map. Usually these data sets only can be accessed by financial authorities and surveying authorities.

The Danger Area Plan outlines areas with a specific risk of natural disasters (e.g. avalanches, land slides, floods). Usually the different zones are linked with different land use restrictions. The composition of Danger Area Plans lies in the responsibility of the Regional Offices of Risk Protection which are subordinated to the Austrian Ministry of Agriculture, Forestry Environment and Water Management. Danger Area Maps are based on cadastral maps and are produced for municipalities with a given risk probability. Citizens are enabled to have a free look to these maps in the specific municipality or in the Regional Office of Risk Protection.
Cadastral data are also used within facility management, even when cadastral data are not designed for that purpose. Control of Resources (forests, wine) is another example where governmental as well as private institutions use cadastral data for their decision-making.
The Ministry of Agriculture and Forestry administrates IACS as well as subsidies within handicapped rural areas based on cadastral data combined with their data and rules.
Currently address-matching is often used to combine cadastral data with statistical data from the Federal Office for Statistics or other sources. This is a common method to bring databases into relation with their geographic position. This process called “geocoding” needs geographic information which covers the whole country.

5 UPDATING PROCEDURES

The territory of Austria has been completely surveyed during the years 1817–1861and since 1883 all changes in parcels (boundaries and/or ownership) have to be registered in the cadastre and the Land Registry. Since that time there has been a constant process of updating of the Austrian cadastre.
All changes and updates of the cadastre are based on legal and formal procedures and have to be documented (e.g. in surveying documents). Causes for changes and updates are:

- changes of the boundaries of a parcel (application by the owner);
- updating of the land cover layer of the cadastral map by deriving information from up-to-date Digital Ortho images not older than 5-years;
- quality improvement of the cadastre (ex officio by the cadastral offices).

Either an application by the owner of a cadastral parcel or an ex officio based process induces the process of changes and updating the cadastre by the cadastral office.

5.1 Application for changing of a parcel by the owner

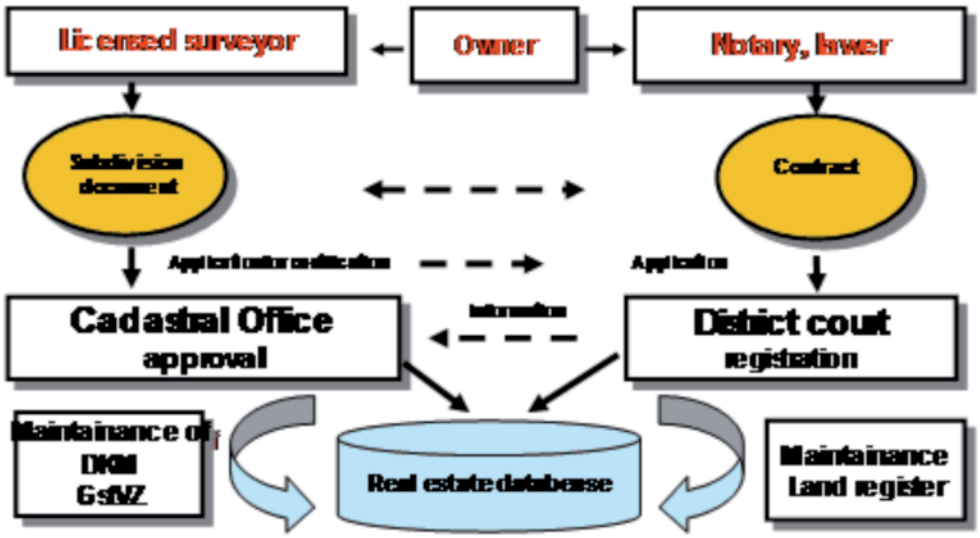
In case of changing the boundaries of a parcel a surveying document is demanded to fulfil the legal requirements for the registration in the cadastre and in the land register.
The main steps of the registration process are:

- owner of the parcel contracts a private licensed surveyor;
- private licensed surveyor creates a surveying document as the result of consultations with all neighbours of the parcel, surveying of the boundary points etc.;
- application at the cadastral office for an certification of the surveying document by the owner or notary or the licensed surveyor as substitute of the owner ;
- formal check regarding legal and technical conditions by the cadastral office;
- certification of the surveying document by the cadastral office;
- Notary (or the owner himself) applies for registration in the Land register at the local district court; the surveying document, the certification of the cadastral office and other documents (e.g. the contract, approvals of the municipality) are required for the application at the land registry for the registration;
- Check of the application and finally the legal decision by the local district court.

Now the conveyance of freehold is entered into the Land register

- local district court sends a copy of the decision to the Cadastral office ;
- the Cadastral office updates the Cadastre (Real Estate Database and the cadastral map) and the subdivision documents are included in the Collection of Documents.

Process of registration



5.2 Update of the land cover layer of the cadastre

The Austrian Cadastre includes information about the type of land cover separated in 7 main categories and each of this divided in sub- categories:

- Building land, i.e. areas used for construction and areas primarily used therefore;
- Land used for agricultural purposes, i.e. arable land, meadows and pastures;
- Gardens, i.e. land used for horticultural purposes or primarily used for recreation and leisure purposes;
- Vineyards, i.e. land used for viticulture;
- Alps, i.e. land used for mountain farming;
- Forests, i.e. land used for forestry;
- Waters, i.e. land dedicated to holding running or stagnant waters, including the adjoining slopes and embankments as well as swamps and grounds covered with reed;
- Other types of land.

This information is part of the cadastral map (land cover layer) as well as part of the parcel register information in the real estate database.

As mentioned before the cadastre and especially the cadastral map are used for a numerous applications. To provide the information according to the needs of the users the land cover layer is updated by periodically within 5 years using the latest ortho images.

5.3 Quality Improvement of cadastral data / information

To provide data and information of the cadastre in the quality according to the needs of the users some processes of quality improvements are carried out by the Cadastral offices:

- Improvement of the Cadastral Map;
- Improve position of lineament (points, lines) and actuality of the information;
- Eliminate spacious (wide area) displacements in Digital Cadastral Map – use the latest Ortho image;
- Adjust (old) surveying documents;
- In situ measurements of identical points (referring to old surveying documents) and coordinate transformation to national system (geo-referencing);
- Improvement of lineament based on the process of homogenizing the national geodetic network;
- Boundaries documented in (old) surveying documents are correctly geo-referenced;
- Best possible adjustment of surveying documents without geo-reference in national reference coordinate system;
- Using Ortho images, identical points, etc.

For the maintaining and updating processes of the cadastre standardized software is used by the Cadastral offices as well as a highly developed quality management system guarantees unified processes and well-engineered quality checks.

6 PROVIDED SERVICES

The Austrian system provides a wide range of standard products on spatial data and geographical data (spatial base data) compiled in connection with fulfilling its surveying tasks to both private and public bodies, among which technicians, banks and private citizens.
Since beginning of 2008 the BEV runs a high developed web- portal (http://www.bev.gv.at/) and provides their products as well as the information of the Cadastre.
There are three main categories of users for the information system:

- Traditional users which ask for on-paper;
- Professional users, asking for digital data, stored on movable supports;
- On-line users.

Web Portal of the BEV (www.bev.gv.at)

It is a web based dissemination system of spatial information and spatial data and combines the many different datasets provided by the BEV in one logical dissemination database. Furthermore it contains automatic and event triggered updating of the dissemination database and manages customers, users, roles and rights. This geo-information portal of the BEV offers different dissemination channels for different customer groups (Shop, Expert Shop, WebGIS, Map and Feature Services).

The primary objectives of the BEV- portal are to simplify the official procedures for realising one stop-service and for the new definition of the local authorities. It links directly the legally relevant database of real estate and the address register with the spatial data of the national cadastre and the topographic survey. For citizens, economy and administration it accelerates the access to spatial information.

6.1 Services - Pricing and licensing

Standard charges for spatial base data and exploitation of spatial base data as well as the licensing conditions determine the existing regulations and are the framework for charges according to a fair market value. Essential features of the BEV price structure are the distinction between the customer's internal rights to use the products and his external rights to use the products and the related pricing factors.
Schematic illustration – Overview of pricing factors:

INTERNAL USE		
Pricing factors	Analogue products	Digital products
Type of data	data layer	data layer
Territory	area (or number of plots of land)	area (or number of plots of land)
Costs of shipping	lump-sum for packaging and postal charges	lump-sum for packaging and postal charges
Multiple workstation charge for internal use	-	number of workstations

EXTERNAL USE		
Standard charge for exploitation (charge for use)	type of use (defined rights of use)	type of use (defined rights of use)

The services offered can be divided into three categories:

- General information (much of which accessible online);
- Technical information for field surveyors;
- Technical information for surveyors and topographers on larger scale and users with goals different from surveying.

6.2 Financial aspects

The maintaining costs of the property registration system are financed, for an almost 100% quota, by the taxes on registration paid by users. Taxes paid by users are a Ministry of Finances entry. The expense for the management of land property registration system is covered by the budget of the Ministry of Justice or the Ministry of Economy. The level of taxation is decided by both the competent ministry and the Parliament, and, of course, taxes are established by law provisions.

7 LINKS WITH THE RIGHTS REGISTRATION SYSTEM

Land register and cadastre are fully independent in organization, personal and financial matters but they are unified in a common data base. The digital "real estate database" ("Grundstücksdatenbank") contains both the information from land book and the cadastral register. Each land register office and cadastral office maintains the data (within its jurisdiction in the data base. The technical support of this central organized data base lies in the responsibility of the Federal Office of Surveying and Metrology (BEV). All information in the records is fully open to the public. There is an open access to the information by using modern web based services. All land book courts, cadastre offices, notaries, licensed surveyors, banks and many others have online access to the database.

Land registration and cadastre are organised on a regional basis in districts. Both registers are public and the data contained within the registers are legally binding (boundaries of parcels in the cadastre, ownership of parcels in the Land Book). People have a duty of notifying changes of ownership. The modification will be registered by a public authority. If the parcel is divided, the partition must be based on a certification of a cadastral authority. Because of these conditions, the land register is guaranteed by the state and people can trust the data contained in the register. Boundary disputes are resolved by the cadastral authorities by re-establishing the boundary using the coordinates recorded when the boundary was originally established. This statement applies only to parcels stored in the 'Boundary

Cadastre' (established in 1969). In all other cases, the authority of resolving boundary disputes is the local court. Mostly a surveyor will act as an expert to assist the judge.
Additional information such as the area of the parcel, the land cover of parcel parts, etc. are also implied in the Austrian cadastre, but they are not legally binding facts. As mentioned above land register and cadastre are public. Since the implementation of the digital registers, the procedure of obtaining information has changed. Everyone in Austria can access - subject to charges - the data using modern communication technologies, or inquiries can be made at the regional authorities (local cadastral office or Land registry office).

8 RELATION CADASTRE, VALUATION SYSTEM AND REAL ESTATE TAXATION

In Austria, the taxation of land is based on yearly averaged yield estimation. The main parameters for the land valuation are the natural yield conditions (such as soil quality, topography, climatic and water conditions) and economic yield conditions (traffic systems, together with the location and distribution of agricultural parcels). Soil specialists, employed by the Finance Authorities, estimate the value of land by using sample holes with a depth of 1m and by comparing it with sample standards. All matters connected with surveying, mapping and the parcel-wise evaluation of soil estimation is performed by the Federal Office of Metrology and Surveying. Parcel-related results of soil estimation are stored in the Real estate database (GDB).
The purpose of official soil evaluation is to create the basics for evaluation for revenue purposes, as for instance:

- levy of land fax, real estate transfer tax, tax on assets, inheritance tax;
- assessment of the contributions to social insurance and religious communities;
- assessment of claims relating grants and loans.

Agricultural enterprises are rated according to the earning-capacity value, which can be gained in an average year, assuming correct farming as is generally practised (sustained productive capacity).
Special consideration thereby is given to:

- the natural conditions for productivity, such as soil quality, topographic features (terrain tormsj, climatic conditions and water resources. It is the task of the official soil evaluation to record and compare these parameters;

- the economic conditions for productivity, such as exterior accessibility (lines of communication), inferior accessibility (Situation and arrangement of agricultural fields), as well as the size of the agricultural enterprises.

8.1 Historical development of soil evaluation

1718 The first attempt aimed at a just land tax assessment: Imperial Act "Kaiserliches Patent" by Emperor Karl VI (Milan cadastre);
1748 Empress Maria Theresia standardises land tax acts throughout the whole Habsburg Monarchy (Steuerrektifikation - tax rectification);
1785 Tax Privileges based on the individual subject to taxation are abolished by Emperor Joseph's II Imperial Act "Allerhöchstes Patent" (land tax regulation);
1790 Emperor Leopold II abolishes land tax regulation (provisional arrangements for land tax);
1817 Emperor Franz I establishes the "stable cadastre" by an Imperial Act (Grundsteuer patent - land tax act), which regulates the survey of landed property and the assessment of its net return;
1869 Emperor Franz Joseph I enacts the iand tax regulationact (Grundsteurkataster fiscal cadastre), revision of the "stable cadastre" and re-evaluation;
1883 The Evidenzhaltungsgesetz (Update Act) regulates the updating of the fiscal cadastre's;
1934 Soil Evaluation Act: Evaluation is based upon the natural yield conditions (initial evaluation) from 1940 to 1973;
1968 Surveying Act;
1970 Soil Evaluation Act.

8.2 Organisational structures and competences

Official soil evaluation lies within the financial authority's competence. All survey matters in conjunction with that, as well as drawing up plans, analysis and transfer of the soil evaluation results to the cadastre lie within the responsibility of the BEV, the Austrian Federal Office of Metrology and Surveying.
A so called federal advisory council for soil evaluation (Bundeschätzungsbeirat) has been established to support and advise the Federal Minister of Finance. The regions advisory councils for soil evaluation (Landesschätzungsbeiräte) have been established in rough geographical correspondence with the

Austrian Regions financial authorities. Soil evaluation is carried out by evaluation committees (Schätzungsausschüsse) in the district of the local tax Offices.

Following the Soil Evaluation Act 1934, an evaluation based on the natural conditions for productivity of all agricultural land was carried out in Austria from 1940 to 1973 according to standardised directives ("Erstschätzung" - initial evaluation).In accordance to the Soil Evaluation Act 1970 the results of soil evaluation have to be controlled every twenty years with respect to conforming to the natural conditions. If necessary it has to be adapted accordingly.

The areas to be controlled (cadastral units - Katastralgemeinden) are listed in the yearly evaluation Programme which is coordinated between the financial authority and the cadastral offices. Substantial and lasting alterations of the natural conditions in relation to productivity as aconsequence of natural events (e.g. floods/inundations, landslides) or man-made developments (e.g. a melioration works, construction of power plants or roads) are entered, if required, in the course of re-evaluations.

Subject of soil evaluation is the (comparative) survey in situ of natural conditions for earning capacity of agricultural land. To ensure nation-wide uniformity of soil evaluation, so called "Bundesmusterstücke" (sample land parcels) are chosen and evaluated throughout the whole federal territory. These sample land parcels are typical of their respective region. It is determined by the Ministry of Finance that in total they represent a cross section of all existing soil types.

Correspondingly, at regional level, "Landesmusterstücke" - sample land parcels, and at district level, further comparison samples are identified. In order to allow a rating of the soil quality, holes up to a depth of one meter are dug in the sample parcels. The most productive parcel receives a valuation index (of land classification) of 100. All agricultural land including the sample parcels is given a valuation based on this index, according to the natural productive conditions. Upon determination of the valuation index, all factors influencing the productive capacity have to be considered, differentiating between arable land and grassland, both categories knowing various subcategories.

For each evaluated parcel, two indices are determined. The first one (soil index number or valuation index used for grassland) expresses the objective soil conditions, whereas the second (final value of evaluation of arable lands or grassland valuation index) takes into account various other factors of natural productive conditions. Classification for valuation of arable land or of grassland is used as auxiliary means.

8.3 Criteria on determining indices

Arable land		Grassland
land cover		land cover
Soil type		Soil type
Origin of agricultural soil		Quality characteristics of soil condition
Quality characteristics of soil condition		Category of climatic conditions
		Water content of soil
⇓		⇓
soil index number (indicating the soil conditions)		valuation index used for grassland
⇓		⇓
	Terrain conditions	
	Temperature	
	Rainfall	
	Wind conditions	
	Shadow due to forests	
	Shadow due to mountains	
	Etc.	
	⇓	
	final value of evaluation of arable land or grassland valuation index	

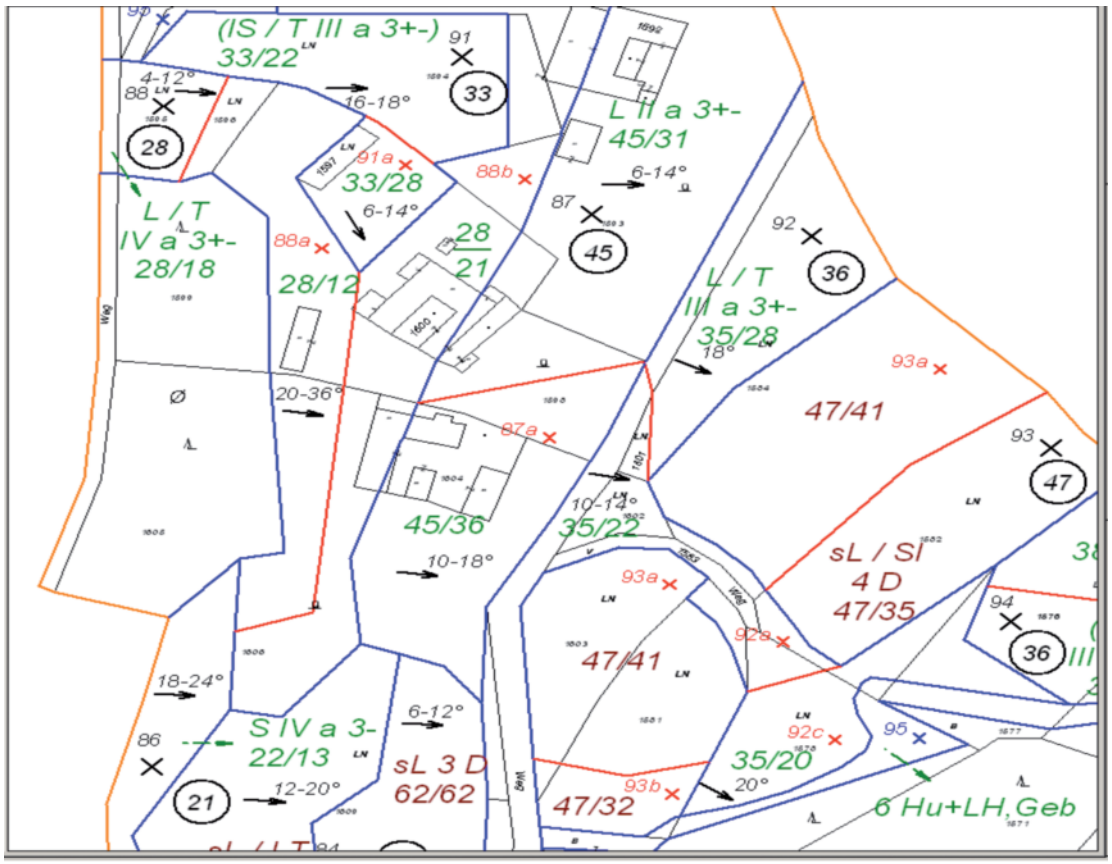
Inspecting in the field, an evaluation committee carries out the evaluation of agricultural land, with a financial authority's soil evaluation officer and a technician on consignment of the cadastral office. Samples of the soil are taken by means of a soil drill (drill holes) approximately every 40 m along the marked off inspection lines. These samples are used to determine the soil quality. Particularly in mountainous regions, evaluation frequently is not carried out along inspection lines, but per parcel.

Thus, the evaluation is carried out independent of parcel boundaries and owners, and under the assumption of correct farming. Thus with respect to the evaluation criteria already mentioned, areas of uniform soil classes are defined, which are described by the soil evaluation officer along with the specification of the valuation index of land classification (soil description).

The evaluation results thus collected are documented as a soil description in field evaluation registers on the one hand, and in the field evaluation sheet on the other hand, by mapping the boundaries of areas of soil classes and the soil description. The technician on consignment thereafter has to digitise the evaluation map. The evaluation results are then presented to the owner in a public presentation and are finalised after setting any possible objections.

The evaluation map and the cadastral map are laid out in the same sheet line System and the same scale. The combination of the two maps results in the so called original tax-map, providing a graphical comparison of the gathered data and an evaluation per individual parcel.

Extract of the soil evaluation map



8.4 The process of analysing and calculating

The evaluation map is linked to the digital cadastral map (DKM) and the real estate data bank (GDB) for data analysis. The evaluation's result, known as the yield figure (EMZ) is calculated parcel by parcel, entered in the real estate data bank of the BEV and transmitted to the financial authorities as basic unit for rate assessment.

For updating the information all changes in the cadastre, e.g. changes of parcel boundaries or land cover, as well as updating soil evaluation data e.g. following a re-evaluation, will result in recalculating the parcels yield numbers. This job is performed by the local cadastral Offices.

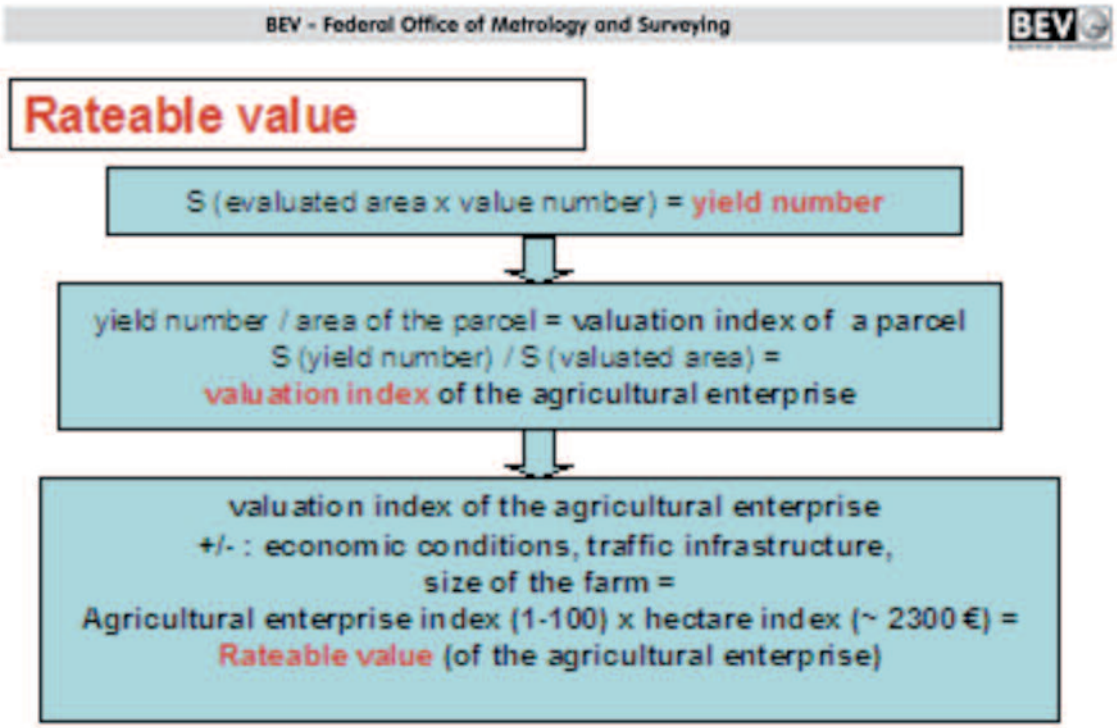
For each agricultural enterprise the so called valuation index (indicating the climatic soil conditions) for each enterprise is calculated. That valuation index is the total sum of all the yield numbers of an enterprise divided by its total acreage, thus giving an average value for all the arable land and grassland. The term valuation index (indicating the climatic soil conditions) expresses the fact that all natural productive conditions are taken into consideration.

The BEV submits this index to the financial authorities. The financial authorities then compile the agricultural enterprise index, ranging between 0 and 100. The economic productive conditions are included in the form of discounts and surcharges to the valuation index (indicating the climatic soil conditions).

The agricultural enterprise index in conjunction with the total acreage of an agricultural enterprise and the existing hectare index are used to produce the so called rateable value of an agricultural enterprise. The financial authority's evaluation bureau submits the rateable value in the form of a rateable value notification to the owner; the rateable value is the basis for all further tax matters.

A hectare index is the earning-capacity value of a (theoretical) model enterprise, having an agricultural enterprise index of 100. It is determined by the Minister of Finance at nine yearly intervals and published as federal law.

Calculating the rateable value



8.5 Relevance of the soil evaluation map

Due to their great importance, soil evaluation results are used not only as a basis for fiscal purposes, but also for regional and supra-regional planning work, analysis for regional policy, for solving environmental problems, and market value estimations etc. Reliable data on soil are an essential tool to control the use of land. The method of soil evaluation in Austria is the only means to collect standardised physical as well as some Chemical soil data throughout the country. The data offers a great quantity of Information, which is linked to the digital cadastre and thus geo-coded. The data is precise with regard to parcel information and continually updated.

THE CADASTRAL SYSTEM IN BELGIUM

Federal
Public Service
FINANCE

GENERAL ADMINISTRATION OF PATRIMONIAL DOCUMENTATION

www.fiscus.fgov.be

December 2008

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1 INTRODUCTION

1.1 History, purposes of the cadastre and organisational structure

1.1.1 Napoleonic cadastre

Napoleon decided to carry out the general counting of lands in all the municipalities of the Empire – including Belgium – with the land surveying and the evaluation of each property parcel. With respect to the soil's ownership, a good parcel cadastre will be the complement of my Civil Code. The plans must be accurate and developed enough in order to help fixing the property limits and stopping the legal proceedings[1].

Therefore, to ensure the continuity of the French Civil Code's promulgation (1804), the setting up of a main parcel cadastre has been ordered[2]. While it must be directed to the legal and fiscal subjects, that cadastre quickly became a cadastre basically directed to the fiscal theme in order to allow to put fairly on the assessment list the tax on real estate, which already constitutes in itself a significative advance of equality and equity between the citizens. Indeed, Napoleon considered the cadastre to be « the true guarantee of properties and the certainty of everyone's independence ; because, once the cadastre is established and when the legislature has set the tax, everyone did his accounts and did not fear the arbitrary nature of the authority or of the assessors[3]. »

In 1811 the first edition of the « Recueil méthodique des lois, décrets et règlements, instructions et décisions sur le Cadastre de la France » (Methodical collection of laws, decrees, regulations, directives and decisions about the French Cadastre) is published. In Belgium, that has won its independence after the revolution of 1830, a legal and statutory plan of action is implemented by the Ministry of Finance, which allowed the creation of a Cadastre department in charge of the update of cadastral documents.

The civil servants of the Cadastre then conscientiously updated the cadastral documentation. In view of the densification of the parcels, some sections were subject to remeasurements and redrawn on a larger scale. Between 1925 and 1926, the articles of the cadastral register were copied out on loose sheets and kept in the spring back binders. To be specific, the main purpose was to allow the yearly putting on the assessment list of the tax on real estate on the basis of a reliable identification of each land parcel, mentioning the municipality, the section, the parcel number as well as the capacity, the cadastral income and the name of the owner or, in the very least, the name of the possessor.

[1] Statement of Napoleon to Mollien, Minister for the Treasury, July 1807
[2] Law of September 15th 1807 with respect to the State budget
[3] Statement collected by E. de Las Cases during Napoleon's stay on the island of Saint Helena

1.1.2 Operations carried out during the establishing of the cadastre (beginning of the 19th century)

The Napoleonic cadastre, which was set up at the beginning of the 19th century, is a parcel cadastre consisting of the following documents:

- a topographic document, with the registration of the land properties as cadastral parcels (building and agricultural parcels) = cadastral map;
- a descriptive document, with the list of its location, its nature, its capacity and its (their) owner(s) for each cadastral parcel = inventory of the sections or descriptive table of the parcels (also named « legend of the cadastral map »);
- a summary per owner, mentioning the parcels he owns as well as his income = tax register, which later was divided in two parts : the cadastral register and the register of the tax on real estate (currently the register of the withholding tax on immovable property).

The idea of the parcel cadastre arises from a long set of experiments, so that we can say that the original idea has been developed through three stages, that is to say:

- First stage: setting up of a fiscal cadastre according to the classic rule, that is to say, on the basis of the owners' statements (1789). Because of the lack of properties' registrations on a map, that project completely failed;
- Second stage: creation of a parcel cadastre restricted to 1800 pilot municipalities. The composition of the parcels has been limited to the « masses de culture » (land which was cultivated in the same way). The topographic division of those parcels has initially created significant problems[4]. Afterwards, it turned out to be impossible to fairly divide the tax between the owners of the parcels which were involved in the « masses de culture » (1802). That system did not give great satisfaction;
- Third stage : decision to carry out the general registration of the whole parcels on a cadastral parcel map and to grant to each parcel a related right of property and its cadastral income (1807).

Setting up of the parcel cadastre of 1808 includes three significant operations. In the carrying-out order, they are: topographic works, assessment operations and administrative operations.

[4] The local measurement systems with respect to the lengths and the surface areas had to be replaced by the decimal metric system. There was also an insufficiency of the measuring instruments, of skilled staff (surveyors) and of lessons concerning the trigonometry.

1.1.3 The Belgian Administration of the cadastre

In 1930, the cadastre became an autonomous administration within the federal Ministry of Finance. Significant decisions were taken, for instance concerning the creation of a centre of excellence with respect to measurement : La direction des Grands Levers et Plans Généraux[5].
After the Second World War, the modernization of the cadastre increased. Therefore, since 1955, all the sheets of the cadastral parcel map have been copied out on microfilm. In 1976, the cadastral register was copied out on a magnetic medium. From 1987 to 1989, a national computerized file of the legal entities governed by public and private law has been set up. In 1990, a national directory of the natural persons has been set up as a database. Since 1995, the transfers are directly made by the whole cadastre's offices of the kingdom : that is the network CADNET. From 2001 to 2006, the cadastre has set up a digital cadastral parcel map, which is nowadays operational and called CADMAP.

Finally, in order to allow the integrated processing of the Patrimonial Documentation, the Administration is setting up an integrated database of the patrimonial information called PATRIS. To be specific, the data with respect to the immovable and movable property and concerning the composition and the value of the property of the whole natural persons and legal entities, are gathered, organized, updated and provided to many potential users, persons as well as enterprises.

In order to promote a quicker and more efficient collaboration between the various tax departments, competent in real estate tax legislation, the administration of the cadastre which was since then autonomous and the department of the Registry and Public Property of the Administration of the VAT, Registry and Public Property have been merged by Royal Decree of December 18th 1998 in order to set up the Belgian Administration of Cadastre, Registry and Public Property (ACED), under the authority of a Director-General.

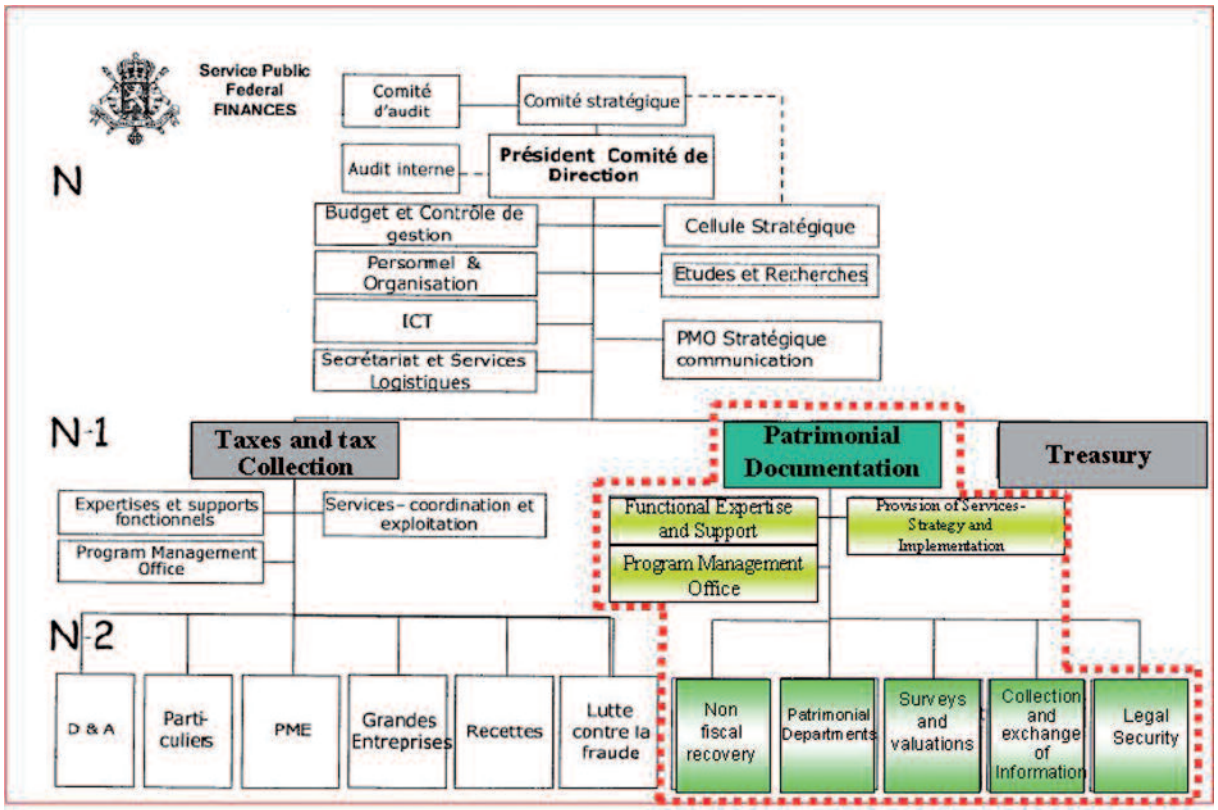
Then, within the framework of a significant reform of the Federal Public Services, that Administration became the Patrimonial Documentation (cadastre, registry, public property and mortgage). That reform of the services, which has begun in 2002, aims particularly at the reorganization of working methods in the various fields of activities ; it must allow the setting up of a patrimonial data bank of authorities, citizens and enterprises as well as its operating by the distribution of the patrimonial information and the production of services.

From that time forwards, the cadastre resolutely turns towards an authentic cadastre; the tax function is no more a priority. Indeed, within the overall framework of the Patrimonial Documentation, it is essentially a matter of ensuring the disclosure of some operations with respect to real estate, that is to

[5] Law of July 8th 1937

say mainly : the transcription of deeds of transfer or declaratory acts of real property rights or of renunciation to such rights, of declarations of co-ownership, of tenancies of immovable property going beyond nine years or with a receipt equal to at least three years of rent, of deeds drawn up within the framework of a seizure of immovable property ; of the registration of some privileges with respect to the real estate and mortgages and of the marginal mention of some legal facts stated restrictively, concerning the transcribed or registered deeds.

Structure of the FPS Finance



The 5 PILLARS of the Patrimonial Documentation

Survey & Valuations

We determine and verify the different values of immovable property (the cadastral income, the market value in respect of the registration duties and the inheritance taxes, the rental value). We measure the parcels of land and the constructions. We determine the boundaries of the pieces of land as well as the administrative boundaries within the framework of the updating of the cadastral map and the development of a geographic information system. In the future, we will also be entrusted with verifying the construction value in respect of VAT as well as the value of movable assets such as holdings of enterprises, works of art,...

Contrary to the generally accepted idea, however, we don't collect any tax. We limit ourselves to determining or verifying the tax basis, such as the cadastral income, and we transmit it to the competent tax authorities.

Legal Security

We collect the registration duties and the inheritance taxes, which are mainly transferred to the Regions, the mortgage duties and the court fees. But beyond our tax mission, we add an essential legal piece to the puzzle of the immovable property's picture: the publication, by the Mortgage Registry Offices, of the public officers' instruments, with respect to which we have verified the correctness of the data. We update our documentation in the light of these instruments in order for the information to correspond to reality as soon as possible.

We mainly are at the service of the outside world (notaries, bailiffs, lawyers, credit institutions, citizens) towards which we make sure to maintain the quality of our service in order to deserve its complete confidence.

Patrimonial Departments

We acquire, amicably or trough expropriation, immovable property that is useful or absolutely necessary to the realization of the infrastructures decided on by the public authorities. In our capacity as real estate agent and at their request, we sell the immovable property of these authorities. In our capacity as "public notary", we draw up the authentic deeds relating to the acquisitions and the sales as well as certain special deeds on account of public enterprises. We manage the private immovable patrimony of the State, either by renting it out or conceding it, or by selling it. Finally, we are competent to recover the movables coming from various Administrations which have been put out of service : we sell, recycle or even destroy them.

Non-fiscal Recovery

We recover the criminal fines and intervene in the recovery of non-fiscal claims on account of various public authorities. We are, for instance, entrusted with recovering unduly received unemployment benefits, administrative fines or study grants and loans awarded by the Community authorities. We also act in favour of private individuals. Indeed, at the request of maintenance creditors, we recover the maintenance that their debtors fail to pay.
Since October 2005, our mission has a social dimension insofar as, under certain conditions, we give advances on one's maintenance which, at first, are limited to the benefit of he children.

Collection & Exchange of Information

We are the driving force behind e-government and its co-ordinator in the framework of the development and the management of a crossroads bank of the patrimonial documentation. Our task consists in collecting and exchanging the patrimonial information, both movable and immovable, on the Belgian natural or legal persons (or the persons having immovable property in Belgium). The diffusion of this information to both the public and the private authorities or to the citizens is also part of our mission.
As a matter of course, this mission must be carried out in accordance with the provision relating to the protection of privacy, in accordance with the rights of the different partners who co-operate with us on this project and, where necessary, according to the authorizations required.
Our provision of services must be of the highest quality and at the best cost.

1.2 Financial and organisational issues

The expenses of the General Administration of Patrimonial Documentation are financed by a state budget. Its income are included in the Budget of Ways and Means.

1.3 Decentralisation

In addition to Central Services, we have also Decentralized Services which can be divided in two groups:

- 9 regional directions Mutations & Expertises (one by province but one for the two Brabant), which are composed of Inspections and local cadastral offices (168 in municipalities).
- 1 direction des Grands Levers et Plans généraux in charge of the surveys and general maps which are composed of Inspections and local cadastral offices (27).

2 CONTENT OF THE CADASTRE

2.1 Main assignments

The main assignments of the general Administration of the Patrimonial Documentation are:

- the construction of the Patrimonial Documentation;
- the distribution of patrimonial information;
- the provision of services based on the patrimonial documentation.

The general Administration of the Patrimonial Documentation – department of the Cadastre – has a double mission:

- a fiscal mission, which consists of setting the cadastral income;
- a technical mission, whose purpose is to update the documentation with respect to the real estate (plans, registers, descriptions).

2.2 The fiscal mission of the Cadastre

The fiscal mission of the Cadastre mainly consists of setting the cadastral income. It serves as a base for the collection of the withholding tax on immovable property, which is set and collected by the Administration of Direct Tax for the Brussels Region and Walloon Region and by the Ministry of the Flemish Community for the Flemish Region. The cadastral income also helps determining the real estate incomes subject to the personal income tax.

Definition of the cadastral income

Article 471 of the Income Tax Code 92

§1st. A cadastral income is established for the whole built real properties and undeveloped land, as well as for the equipment having the nature of a real property or fixtures.

§2. The cadastral income means the average net normal income of a year.

§3. The equipment means every machinery, machine and other fittings useful for an industrial,

commercial or home-made operating, to the exclusion of premises, shelter and any accessory essential for those. Nevertheless, the equipment having the nature of fixtures is only taken into account if it is linked to immovable property or if it is appointed permanently to the service and the operating and if, because of its weight, its size, its methods of use or its functioning, it is intended to be permanently used at the place where it stands or to stay stationary during its use.

The Law of July 19th 1979 includes the following terms:

- Average : because it is assumed that the income corresponds to the income which can be obtained on average;
- Normal : because the abnormally high or low income is not taken into account for the setting of the cadastral income;
- Net : because a definite percentage can be deducted for maintenance and repairing costs.

2.3 The technical mission of the Cadastre

The Cadastre includes all the documents (consisting of plans, registers, fiches and microfiches) where the list of the real estate of a country and their owners is mentioned.

The registers, fiches, microfiches,... mention the identity of the owners and of their goods. The plans show the location of the real estate as well as their boundaries and their area.

The Cadastre in Belgium can be defined as the whole operations and documents which allow:

- to set up and to update an inventory as well as the municipal registry of the built real estate and the undeveloped land;
- to individualize and to locate that real estate:
  - by drawing them with their boundaries on the cadastral map drawn up on an appropriate scale ;
  - by registering them in the cadastral register where the identity of the owners and all the information with respect to their parcels (such as the location, the cadastral designation, the nature, the capacity, the cadastral income as basis for the collection of the withholding tax on immovable property ...) are mentioned.
- to set and to put on the assessment list the withholding tax on immovable property.

In order to allow to put yearly on the assessment list the withholding tax on immovable property, the Cadastre is updated yearly. Besides, it attempts to adapt its working methods to the modern requirements, that is to say, a continuous update. Therefore, it is able to help greatly with respect to the real estate (identification of the property for the notarial acts, study and carryout out the expropriations in the public interest and the land consolidations, providing some statistics...)

2.3.1 Main documents

1 - The cadastral map

The cadastral parcel map is a plan on a large scale, which reproduces the graphical configuration of the cadastral parcels and the buildings built on those parcels. Each parcel is numbered per section on that plan.

The scales most used were those of 1 to 2500, of 1 to 2000 and of 1 to 1000 and, for some cities, of 1 to 500. Those plans were originally drawn on heavy duty paper and then they were copied out on microfilms, thanks to which they were easily reproduced.

The additional cadastral parcel map was yearly updated. It reproduced then the most recent known location of the parcels. The out-of-date documents with respect to that location were kept on microfilms. Nowadays, the cadastral map is vectorized.

2 - The cadastral register

The cadastral register is a register which, for each municipality or cadastral division of the municipality, mentions each owner ; the parcels he owns are mentioned under its own numbered article. It also includes the total of the capacities and the total of those parcels' income.

3 - The expertise sheet

The expertise sheet is an expertise established for each building (ordinary, industrial or exceptional building), which includes all the useful information necessary for the setting of the cadastral income.

2.3.2 Forming of the parcels (RD of 12/04/1966, Article 8, B.348)

A building always forms a separated parcel. Nevertheless, if the land that is adjacent can manifestly be considered, because of its relatively small area, to be a yard, an outbuilding or an open space of the building, this land only forms a single parcel with the building.

However, a dwelling house, a factory, a school, an hospital, a monastic institution or other, only forms a single parcel with the yard, the vegetable garden or the ornamental garden, the park, the passages and the outbuilding built and not built that are the accessory, when all is adjacent.

However, we refrain from gathering together in the dwelling house, in the factory or in the institution, the exploited lands, which are planted or not, other than the yards, the vegetable gardens or the ornamental gardens and the parks, as soon as the capacity of these lands considered separately according to their nature, is of 25 ares or above 25 ares.

Parts of ornamental gardens or parks, planted of forest trees, of a capacity of unless 50 ares, are surveyed and registered separately in woodland.

2.3.3 Cadastral maps

The cadastral parcel map is an essential part of real estate information. The identification of the estate is done from their representation to the cadastral map that moreover gathers together graphic information such as the pattern, the area, the land occupation, and other essential information to the determination of the characteristics of built real estate and undeveloped land.

One of the missions of the Patrimonial Documentation consists in the updating of cadastral information.

The implementation of the computerization of the cadastral plan cannot question the intrinsic qualities of this document or the fact that it is continuously and entirely updated.

This requires handling about 200,000 modifications (called mutation sketch) of various scales, each year and for the whole country.

The release of the digital cadastral map

Introduction

Agreements have been concluded with the three Regions in order to allow them the elaboration of the KADSCAN and KADVEC plans in the Flemish Region and of the PLI plan in the Walloon Region on the one hand and on the other hand, the updating of cadastral parcels of the URBIS 2 plan in the Region of Brussels Capital. These plans required to scan and to vectorize sheets of cadastral parcel maps and following these agreements, the Patrimonial Documentation could obtain the result of this vectorization and to launch the CADMAP plan of digitalization of the cadastral parcel map

The digital cadastral map, CADMAP, was definitively released in September 2005. The changeover from the paper map to the computerized map took place without major difficulties.

The perspectives of the new map

The changeover to the digital map offers numerous perspectives:

- centralization of the geographic information (before, the maps drawn on film were distributed among the regional directorates);
- provision of the cadastral maps to the municipalities, at first on cd-rom, later through the network;
- creation of links between the data of the map and those of the cadastral register; currently a geographic information system is under construction, namely the CADGIS project;
- implementation of the future integrated system of the Patrimonial Documentation, STIPAD: the geographic information system is essential for this project;
- improvement of the quality of the maps thanks to their being in line with more precise systems of reference (orthophotos, regional referential plans, NGI) and thanks to the integration of the plans drawn up by the contracted private surveyors-experts;
- creation of a large-scale national referential map that will serve as a basis for numerous internal and external applications; various firms already have indicated that they wanted to get the digital maps;
- creation of a referential map for the subsoil cadastre; each participant will keep its powers and its responsibilities but the respective information will be pooled through a computer platform to be implemented by FEDICT (e-government);
- Best Address (Belgium Street Address) project.

The adjustement of the cadastral sheets

The context

The perfect assembling of digitized cadastral sheets is an essential requirement for the creation of a continuous cadastral plan and a Geographic Information System within the Patrimonial Documentation.

So, the 30,007 sheets of the plan that are currently as much different files must be collected and all their numerical data must be put together in a single file.

However, the assembling of digitized cadastral sheets generates gaps and superposings. The motives of those phenomena are historical: the firsts cadastral plans have been drawn up in local coordinates and copied out several times on various supports, which have been distorted with the passing years.
The georeferencing, which was lacking when the cadastral sheets were drawn up, has been superficially made after the digitization of the cadastral sheets. It allows to use research applications based on the location of the cadastral parcels in Belgium.

The adopted solution

As the cadastral sheets are not homogeneously distorted, they are divided into small islands, which are adjusted on the available systems of reference: orthophotos of the Flemish Region for the Flanders, the PICC (Projet Informatique de Cartographie Continue) and the PPNC (Plans Photographiques Numériques Communaux) for the Walloon Region and the German-speaking Community.

As the plans of the Brussels Region have been completely renewed on the basis of data provided by the CIRB (Centre d'Informatique pour la Région Bruxelloise), they did not have to be subjected to that process.
The "home-made" application, which has been developed in order to adjust island by island to the system of reference, generates a report which mentions the parameters and the remnants of the transformation.
The provincial coordinator checks the joints of the various cadastral sheets and by relying on the report of the change, he can identify the various problems and classify them in three categories:

- request 00: blocking problems to solve as quickly as possible;
- request 01: non blocking problems, which do not require cadastral knowledge to be solved;
- they are annotated with an additional code and eventual comments, showing the procedure to solve the problem;
- request 02: problems to solved but which do not block the running of the GIS.

All those data are stored in a geographical database in order to guarantee the monitoring, the coordination and the management.

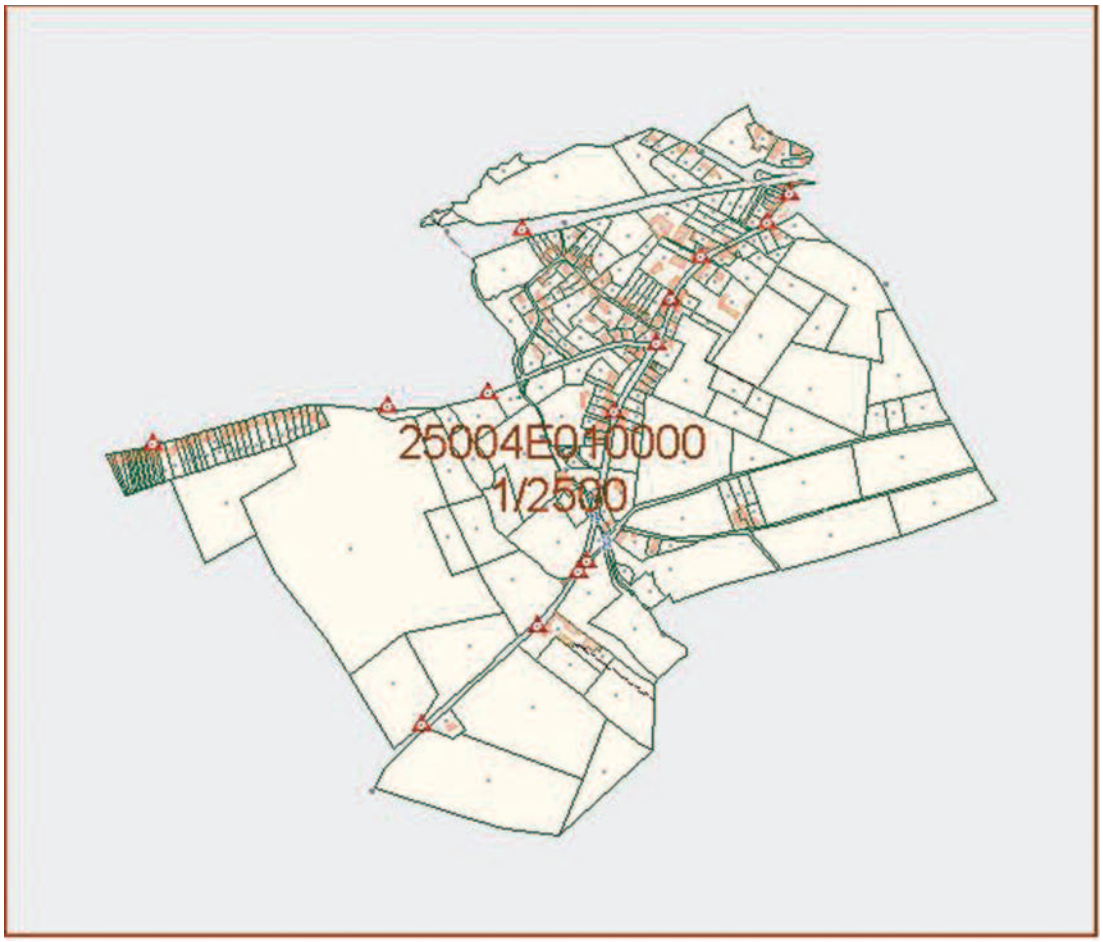
The progress

The first operation of the top-quality georeferencing, the adjustment of the plans and the inventory of joint problems has been entrusted to the Belgian administration "des Grands Levers" (the department

of the Belgian Cadastre in charge of the surveys and general maps), which has devoted all its resources to that project from June 2006 until August 2007. Since then, this service attempts to resolve the "requests 00", which would be ended in June 2008.

The superposing of the plans adjusted to the topographic and patrimonial data of other organizations allows to note a great improvement concerning the absolute positioning of the objects mentioned in the cadastral plan.

Example of cadastral map



The update
For CadMap (Cadastral Map), there exist two types of modifications:

- CMGL: cadastral sketches (light modifications);
- CMGH: requests (heavy modifications).

All features of the cadastral maps are involved.

Concerning the processes' automation, we have:

- Closed application to make cadastral sketches (step by step approach).
- Partly open application to resolve requests (errors on a larger part of a map or on several maps at the same time, more then a modification of some parcels).

2.3.4 Cadastral register

The cadastral register is the big tax book of the real estate. It consists of a document annually updated in which each property right corresponds to a numbered sheet ("article") including, under the name, first names, address, etc. ("heading") of an owner or a group of owners exercising together a property right over all parcels that belong to them in the municipality or in the cadastral division of municipality ("body").

Parcels are marked out by their situation (street and number or named location, hamlet), cadastral section and number, nature, capacity and different indications with respect to the cadastral income. The modifications made in the heading and in the body of an article are the subject of a succinct justification ("cause of mutation").

Description of articles.
They include two frames

a) Upper frame (heading) meant to:
   - the inscription of the name, first names (or the denomination for legal entities) and address of the person or the persons who own(s) in common the real estate (possibly followed by the nature and the portion of his exercised right: -NP-, US-, -BAIL-, -EMPH-, -BAT-, ...

and if need be, the year of the end of the rights that were set up for a definite period;

- the inscription in a distinct case of the codification of the holder of the right (owner code). This codification generally includes the national number of legal entities (or VAT No);
- the inscription in a distinct case of the two last figures of the year of mutation (70) or the letter R that means that the inscription has already existed at the moment of the recovery.

b) Lower frame: meant to data with respect to parcels: situation (street and No or named location, hamlet), section and cadastral No, nature, capacity, tax status, cadastral income and, for the undeveloped land, classification and cadastral income to the hectare or for the built real estate, the year or the period of the end of building.

Codes with respect to cadastral incomes.

Two characters are used for the code inscription: the first is a figure characterizing the category of building (ordinary, industrial ( ), tools, built real estate or undeveloped land), the second, a letter characterizing a tax status of the real estate and the income itself.

Main prescriptions with respect to the inscription of owners.

1) A single article (= subdivision of the cadastral register) is set up by a complete and distinct property right on one or several cadastral parcels in a cadastral municipality.

Examples : An article is set up:

- for the whole joint owners;
- for the usufruct and the bare owner together;
- for the leaseholder and the lessor together;
- for the superficiary and the land owner together.

2) If a distinct and complete property right is hold by several persons, these are mentioned by name in the article with indication, under an abbreviated form, of their right and their portion in the right (for instance PP 1/4 and PP 3/4). If need be, the year when the right ends is added if this right was set up for a definite period.

3) Thus, each owner (or group of owners exercising together a single right of property) can only have one article in the cadastral register, except if he owns to different titles (ex.: to an article as PP and another one as US).

4) Inscription of the couple and their real estate.

A. Before the situation of 01.01.1992.
The couple (husband and wife) is always recorded, until the situation of 01.01.1991, as a single person.
The article is opened to the husband's name to which the wife's name is added. The whole real estate is recorded in the same article.

B. From 01.01.1992.
From the first work in 1991/1992, the real estate of the couple is recorded under separate articles according to the estate they belong to, considering that each estate corresponds to a distinct right of property. The wife is designated to the cadastral register as the husband is.

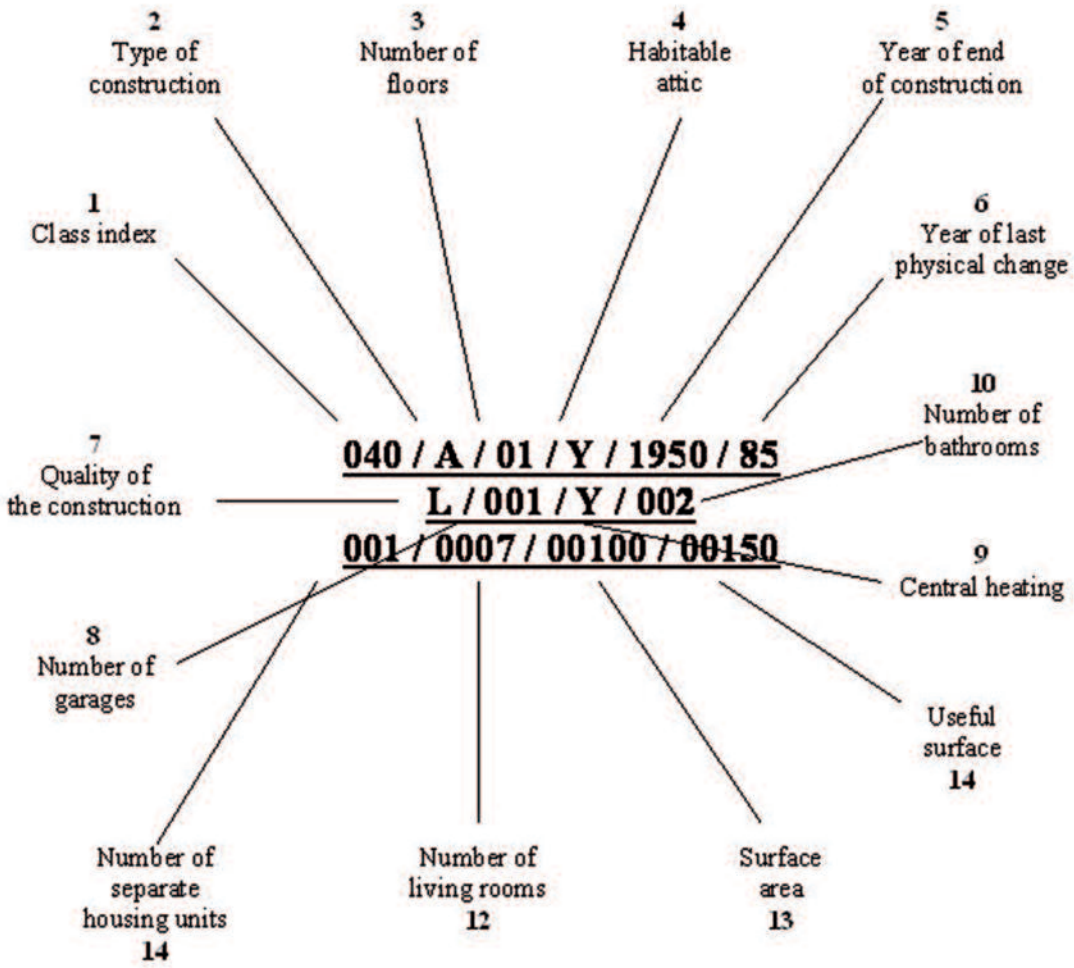
Construction code
In 1983, a construction code was drawn up, including 14 terms

This Construction code – CC in abbreviated form – includes fourteen different terms, classified into three groups:

The first group includes the terms from 1 to 6 and is dedicated to the general characteristics of the building; the second group includes the terms from 7 to 10 and is dedicated to the facilities of the building; the third group includes the terms from 11 to 14 and is dedicated to the consistency of the building.

Construction code

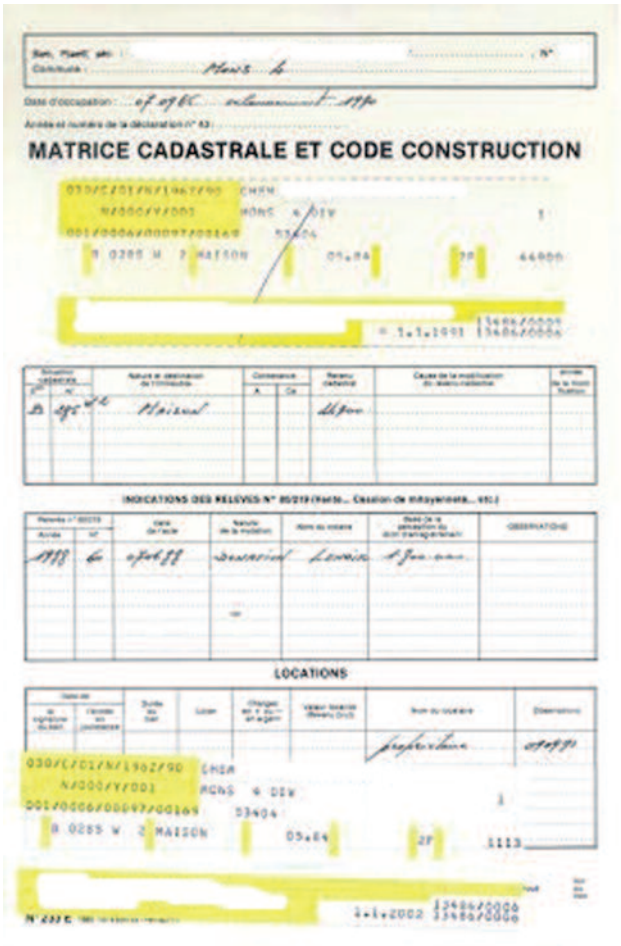
The Construction code can be schematically represented as follows:

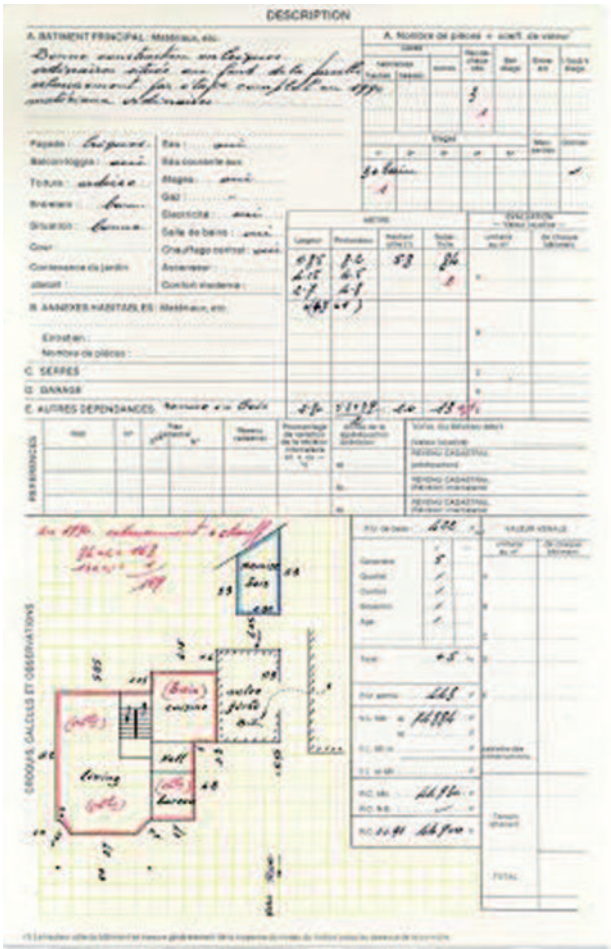


In the future, the construction code will be extended to more terms. (There is a project with 62 terms but we don't know yet if all the 62 terms will be selected).

2.3.5 Expertise sheet

For each expertised sheet, a sheet No 233 E is set up with description and complete measurement (+ picture for real estate being a reference) either a descriptive board No 233 D (exceptional buildings and industrial buildings) or No 233 D bis (buildings with multiple apartments). In principle, these documents cannot be consulted by external persons of the Administration.





2.3.6 STIPAD

Introduction

In Belgium, the management of the patrimonial documentation is at least composite. Indeed, because of the fact that the property system based on the person and not on the property, the numerous missions are accomplished by several services independent of each other. However, the basis documents, such as the notarial deed, that everyone takes into account in order to accomplish his specific mission, are often identical.

The STIPAD project aims at modernizing and rationalizing the methods of working.

Missions and objectives

Generally, STIPAD must implement current missions by means of the existing databases, complete these databases by integrating them in the currently independent documentations, harmonize their treatment and ensure their management. It must collect, keep and deliver information with respect to the Patrimonial Documentation.

Thanks to the new technologies, it will allow us to implement all our missions optimally, for example:

- integrating the data through a global and interactive management;
- centralizing all the data in a single database, PATRIS;
- computerizing the process and the documentation in an integrated way;
- improving service performance;
- collaborating actively with external partners;
- responding and adapting to the changes and to the needs according to new social, economic and environmental elements.

Improvement of service performance

The integration of documentations will allow to the citizen to call at any office of the Patrimonial Documentation in order to receive information or to file documents. If several formalities have to be carried out on the basis of a single document, the citizen will deposit it only once; the system will manage all the requests held in that single document. The steps and the delivery periods and information treatment periods will be reduced, the conviviality and the transparency will be increased. Finally, STIPAD will offer its services on line.

In order to guarantee the respect of the privacy, the access to the database will be strictly regulated electronically; it will be determined on account of the user profile and the aim of the intervention.

Components

The heart of STIPAD is the single database PATRIS. The information contained therein will be about persons, properties and duties linked to each others by the effect of the Law or by convention. The processes necessary to the accomplishment of the missions will be totally integrated. It will be the case, for example, for acquiring, managing and alienating properties, claiming duties, delivering patrimonial information.

The management of work will allow us to structure the requests and the information and the electronic management of documents will allow us a consultation of data at each moment.

The implementation of the System on Integrated Treatment will be completed with the implementation of concepts, which allow to apprehend at best our various missions.
Those concepts, which were set up in a purpose relating to administrative simplification, will stimulate our relationships with the citizens, the mutual connections with some privileged users and the flows of information with our partners. Some are cross-disciplinary in the Federal Public Service Finance, others are specific to the Patrimonial Documentation.
The unique file, the single point of contact, only once, the use of authentic source and the risk management are cross-disciplinary concepts.
The integrated formality, the authentic cadastre, the univocal identification, the prior identification and the prior payment are specific concepts.

The unique file

The concept of "the unique file" with its part relating to the "people" puts together information on the people, their obligations and tax and non-tax duties within the same data bank. There are significant advantages: to eliminate the redundancies, to facilitate the searches and to establish a common access for the three Systems of Integrated Treatment of the Federal Public Service.

The single counter

The concept of "the single counter" offers a single point of contact to the citizen in order to carry out his sets and duties towards the Administration: the sub-offices. On the other hand, a local office is attributed for the professional for all their steps: records sub-offices. The access to the Web portal is also included in that concept.

Only once

The concept of "only once" allows to collect only once the information provided by the private individual or by the professional when they address the Administration and to forward it to the various concerned organizations.

Those organizations communicate with each other via electronic media thanks to the setting up of a communication network, which is based on an harmonization of technologies and the interoperability of systems responsible for processing the information.

The use of the authentic source

To keep the original authenticity of a data bank and to guarantee its reliability, it is essential that only one organization takes care of the management and the updating of information within the Integrated System. That organization must also act as the only guarantor for their authentic source and their viability within time. Combined with the concepts of "the single counter" and "only once", the various computer systems must be opened to the authentic sources in which the information is taken.

The risk management

To avoid systematic controls, the concept of "risk management" targets with full knowledge of the facts, the files to check and analyses the most frequent failures in order to bring a preventive information to the inspector. The efficiency of that system is due to the setting up of the risk profiles and indicators, to the quantitative and qualitative analysis of the risks incurred and to the exploitation of the feedback.

The integrated formality

The concept of "integrated formality" applies the concepts of "the single counter" and "only once" to the specificities of the Patrimonial Documentation in order to simplify and to rationalize the steps that people take to its various organizations.

The authentic cadastre

To evolve to an authentic cadastre of which data are opposable to third parties, the Administration must improve the legal security of its documentation while favouring its patrimonial side rather than its tax or documentary side.
The collected data must meet the accuracy and quality criteria in order to be granted an authentic nature in reference to the legal document from which they come. Those data could even have a legal nature according to their own nature as for instance a plan drawn up by a land surveyor on oath.

The univocal identification

The current identification of the cadastral parcel is inadequate and not to say imprecise. The concept of "univocal identification" will find a remedy for it by identifying smaller or bigger objects than the parcel itself such as flats and by creating relations between objects and personal or property rights, which are linked to it. That concept introduces a new notion: PUR (Patrimonial Unit of Real estate), which is soon appointed to redefine the parcel in various deeds.

The prior identification

At every stage of its processing within the Patrimonial Documentation, from an authentic deed until the update of the cadastral register through the registration and the transcription of mortgages and other property changes, a new estate is given various identifications. That discontinuity jeopardizes all the more the legal security of the data since each organization identifies the estate but also the holders of the duties according to criteria imposed by its own missions. The concept of "prior identification" identifies an estate once and for all before its description in a deed.

The prior payment (provisioning)

A deed gains its legal status since its signing while its registration and therefore the assignment, which follow on from this, are currently surbordinate to the payment of the duties. The concept of "prior payment" aims to set up, with the profession of solicitors, a code of conduct based on a system of provisioning, allowing the Administration to carry out its Patrimonial missions more quickly.

2.3.7 A characteristic of Belgian Cadastre: the prior cadastral registration of apartments

Introduction

A building newly built is registered in the cadastral documentation as soon as the Administration is informed of the date of its occupation or its renting. It becomes taxable to the withholding tax on real estate income from the 1st of January of the year following this date.
The situation is different for apartments sold while it is still only a plan on paper. Indeed in this case, the buyer has immediately at his disposal a right in rem over an immovable property not built yet, or all the more occupied or rented.
However, the legal security implies that the buyer is recorded, from this moment, as owner in the cadastral documentation. So, we proceed to a virtual cadastral registration of the apartment. Actually, it is a prior cadastral registration as it is carried out before the occupation or the renting of the real estate.

What does the virtual cadastral registration imply?
Each private entity (apartment, garage, cellar) recorded in the basis act of an apartment building is separately surveyed and registered in the cadastral documents with a unique identification (UNIDENT plan). During the sale of an apartment while it is only a plan on paper, the inscription is directly made on behalf of the buyer with the mention "under construction". The cadastral income will be set when the property is occupied or rented. Fiscally, there is no modification with respect to the collection of the withholding tax on immovable property.

A particular case

If the parcel on which the apartment building has to be constructed has already been built, it remains taxable and its inscription in the cadastral register is maintained. Thus, there are two inscriptions in the documentation: a temporary inscription with respect to the construction intended to be demolished and a virtual inscription with respect to apartments under construc¬tion.

Conclusion

That the parcel on which the apartment building has to be constructed has already been built or not, the virtual cadastral registration changes in real cadastral registration during the occupation or the renting of the building.

(See also 2.3.5. Expertise sheet)

3 TECHNOLOGICAL INFRASTRUCTURE

See annexes

4 UPDATING PROCEDURES

4.1 Income Tax Code: The taxpayers' returns and the Administration's entitlement to investigation

With respect to the taxpayers' returns and the Administration's entitlement to investigation, the Income Tax Code 1992 (CIR 92) mentions:

Article 473

The owner, possessor, hereditary long term leaseholder, superficiary owner or usufructuary of the goods, named the taxpayer in the present title, is obliged to declare spontaneously to the Cadastre Administration:

- The occupancy or the renting, if it precedes the occupancy of the buildings newly built or rebuilt;
- The completion of the works of the built real properties changed;
- The change concerning the running system, the change or the improvement of the undeveloped land;
- The use of new or added equipment or tools as well as the change or definite taking out of service of equipment or tools.

The return must be drawn up within thirty days following the event.

Article 474

Besides, at the request of the Cadastre Administration, the taxpayer is obliged to fill in a return mentioning the necessary data in order to establish the cadastral income of the equiment and tools. That return, which has to be drawn up according to a pattern issued by that Administration to the taxpayer concerned, must be returned, duly completed and signed, and sent within the recommended period to the civil servant or the service, which has issued it.

Article 475
The Cadastre Administration can require:

1 the presentation of any useful information in order to determine the cadastral income, by the taxpayer as well as by possible tenants, in the form and within the period set up by the Administration, as well as the production of accounting records and documents likely to allow the administration to check the accuracy of the provided information, in their premises;
2 the presentation by the services, institutions and bodies mentioned in Article 327, § 1, without any costs, of a complete copy of plans and attached documents, which they have at their disposal and which can be useful for the update of the cadastral map.

Article 476
Provided that they are bearing the proof of their appointment, the civil servants of the Cadastre Administration, whether they are alone or assisted by their staff in their operations or accompanied by the representative appointed by the burgomaster, have the right to enter any building and real estate from 8 a.m to 6 p.m, in order to carry out the measurements, surveys of the boundaries and assessments. If the entry to those buildings is refused to them, they can only enter into it with the assistance of the burgomaster, the police superintendent, the leader of the gendarmerie squad or their representative.

4.2 The role of the municipal administrations: Application URBAIN

The municipal administrations must send on a quaterly basis the lists 220 of the building permissions and subdivision permits to the Cadastre offices. That obligation is governed by Article 475 of the Income Tax Code and by the Royal Decree of July 26th 1877 concerning the regulations with respect to the cadastre. In 2005, the project 220 of digital lists of building permits aimed mainly at the development of the URBAIN application (URBAnistic Information Network). That application has been developed on the CCFF's platform (Communication Centre of Federal Finance), which ensures an optimal exchange of data between the Federal Public Service Finance and the external data sources.
The URBAIN application offers two possibilities for automated issuing of information with respect to urban development permits by the municipal administrations to the Patrimonial Documentation:

- The online encoding of information;
- The sending by e-mail of a XML file mentioning all the information on the permits granted during a reference period.

The municipal administrations have access to the URBAIN application via the Federal Public Service Finance's portal after authentication by means of the electronic identity card.

The URBAIN application offers the following advantages:

- The abolition of lists printed on paper;
- The unique entry of the information : extracting the data from the authentic source and exchanging them via a XML file;
- The authentic source can be whether a commercial application of the management of permits or an application developed by a regional authority.

That application is not only limited to the notification of the permits but also offers the possibility to complement that information with the date of the project completion or of the first occupancy of the new buildings. A reference is made to the initial assignment of the expert identifier appointed by the municipalities in order to work in cooperation with the Cadastre expert, which consisted in pointing out the changes made to the immovable properties. The information with respect to the project completion or the first occupancy is actually essential so that the Patrimonial Documentation could carry out the assessment or the reassessment of the cadastral income.

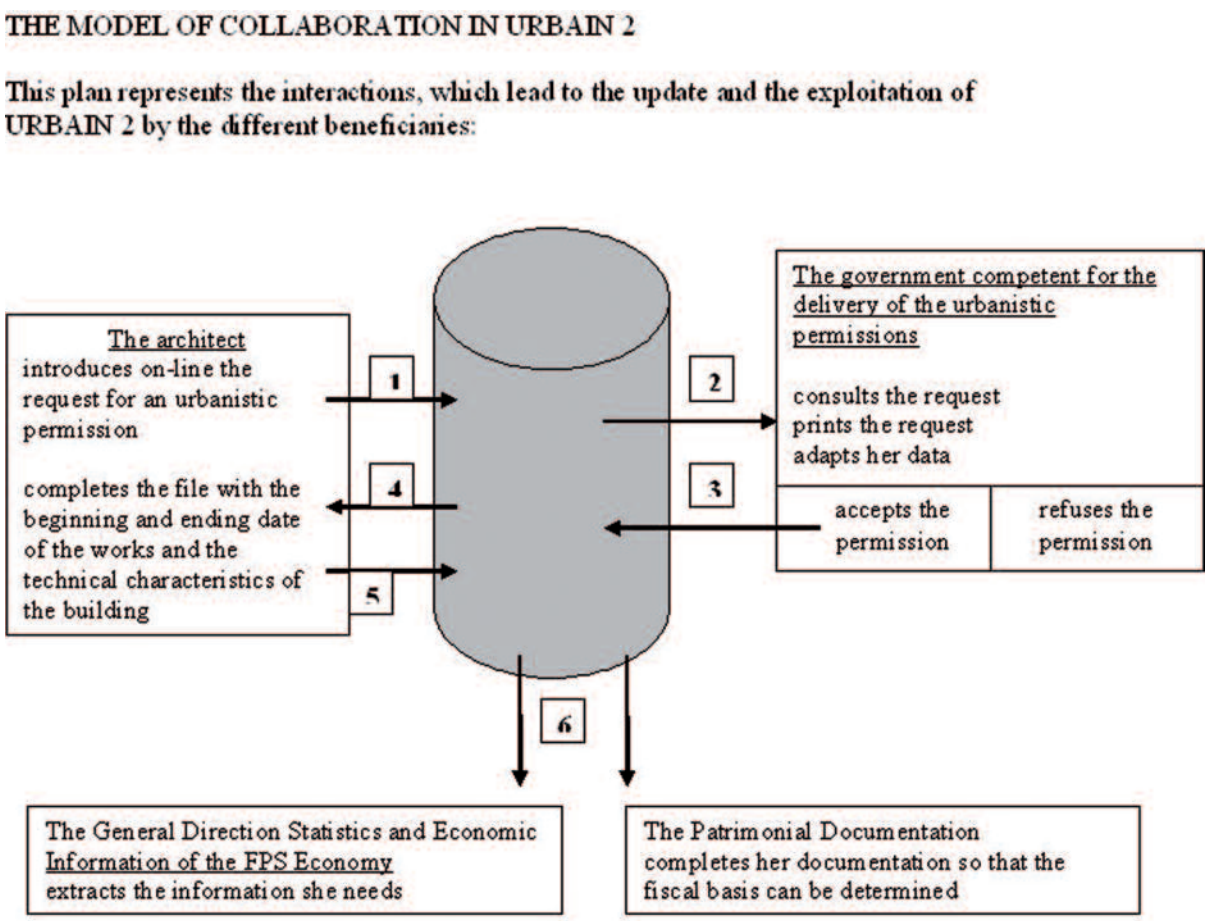
4.3 Extension : URBAIN 2

The State Secretary for the Administrative Simplification has asked the Architects' Association, the Directorate-General Statistics and Economic Information of the Federal Public Service Economy and the Patrimonial Documentation to simplify the administrative procedures concerning the urban development permits. The Regions and the municipalities have been afterwards involved in that initiative, which gave rise to the new concept URBAIN 2. The application URBAIN 2 aims at the unique collection and the reuse of urbanistic, statistical and architectural information during the the procedure for requesting and granting the urban development permits. That concept falls within the framework of the Collaboration Agreement of April 10th 2006 between the Federal Government, the Regions and the Communities governing in particular the following principles for an integrated e-government :

- Single collection « only once » and maximum reuse;
- Authentic sources;
- Maximum interoperability.

The Regions constitute the sources of authentic data above all else, with respect to the urbanistic status of real properties (instructions concerning the development plan, structure plan, specific development plan, permits).
The Patrimonial Documentation constitutes the authentic data source above all else, with respect to the property documentation and the related property rights.

Collaboration Model Urbain 2



4.4 The collaboration with land surveyors

During the authentification of a property transaction by a public officer, the notary's intervention firstly focuses on the identification of the parties and the origin of title deeds.
In order to update the cadastral documentation in an optimal way, the patrimonial Documentation looks for a better legal security as regards the identification of the properties during the execution of deeds, which must be presented to the Mortgage Registry Office. When the conveyancing applies to a part of a cadastral parcel, a new limit is set up and the Administration must be able to determine the new parcels accurately, which would each have a new identifier. But more and more often, notaries enclose surveyors' plans with the involved deeds.
A project of Belgian Royal Decree has been tabled in order to make compulsory a measuring plan enclosed with every adjudicative decree or conveyance title, involving the creation of new limits.
With that prospect, it is considered to grant the status of public officer to the land surveyors in their missions of land demarcation and the drafting of plans, used for the recognition of limits, a transformation, a settlement of joint ownership and every other report, constituting an identification of property ownership, when those plans can be presented to the transcription of mortgages and other property changes.
Since 2003, a collaboration agreement, to which any surveyor can freely subscribe, has been set up in consultation with the associations representing the profession. The collaboration aims to improve the quality of the cadastral parcel map in order to inventory the plans concerning the description of the properties' boundaries ; to create an uniform documentation; to reduce as far as possible the costs of the update ; to aim at an homogeneous quality of the measurement plans;
The win-win situation can be defined as follows:

For	It means
The Patrimonial Documentation	- A quicker update of the which is moreover of better quality as regards the law - A more efficient working method - The standardization of local initiatives
The surveyors	- The access to the cadastral history of the parcel - The possibility to obtain free of charge a « hard copy » - The possibility to consult the archived plans of measurement ; Eventually also via the Web - A support as regards the project of development from the profession of surveyor to that of public officer

In October 2008, more than 1300 surveyors had signed the collaboration agreement with the Patrimonial Documentation for the improvement of the geometric, legal and figurative quality of information of the cadastral parcel map.

In this agreement, the surveyors commit themselves to provide their plans according to accurate technical characteristics as well as files of the coordinates of the objects mentioned in the plans.

The plan of measurement of a government-regulated surveyor must contain among other things the following indications:

- The coordinates of the properties' and the buildings' tops ;
- A table with the numbers of the parcels, the name and signature of the owners ;
- As far as possible, the numbers of the bordering parcels as well as the names and signatures of the owner(s).

Those plans are filed in the Cadastre's offices and a copy is sent to the Direction des Grands Levers et Plans Généraux (a department of the Belgian Cadastre in charge of the surveys and general maps), where it is encoded in a database which mentions among others the numbers of all the cadastral parcels.

5 PROVIDED SERVICES

5.1 The cadastral extracts and the cadastral information

The legal and statutory basis

According to the regulations and the rates set by the king, the Patrimonial Documentation is the only organization which is authorized to draw up and issue certificates or copies of the cadastral documents. Unless expressly authorized, it is forbidden to duplicate such certificates and copies or to process them according to a data-processing technique (Article 504 of the Income Tax Code).

Those regulations and rates are determined by Royal Decree of September 20th 2002 setting the payments due and the methods to apply for the issue of cadastral certificates and information (Belgian Law Gazette of October 11th 2002).

In exchange for payment and on strict conditions (cadastral regulation, privacy protection law, European regulation about database protection,...), the Patrimonial Documentation issues information extracted from its cadastral documentation.
The requests are sent to the regional head departments (one per province) by the usual means of communication (mail service, fax, email or when they are left on the desk). The owners and tenants can also obtain information at the local cadastral office. Investigations are usually carried out on the basis of the estate's location.

The Royal Association of Belgian notaries has an online access to the cadastral data bank for 3.15 euros per consultation.
In 2007 the number of consultations that it made has increased significantly. As an indirect result, the number of cadastral extracts issued on hard copy keeps on decreasing.

Cadastral extracts and cadastral information

Cadastral extracts and cadastral information			
Number	2005	2006	2007
Extracts delivered	1,149,439	1,064,645	1,020,340
Online consultations	268,100	285,047	347,030
Collection (in euro)			
Extracts delivered	11,261,908	10,534,798	10,278,922
Online consultations	769,614	880,179	1,093,145
Total	12,031,522	11,414,977	11,372,067

5.2 The online consultation of the Cadastre

5.2.1 SP4 : the current application

The application SP4 allows the fiscal administrations of the Federal Public Service Finance to consult the Cadastre via an Internet interface.

The search criteria for the cadastral information are:

- the cadastral division and the article number;
- the national number of a natural person;
- the name and the postcode of a natural person's address;
- the enterprise number of a legal entity;
- the designation of a legal entity.

5.2.2 Access to the central databank of the Social Security

An Internet service has been developed to give access to the Cadastre's data from an application of an external partner. That Internet service has been tested with the central databank of the Social Security and the standards for securing the exchange of information have been determined by both sides. The implementation of that solution is expected for the first six months of 2008.
However the access to those data is subject to a prior authorization issued by the sectoral committee for the Federal Authority, which has been established within the Commission for Privacy Protection.

5.2.3 Extension of the application

Many external partners, such as the Royal Union for Belgian notaries, the Regions and the Royal Society of estate agents, have asked for an access to the Cadastre's information; some citizens had the same request. A study of the needs has been carried out and an ICT budget has been claimed for the extension of the application SP4 in 2008.
That improvement will involve:

- the development of additional search criteria;
- the development of Internet services and additional screens;
- an effective tool for the management of the authentications and authorizations in order to limit strictly the access according to the user's profile and to ensure the privacy protection;
- the access for the citizen to the consultation of the cadastral information with respect to -
- the possibility to order, to pay and to obtain online cadastral certificates in PDF form with an electronic signature.

5.3 Our collaboration with the Institute of estate Agents

IPI (Institut Professionnel des Agents Immobiliers) and the Patrimonial Documentation have signed on 10 May 2007 a collaboration protocol, which aims at the exchange of the patrimonial data. That protocol also mentions that estate agents will collaborate on the study of patrimonial entities (unique identifiers of estate objects) and on the writing of structured examples of leasing contracts and sales agreements, which could be used for registration via Internet.

In the end, the estate agents should eventually have access to some data concerning the buildings put on sale and should be able to mention information confirmed by our Documentation in their sales agreements.

In exchange, they would provide information useful for the update of the building code and would point out the inaccuracies noticed in the cadastral description of the buildings.

5.4 The electronic exchange of authentic deeds with the notaries

Consultation meetings occured in 2007 in order to formalize the collaboration protocol signed on June 12th 2006 between the FRNB (Royal federation of Belgian Notaries) and the Federal Public Service Finance. They end up in the elaboration of the project DER.VE (Electronic recognizable Document. Sale), which aims at the exchange of data between the signatories. First, the data, which must be structured, must be determined. But at first it will only apply to the pure bills of sale of the full ownership of real estate.

The development of the formalized agreement will be carried out in e-notariat and Stipad.

The notary will forward to the competent office an Electronic Recognizable Document (DER) containing structured data and the electronic sending of the deed. Such a deed will not have to be presented in hard copy neither during the registration nor during the hypothecary procedure.

5.5 The digital cadastral map on the web

The digital cadastral map is available on CD-Rom since the situation on January 1st 2006. The next logic step is to be put at disposal on the Intranet and on the Web. In 2007, the situations on January 1st for 2005, 2006 and 2007 have been made available for the civil servants on the Federal Public Service Finance's Intranet. This is only a flat-faced display. In order to make the digital cadastral map public on the Web, pilot projects developed in collaboration with the Regions, test the capacity of the system and the network, the visual presentation of the objects and the consequences in case of temporary unavailability of the service.

A later step will allow a limited number of people to download cliparts such as points, lines, polygons and their attributes via a secured Web service.

6 LINKS BETWEEN CADASTRE AND LAND REGISTRY

6.1 A sale: from the signature to the transcription

A simple contract arising from agreement

In Belgium, the sale constitutes a simple contract arising from agreement, that is to say, that it is developed and validly and permanently exists by the only agreement between the seller and the buyer on the good and the price. That agreement is not subject to the formal requirements and so it can be recorded by a private deed, which is commonly called 'pre- contract'. The signature of such a pre-contract proves the perfect validity of the sale and implies at once legal obligations between the seller and the buyer. The seller must provide the good and the buyer must pay its price. However, the sale must be subject to the fulfilment of a condition precedent, such as, for instance, the granting of a mortgage loan. In that case, it will only be definitive when the condition will be fulfilled.

A sale perfectly valid?

Is the agreement on the good and the price enough for the validity of the sale ? Yes, but only between the seller and the buyer. Indeed, in order to be opposable to the bona fide third party, the sale must be copied out to the competent mortgage registry, which implies the production of an official deed. Therefore, the intervention of a public officer, who is entitled to receive such a deed, is essential. That public officer is generally a notary.

The obligation to register

A significant consequence of the signature of a pre-contract is the obligation for the contracting parties to have it registered in return for the payment of the registration fee. That obligation must be fulfilled within four months from the signature of the pre-contract. Indeed, that document's existence makes the registration fee due for payment. If, within the allocated time of four months, the pre-contract is followed by a notarial act, only that last act will be produced to be registered by the notary.

A first risk

In spite of the signature of the pre-contract, it can happen that one of the signatories, who does not know the significance of his commitment, changes his mind and thinks that purely and simply destroying the document is enough to invalidate the sale. For instance, some persons start legal proceedings in order to recover their deposit. Thus, they involuntarily inform the Patrimonial Documentation of the sale's existence. That administration must then claim the registration fees and

can prosecute the seller as well as the buyer for the payment of the sums due, whatever the agreement mentions in other respects. The legal time limit of four months is quite often not observed, which implies heavy fines.

A second risk

As long as the official deed of the sale is not copied out to the mortgage registry, the seller is the legal owner of the building with regard to the bona fide third party. It could then happen that, before the signing of the official deed, he signs a second pre-contract with another buyer concerning the same building and that the pre-contract becomes first an official deed with another notary as well as a transcription of mortgage. A unscrupulous seller could also mortgage the building, which is mentioned in the pre-contract.

The role of the Patrimonial Documentation

Next to its mission with respect to taxation, the Patrimonial Documentation manages some patrimonial data of everybody. When a transfer of property occurs for instance during a sale, a series of processes is carried out in order to record the resulting transfer in the databases: on the one hand, the copy out to the mortgage registry, on the other hand, the collection of the registration fees during the production of the deed at the registry office, followed by the transfer in the Cadastre. Finally, the information is sent to the authority in charge of the collection of the withholding tax on immovable property, that is to say, the Tax Collection Administration of the Federal Public Service Finance or the Flemish Region.

6.2 The support of the experts of the Cadastre to the registry offices

The cadastre's experts help the collectors of the registry offices in various real estate evaluations:

- the price control or of the real estate evaluations for the collection of the registration fees, the estate taxes and related taxes;
- the assessments of real estate required by other public services;
- the useful evaluations within the framework of the in-house processing of the collectors' missions

That support has been set up for the following grounds:

- the lack of harmony in the price control or of the real estate evaluations and the constant

decreasing of the claimed inadequacies;
- the will to gather in one place the entire expertise documentation (each collector of the registry office, each committee for the purchase and each cadastral office had their own documentation with respect to the real estates)
- the Cadastre has at its disposal a complete and detailed description of the set of real estates located on the Belgian territory; that description is constantly updated.

7 LINKS BETWEEN CADASTRE AND REAL ESTATE EVALUATION SYSTEM / REAL ESTATE TAXES

7.1 Taxes on land property

Next to its mission to manages some patrimonial data of everybody, the Patrimonial Documentation collects a series of taxes an important part of which are transferred to the Regions. (see 7.1.1.)

As already said in 2.2., the fiscal mission of the Cadastre mainly consists of setting the cadastral income. It serves as a base for the collection of the withholding tax on immovable property, which is set and collected by the Administration of Taxes and tax Collection for the Brussels Region and Walloon Region and by the Ministry of the Flemish Community for the Flemish Region.

The cadastral income also helps determining the real estate incomes subject to the personal income tax. (see 7.1.2.)

7.1.1 Taxes collected by the Patrimonial Documentation

The Patrimonial Documentation collects a series of taxes an important part of which, namely the regional taxes, are transferred to the Regions.

The federal taxes, on the other hand, are included in the Budget of Ways and Means under the item of the Administration of VAT, Registry and Public Property. Approximately 98% of the registration duties and all of the inheritance taxes are collected to the benefit of the Regions; these are the regional taxes.

Nature of the tax

	Nature of the tax	2006	2007
1	Registration taxes	3.456.709,80	3.675.615,30
2	Succession duty and transfer duty	1.584.110,30	1.677.831,60
3	Annual tax on insurance contracts	997.947,00	1.097.136,10
4	Fines resulting from convictions in various matters	311.472,00	310.028,40
5	Tax on stock exchange transactions	235.615,50	236.953,90
6	Tax stamps sold by the Belgian Post	38.410,10	3.383,30
7	Annual tax on collective investment organizations, credit institutions and insurance companies	209.103,70	252.512,20
8	Tax on long-term savings	153.358,40	162.657,80
9	Fines in respect of taxes	85.952,40	86.587,80
10	Mortgage duty	79.697,30	75.694,20
11	Tax on deliveries of bearer securities	5.616,80	3.123,60
12	Tax on the non-profit associations	43.595,30	32.321,70
13	Court duties	31.249,10	31.162,60
14	Sale of stamped paper (stamp duty)	25.889,10	/
15	Annual tax on coordination centres	12.396,60	9.600,00
16	Annual tax on profit-sharing	11.254,10	18.452,60
17	Special Fund for Assistance to Victims of Intentional Acts of Violence	12.827,70	15.737,50
18	Bill-posting tax (part of it paid in cash)	1.910.5	2.814,60
19	Legal assistance and procedure free of charge	356,9	478
20	Writing's duties	/	33.961,90
			in millions of euros

Registration duties

Registration duties are levied, as a rule, when a deed or written document is registered, i.e. at any formality which consists in copying, analysing or mentioning this deed or this written document by the receiver of registry fees and stamp duties in a register made for this purpose.

The following must be registered, among others:

- deeds drawn up by Belgian notaries;
- writs and summonses by Belgian bailiffs;
- decisions and judgements issued by Belgian courts and tribunals which contain dispositions subject to proportional duty;
- private deeds or notarial deeds signed abroad, relating to the transfer or declaration of property or usufruct of property situated in Belgium or relating to the lease, sub-lease or transfer of lease of such property;
- records of the public sale of tangible movable assets drawn up in Belgium;
- private contracts and notarial deeds drawn up abroad relating to the contribution of movable or immovable assets to Belgian companies which are legal persons.

There are three types of registration duties: proportional duties, specific fixed duties and the general fixed duty.

7.1.2 Taxes on land property collected by Taxes & Tax Collection Administration of the FPS Finance (or the Flemish Region)

7.1.2.1- Personal income tax : Determination of the net income (i.e. after deduction of expenses and losses)

The taxable income includes real-estate income, income from movable property, miscellaneous income and earned income. For each of these categories, there are specific rules for the calculation of the net income.

Real estate income

The taxable amount of the real property is established separately for each spouse and the jointly owned property is apportioned on a fifty-fifty basis between the spouses.
The taxable amount of real estate income is determined, according to the case, either on the basis of the cadastral income or on the basis of the rent.
The net amount is then obtained by deducting interests on loans. The taxpayer's dwelling-house represents a special case: the taxable income thereof is granted a lump sum relief and the advance tax payment on property pertaining to it is partly creditable against the taxpayer's income tax liability.

The underlying idea here is the cadastral income, which is a notional income deemed to represent the net annual income from the premises concerned, at the price of the year used as a reference for the most recent official valuation procedure. The reference year is 1975, but the cadastral income has been indexed since 1990. For income of 2007 the adjustment coefficient is 1.4532.
The taxable income depends on the purpose it is given. Figure 8 lists the possible purposes of built movable property.

Income from real property

Income from real property : determination of the taxable amount

	Use the real property is put to ?	Taxable income
a.	It is the taxpayer's dwelling-house	Since 1 January 2005, the cadastral income of the dwelling house is no more taxable, except if interests on a loan contracted before 1 January 2005, are still deducted.
b.	It is not the taxpayer's dwelling-house, but it is not leased (a second residence, for example)	The indexed cadastral income increased by 40%
c.	It is used by its owner for the purpose of a trade or business	No taxable income from immovable property; it is deemed to be a professional income
d.	It is leased to a natural person who does not use it for the purpose of a trade or business	The indexed cadastral income increased by 40%
e.	It is leased - to a natural person who uses it for the purpose of a trade or business, - to a company (*) - to any other legal person except those listed in (f)	The rent less 40% for standard expenses, BUT - the expenses may not exceed two thirds of 3.65 times the cadastral income - the net rent may not be less than the indexed cadastral income increased by 40%
f.	It is leased to a legal person not being a company, for purposes of underlease to one or more natural persons in order to be used exclusively as a dwelling-house	The indexed cadastral income increased by 40%

(*) taking into account the requalification-of-income principle. See infra : special provisions.

These rules also apply to land, provided the following three modifications are taken into consideration:

- cases (a) and (f) do not apply, of course;
- in case (e) the taxable income is the amount of the gross rent, minus lump sum 10% deduction for expenses;
- as for farm rent, the taxable amount is the cadastral income.

Other factors can intervene in the determination of real estate income:

- deductible interest of loans;
- lump sum deduction from the cadastral income of a dwelling-house;
- tax credit for real estate income.

7.1.2.2 - Withholding tax on real estate

Tax base, rates and surcharges

The rate of the withholding tax on real estate income is based on the index-linked cadastral income. For income earned in 2008, the index coefficient has been set at 1.4795.

The rate of the withholding tax on real estate income includes the basic rate and the provincial and municipal surcharges.

The Regions are competent to determine the basic rate and the exemptions in respect of that withholding tax.
The applicable rates are the following:

Rates of withholding tax on real estate

Rates of withholding tax on real estate

	Flemish Region	Walloon Region	Region of Brussels-Capital
Basic rate	2.5	1.25	1.25
Modest dwellings	1.6	0.8 (*)	0.8
Material and equipment	2.08(**)	1.25 (***)	1.17 (****)

(*) In the Walloon Region, the reduced 0.8% rate in respect of houses belonging to the SRWR (a regional housing board) or to companies recognized by it, has also been applied since 2004 to houses belonging to the FLFNW (a cooperative housing company with limited liability). This rate now also applies to dwellings leased or managed by a real estate manager in conformity with the Walloon Housing Code (e.g. by a social real estate agency).

(**) The rate amounts to 2.5% multiplied by a coefficient obtained by dividing the average of the price indices of 1996 by the average of the price indices of the year preceding the year in which the income was received, which results in a rate of 2.04.

(***) The 1.25% rate applies to the cadastral income indexed until 2002. The indexation has been frozen since 01.01.2003.

(****) The 1.25% rate is multiplied by a coefficient obtained by dividing the average of the price indices of 2004 by the average of the price indices of the year preceding the tax year, which results in a rate of 1.17. This amounts to freezing indexation as from 01.01.2005.

All these rates are to be increased by the provincial and municipal surcharges. If the basic rate is 1.25%, for instance, then a surcharge of 3,000 centimes will generate an additional rate of 37.5%, the total rate of the withholding tax on real estate thus amounting to 38.75%.

Reductions, rebates and exemptions for built real property
There are "Common provisions" and also specificities in the 3 Regions (Flemish Region, Walloon Region, Region of Brussels-Capital).

Withholding tax on real estate for investments in material and equipment
"Material and equipment" means devices, engines and other facilities useful for commercial, industrial or craft enterprises, except from premises, shelters and their necessary accessories (cf. article 471 §3, Income Tax Code 1992).

Where material and equipment are housed in built or unbuilt real property, the Cadastral administration fixes a separate cadastral income for those elements.

7.2 Setting of the market value of goods

The value of the real estate to be taken into account for the collection of the registration fees and estate taxes is the market value of that estate.
The value of a real estate declared by the taxpayer during a transfer of property or for a declaration of estate is checked by the administration which accepts it or considers it insufficient.
Besides the Administration is assigned to provide real estate evaluations on behalf of third parties.

7.2.1 Definition

The market value is the value of a good which is in free movement or any other value generally used, set in comparison and on the basis of the recent sale prices which correspond to the current trends of the real estate market.

7.2.2 The assessment or the control

The assessment or the control carried out by the Administration consists in fixing the market value by comparing the available sale prices and the characteristics of the good with those of other known goods

7.2.3 Our mathematical models

Definition
A mathematical model for calculating the monetary value of a house or an apartment is a mathematical synthesis of the analysis of the prices and the characteristics of similar properties sold during the same period of reference.

Application
In order to optimize the assessments and the controls, the Administration has developed the program LocoStat, which includes:

- a search system of points of comparison (data of the real estate come from the computerized documentation Loco/Cadnet);
- the integration of photos and assessment data into the database of points of comparison;
- the recording of assessment elements which have resulted in a insufficient value, in the database of signing-in.

In 2005, the computerized application with respect to the house sales has been completed and allows the calculation of a statistical market value, based on the prices and the objective characteristics of other similar houses sold at the same time.

Derivative products
Next to the centralized risk management allowed by the mathematic model, a second application has been put at the expert's disposal. Thanks to that application, he can take into account more and more the circumstances of the local market and introduce a targeted choice of points of comparison.
A price index for the evolution of the value of the whole houses located in Belgium has been set up. Unlike the existing Belgian indexes, that index takes into account the variety and the characteristics of the houses, which have helped to establish that index. For this reason, that index is a tool comparable with indexes existing at the international level.

A mathematical model for the apartments
In big cities and at the coastline, the volume of apartments sold forms a significant part of the residential immovable market. As a mathematical model is only valid for one determined immovable category, the model conceived for the calculation of a statistical monetary value of houses can only be applied to

apartments.
By analogy with the model finalized in 2005 for the houses, a similar mathematical model for the apartments was developed in 2006 on the basis of prices and of objective characteristics of apartments sold in the previous months.

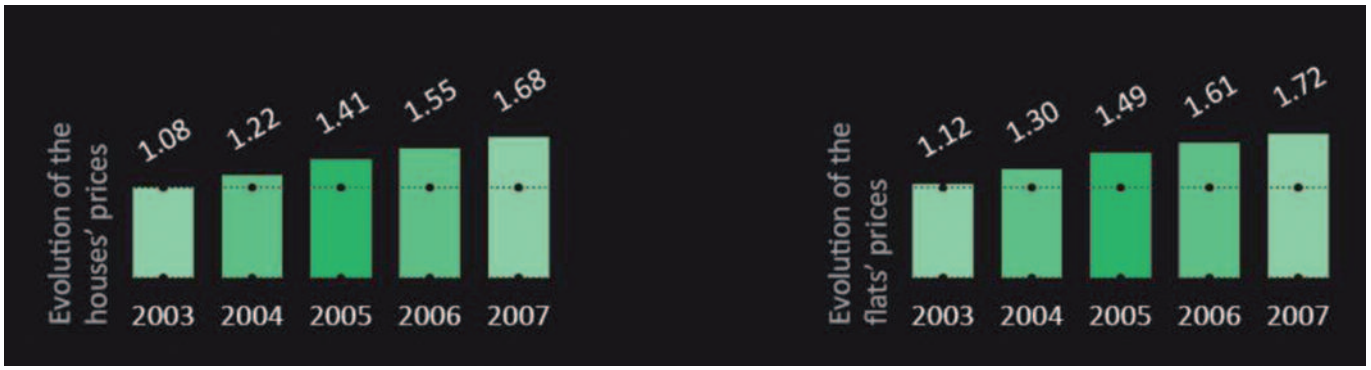
Proper consideration of the specific situation of the property
Each house or apartment is unique on account of its location and the statistical calculations confirm that this location is, practically everywhere, one of the elements highly influencing its value.
On the basis of their field knowledge, the experts of the Patrimonial Documentation have allocated qualifications to every streets of Brussels in order to take the location into account in a better way in the monetary value of houses and apartments.

7.3 The prices'evolution of the houses and the flats

The Patrimonial Documentation guarantees the ongoing updating of the cadastral register (database of the owners and the buildings) as well as the cadastral plan. It is therefore the only Administration that is able to present official statistics, notably as regards the evolution of the housing stock.

The calculation of those indexes is done thanks to the methodology of the hedonic evaluation. We can thus determine the general evolution of the price by an analysis of a very varied group of houses: large and small, old and new, with a good or less favourable location.
The reference index 1.00 is that of the first quarter of 2003 for both charts.

Evolution of the houses'prices and flats'prices



7.4 The distribution of the sales prices

The Patrimonial Documentation gradually considers putting at the citizens and professionals' disposal an Internet application with an admission charge, which allows them to look for sale prices of the real estate in its main file. The prior stage to that process is operational since September 2005 : it allows the concerned civil servants of the Patrimonial Documentation to select and to download the sale prices via the Intranet of the Federal Public Service Finance. Subsequently, an access for the professionals will be ensured, in order to be extended to the citizens in a later stage.

7.4.1 The access authorized for the civil servants of the Administration

The operating unit Intranet allows to select and to download sale prices in order to consult them and to use them afterwards without being connected to the Intranet. The experts with respect to the market value of the Patrimonial Documentation, the representatives of the committees for the purchase of real estate and the collectors of the registry offices are currently the only persons who can carry out online search in the main file of sale prices : search of the market value of the dwelling, evaluation of the added value when fixing the registration fees and the estate taxes, ...
The access is securized and the unit offers to the experts the following search criteria:

- geographic criteria : province, municipality, division, section, street;
- criteria with respect to the value : good, capital, building, cadastral income;
- physical criteria : nature, capacity, elements of the building code;
- administrative criteria : type of inscription, date of the deed, internal number.

7.4.2 The advantages of an online portal relating to land ownership

The distribution of the sale prices of the real estate on Internet will allow the following parallel developments:

- the calculation of the market value of a good on the basis of sale prices and objective characteristics of similar real estate sold during the same period;
- a look on the evolution of the sold real estate's value;
- a look on the evolution of the housing market;
- the study of the investment climate, the transfer of real estate being a significant aspect of that climate;
- an assessment model to anticipate the evolution of the real estate market;

- detailed statistics of the average sale price of the buildings, including the difference in percentage in relation to the previous periods;
- an evolutionary index of the price of all the houses in Belgium which takes into account their variety and characteristics.

ANNEX A1

	Fundation/standard	Minfin Name	Commercial solution	Open Source Solution	Comments
A. Central System					
A1	Hardware Central Plateform	Atlas	Fujitsu Siemens SPARC		
A2	Operating System Central Platform		Sun Solaris	Linux	
A3	Hardware Alternative Plateform	x86	Various		
A4	Operating System Alternative Platform		Windows Server 2003		
A5	Database Management System	Relational Data Center (RDC)	IBM DB2 UDB		
A6	Application server	CCFF	BEA WebLogic	JBoss	
A7	Web server	CCFF		Apache	
A8	Mailing System	FinMail, IMAP4 and SMTP based	Sun JES Mailing		
A9	Calendering System		Sun JES Calendar		
A10	IDM Identity Management		Sun JES Identity Manager		
A11	IDM Access Management en Authentification		Sun JES Access Manager		
A12	IDM Single Sign On		Sun JES Access Manager		
A13	IDM Corporate LDAP Directory		Sun JES LDAP Directory Server		
B. Networking standards					
B1	Voice-Data Consolidation	TelLanNoGa	Cisco Call Manager		
B2	Cabling	UTP:Cat 6, FO: OM3			
B3	LAN	Ethernet 10/100, TCP/IP			
B4	WAN (data only)	FinNet			
B5	WAN (data + IP Tel)	FinNet			
B6	VPN (IPSEC/SSL)	FinNet VPN	Cisco VPN 3005		
B7	DNS, DHCP		MS Windows Server		
B8	Mobility	MoDa	Mobile Token	Open Mobile Alliance	
C. Methods					
C1	Object-oriented Modeling Language		UML		
C2	Development platform (Back-office)	CCFF		J2EE	
C3	Development scripting language (Front-office)			PHP	
C4	Development methodology	SupDev	Borland		
C5	Open Standards	Recommandations Fedict			
C6	Global methodology ICT	ITIL, CMM, Cobit	HP Openview CMDB		
C7	Project management	PRINCE2	CA Clarity/Open Workbench		
D. Tools					

D1	Testing Tools		HP/Mercury	
D2	Enterprise System Management	ESM	HP Openview	
D3	free for later use			
D4	Backup Software		Legato Networker	
D5	Enterprise Job Scheduling		VTOM Job Schedular	
D6	free for later use			
D7	Enterprise Content and Business Process Mgt		Filenet P8	
E. Desktop environment				
E1	Operating System Desktop		Windows 2000	
E2	Active Directory		MS	
E3	Desktop Antivirus		McAfee	
E4	Desktop Software Distribution/Patch Mgt		SMS Microsoft	
E5	Desktop Suite		MS Office	Open Office
E6	Desktop Browser		Internet Explorer	Firefox
E7	Servicedesk		HP Openview Servicedesk	
E8	Desktop Backup software		Connected	
E9	Desktop Utilities		PDF, ZIP	
E10	Desktop Mail Client		Outlook (Express)/Webmail	Thunderbird
F. Interoperability				
F1	Interoperability Central Platform	CCFF	HTTP(S) , FTP, SMTP, XML, HTML	
F2	National interoperability	Fedict/UME2	XML	
F3	International interoperability (OEDC)	OEDC format ??		
F4	Interoperability Files	HTML		ODF
F5	Internet Access	FedMAN		
G. Datawarehousing				
G1	ETL		Datastage, QualitySt, ProfilSt, MetaSt	
G2	Datamining		SPSS Clementine, PES	
G3	Business intelligence, OLAP and reporting		Microsoft Analysus Services	

THE CADASTRAL SYSTEM IN THE CZECH REPUBLIC

www.cuzk.cz

December 2008

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1 INTRODUCTION

History and purposes of the cadastre

The word cadastre was originally derived from the Greek word katastikhon, which means an inventory and is derived from two words kata stikhon which means line by line". Generally this word was used to designate a summary systematic description according to special characteristics, persons, things or rights, in particularly an inventory of land parcels or yields from trades and professions for tax purposes.

The nobility started to secure private rights to property by recording in land records in the 14th century. Originally, of course, books kept by the land court served for records on court cases. The first written document of these records is in a form of a land scribe from 1278. Land records were introduced in Moravia according to the Bohemian model in 1348 at the Brno and Olomouc court and in Silesia at the Opava court at the start of the 15th century.

In 1650, the assembly of the Czech kingdom passed a resolution for taxes to be assessed on a fairer and more material basis. From that time on only estates and lands held by subjects were to be subject to tax. The resulting document (drafted in the years 1653-1656) was the first fiscal cadastre for Bohemia and is known as the first rural cadastre (first fiscal role), which was valid in the years 1656-1684. The so-called land registers can be considered as the first Moravian cadastre (first land census in the years 1656-1658, the second 1669-1697).

The foundations of today's modern Cadastre of Real Estates were laid by a supreme patent of the Austrian Emperor Franz I of 23.12.1817 on land tax and land surveying. Its basis was a precise inventory and geodetic measurement of all land, a so-called stabile cadastre. The stabile cadastre was based entirely on the scientific foundations of a large scale map series. All measured lands were represented and numbered as parcels. The area of individual land parcels was determined from the represented area on the map. Most valid cadastral maps of the territory of the Czech Republic are today derived from the survey documentation of the stabile cadastre. Such cadastral maps (usually at a scale of 1:2880) are available for about 70 % of the territory of today's state.

Updating the map of the stabile cadastre showed that the cadastre could soon be impaired, unless a system for its constant supplementation and updating was not provided. Act No 83 of 23.5.1883 Coll. on registration of the land tax cadastre thus stipulated that the land tax cadastre must be updated in harmony with the actual and legal state.
On 16.12.1927 Act No 177/1927 Coll. was adopted on the cadastre of lands and its maintenance

(cadastral act). The land tax cadastre, officially transformed by the act into the cadastre of lands, started to change its original purpose. It became an indispensable part of all legal negotiation of real estate and its original tax purpose started to be transformed into a legal and general economic purpose. The cadastre of lands was very precise and reliable up until 1938. Later its updating was insufficient and particularly after 1945 (post-war confiscation and allotment procedures) facts started to be grossly distorted and after 1953 its updating stopped completely. Act No 177/1927 Coll. was annulled in 1971 by Act No 46/1971 on geodesy and cartography.

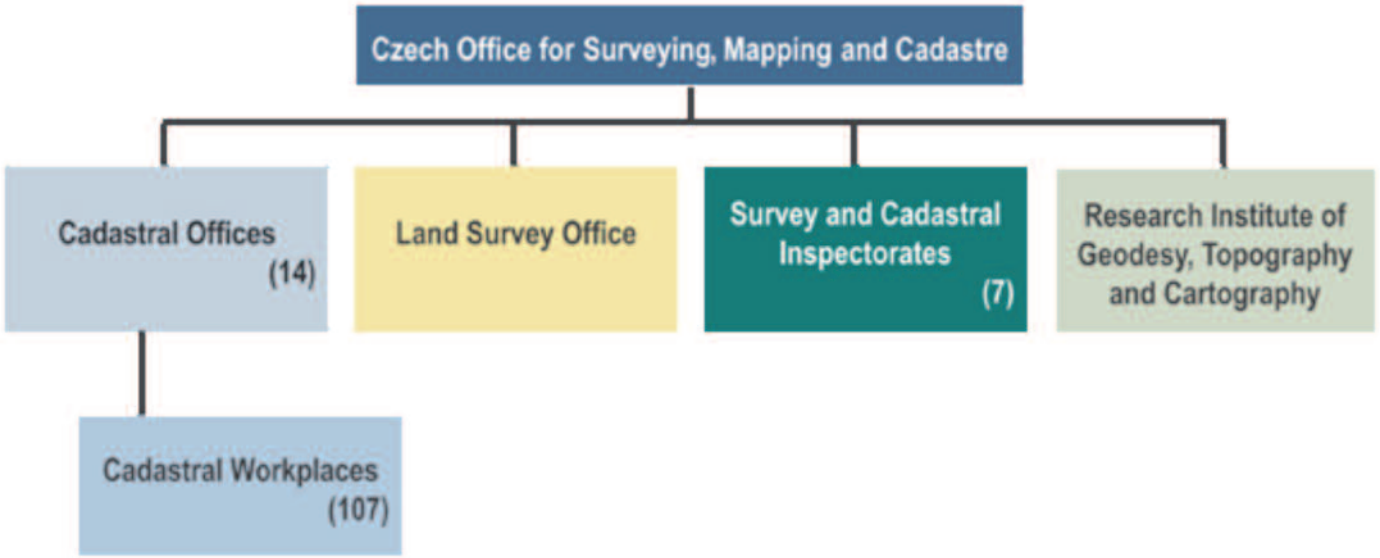
In the new prevalent political situation interest in recording private rights to real estate completely declined. Socialistic economics was based on planning agricultural production and for this purpose it was chiefly necessary to know who worked the land, not who owned it. The Uniform Land Registry (ULR) was set up in 1956 for this requirement. The cadastre of lands was abandoned (without achieving correspondence with facts) and its further maintenance stopped. The ULR had no basis in a generally binding legal regulation and was set up only on the basis of Government Resolution No 192 of 25.1.1956. The essence of the ULR was the recording of land use, regardless of ownership relationships. Property rights to real estate were subject to any full or systematic recording in the years 1951-1964.

On 1.4.1964 the new civil code (Act No 40/1964 Coll.), the Act on the real estate registry (RER) (Act No 22/1964 Coll.) and the Notarial Code (Act No 95/1963 Coll.) came into force. Data in the real estate registry were binding only for planning and management of agricultural production, for reporting and statistics on the agricultural land fund and for an overview of real estate managed by socialist organizations. Contracts on real estate were subject to registration by state notaries. Part of RER was also meant to be registering of legal relations to real estate, and since no such complete and systematic registration of legal relations to real estate had been kept since 1951, it was necessary to establish it again.

Development of the institutional and organisational structure

After renewal of democratic politics in 1989 it was no longer tolerable to use the incomplete content of the RER or continue in the imperfect principles on which it was established and maintained. A completely new legal arrangement came into force from 1.1.1993.The Cadastre of Real Estates of the Czech Republic (CRE), established by new legal arrangement, is integrated into one instrument with the functions of the former Land Registry Book and former Cadastre of Lands. State administration of the Cadastre of Real Estates is performed by legally established cadastral offices.

COSMC structure



Role and position of the organisation

- Complete administration of the Cadastre (including legal relations to real estate property);
- Maintenance and modernisation of horizontal, vertical and gravity control in the Czech Republic;
- Large-scale mapping (cadastral maps, derived 1:5.000 State map);
- Medium-scale mapping (Base map of the Czech Republic 1:10 000, 1:25 000, 1:50 000, 1:100 000, 1:200 000);
- Small-scale mapping of the Czech Republic (1:500 000, 1:1 000 000);
- Operation of the Fundamental Base of Geographic Data (ZABAGED),;
- Geodetic surveys and documentation of state boundaries;
- Development and maintenance of the Information System of Surveying, Mapping and Cadastre in the Czech Republic;
- Standardisation of geographical names;
- Coordination of research and international cooperation in geodesy, cartography and cadastre.

Financial and organisational issues

State Administration of the Cadastre of Real Estates and land survey activities in the public interest are provided by administrative bodies set up by Act No 359/1992 Coll. on land surveying and cadastral bodies, which specifies their material and territorial competence. The Czech Office for Surveying, Mapping and Cadastre runs 14 regional cadastral offices, which have 107 workplaces in larger towns and execute state administration of the Cadastre of Real Estates, it further manages 7 Survey and Cadastral Inspectorates that control cadastral offices and supervise some commercial activities, whose results are applied to the Cadastre of Real Estates and state documentation funds, it manages the Land Survey Office, where the other land survey activities are focused that are provided in the public interest by the Surveying, Mapping and Cadastre Section, and it is also the founder of the Research Institute of Geodesy, Topography and Cartography.

COSMC is financed only by state and has its own chapter in the state budget.

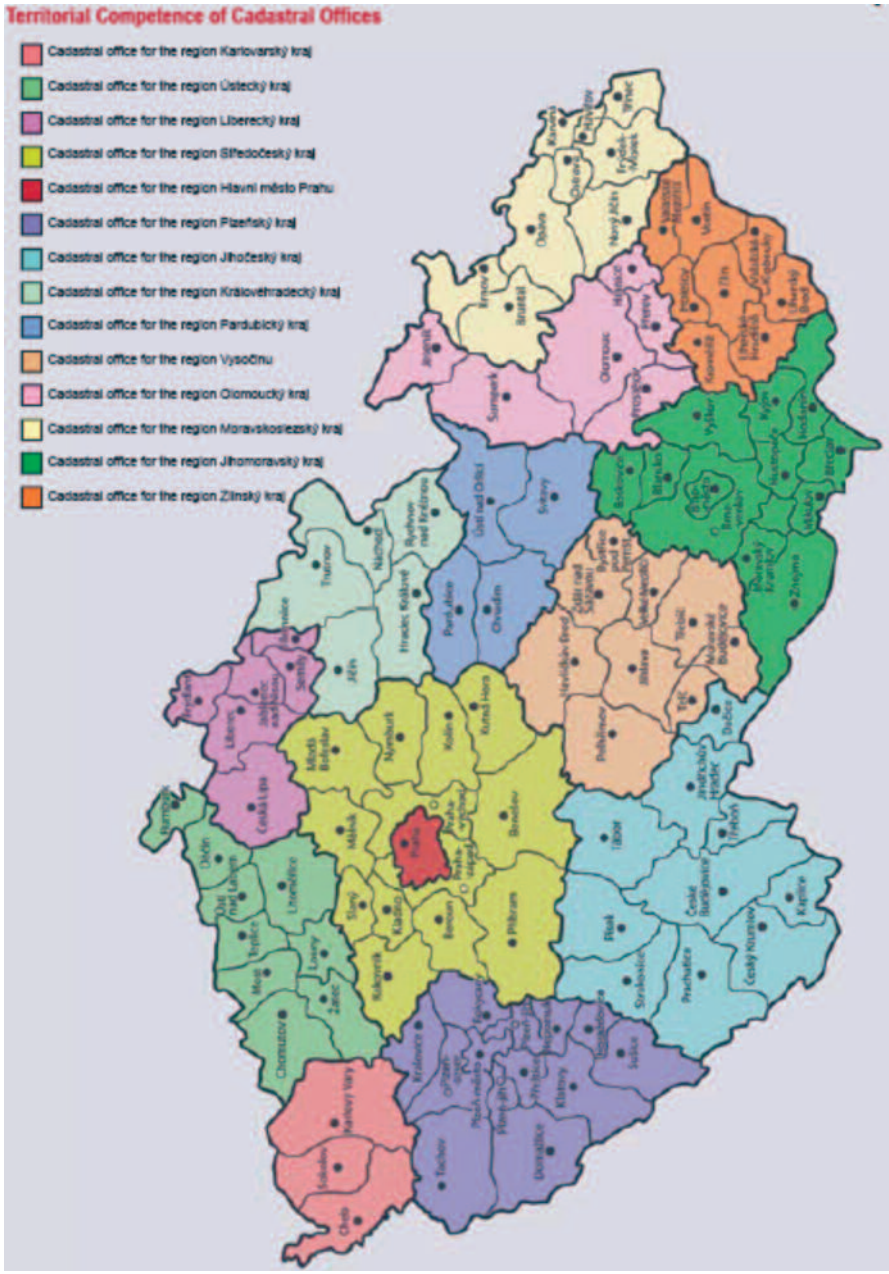
Decentralisation, involvement of the private sector

In the Czech Republic, there is one centralized register of real estates: Cadastre of real estates that represents modern information system of state administration and contains the data on real estates from the whole territory of the state – Information System on Cadastre of Real Estates (ISKN). Cadastre includes both Land Register (legal rights) and cadastre (technical part) information. Administration of the Cadastre of real estates is performed by 14 cadastral offices at 107 workplaces under the responsibility of the Czech Office for Surveying, Mapping and Cadastre.

The central database is located in Prague and all digital information is stored there. The paper documents based on which the owner ´s right was registered are stored in particular cadastral offices in question.

Private sector is at present involved solely in maintenance of the cadastre. Licensed surveyors create survey sketches used for updating of cadastral maps.
However the plan based on the Governmental Decree is to involve private sector in speeding up the digitization of the rest of cadastral maps in next 7 years.

Territorial Competence of Cadastral Offices



2 CONTENT OF THE CADASTRE

Basic register units

in the cadastre of real estates of the CR are:

Parcel – identified by parcel number within a cadastral district A piece of land with a unique identifier within one cadastral district, on which the building having its own building number can be located.
Building – identified by the orientation/control number and part of the municipality or parcel in question – are not part of the parcel.
Unit – flat- identified by the unit number and building number in which it is located
Cadastral district is the area in which the parcels, buildings and units are numbered in one or two number lines. We have together 13 079 cadastral districts depicted on more than 41 451 map sheets.

Cadastral maps

Cadastral maps cover the whole territory of the state. We offer two main types of them at present and you can get them either on-line or in form of copy of paper maps:
Digital cadastral map and Scanned cadastral map in raster form.
Digital cadastral map contains graphical depiction of present legal state of parcel and building borders. Means of information systems update these data continuously, so the information in web application is only a couple of tens minutes old.

Cadastral map in raster form depicts the state at the moment of scanning and is re-scanned usually once a year.

Scales

Most of cadastral maps are in former scales 1:1000,1:2000 and 1:2880. Exceptionally they are in scales 1:2500 (1:1250) and 1:5000.

Cadastral map in digital vector form is available only on 1/3 of the area of the Czech Republic.

Supply formats	Data from Information system of cadastre of real estates are standardly provided in so called exchange format. Raster maps are in format CIT (Intergraph) for disposal. These data can be converted into common CAD, GIS or raster formats

Reference system by coordinates

S-JTSK is the plane geodetic grid coordinate system called in Czech "System jednotne trigonometricke site katastralni - The System of the Unified Czech/Slovak Trigonometric Cadastral Net". The origin of the S-JTSK coordinate system is located in Finnish Basin, X-axis normally coincides with the meridian 42º 30' from Ferro with increasing to the South. Y-axis is perpendicular to the X-axis and increasing to the West. It is Gaussian equi-angular conic projection in the skew position. The Bessel ellipsoid is projected into the plain using the reference sphere. In Czechoslovakia, the Krovak mapping was established in 1922 for cadastral maps; later it was used for definitive military mapping. Since 1968, the sheets of Basic Map System of CZ are built in this projection.

Map features

Informational content of the digital cadastral map is divided into following basic layers:

Layer number	Layer content
1	parcel boundaries
2	parcel numbers in centroid points
3	codes of symbols for types of parcels and their use
4	Internal drawing of parcels
5	codes of symbols of buildings
6	other items of planimetric component of the map
7	description
8	fixed points and boundary symbols
9	frameworks
10	data of BPEJ (estimated pedologic-ecological unit)

Layer (1) is topologically organized and its centroid points are in layer (2).

Detailed specification of items is given in following table

LINES

Item code 1. -3. order	Item of content of DKM (KM-D) – it is Digital Cadastre Map	Layer
201	state boundary	1
203	regional boundary	1
204	district boundary	1
205	municipality boundary	1
206	boundary of cadastral district	1
219	parcel boundary	1
218	interior drawing	4
223	boundary of protected area	4
224	boundary of protected zone	4
501	axis of railway track of standard gauge	6
521	hanging cableway	6
522	funicular railway	6
605	axis of over ground wiring	6

POINTS

Item code	Item of content of DKM (KM-D) it is Digital Cadastre Map	Layer	Layer for re-use
101	point of minor horizontal control	8	-
102	point no 101 only with underground or underwater mark	8	-
103	point of vertical control	8	-
104	stabilized point of technical levelling-boundary	8	-
105	monumentation	8	-
411	small subject identified by centre	6	-
601	metal, concrete pylon	6	-
602	latice pylon	6	-
604	pylon of transmitting station	6	-
811	public well	6	-
301	arable land	3	7
302	hop-field	3	7
303	vineyard	3	7
304	garden	3	7
305	orchard	3	7
306	meadow	3	7
307	pasture	3	7
308	sylvan land	3	7
314	park	3	7
315	cemetery	3	7
316	infertile land	3	7
318	immovable cultural sight	3	7
412	subject of small extent without differentiation	3	7
701	surface mining of minerals and raw materials	3	7
703	bed of swamps and peat	3	7
802	watercourse	3	7
803	water basin	3	7
804	marsh, swamp	3	7
420	bridge, culvert	4	-

ITEMS OF DESCRIPTION

CODE OF DESCR.	ITEMS OF DESCRIPTION OF DKM (KM-D) AND OTHER DATA	LAYER	H MM	F
	TEXTUAL			
0018	parcel number (centroid point) of land parcel	2	1,7	1
0028	parcel number (centroid point) of building parcel	2	1,7	1
1018	descriptive parcel number	7	1,7	1
1001	name of the city	7	8,5	6
1002	name of the part of the city	7	5,0	4
1004	name of the municipality	7	6,7	4
1005	name of the part of the municipality	7	4,4	4
1007	name of the square, hermitage	7	2,3	2
1008	name of the street	7	1,4	2
1009	name of the lot or group of lots outside the built-up areas part, ridge , valley	7	4,4	4
1010	name of the secondary lot or group of lots outside the built-up areas	7	2,9	2
1012	name of the neighbouring country	7	8,5	7
1013	name of the watercourse	7	4,4	3
1014	name of the pond	7	3,4	1
1015	name of the water basin	7	2,3	1
1016	number of point of horizontal control	8	1,7	2
1027	number of boundary symbol at the state border	8	1,7	2
	LINEAR			LINE TYPE
1030	map frame	10		0,011
1028	line of description till pointer	7		0,011
0408	line as an infill of the stairway	7		0,011
	POINT			NOTE
1029	pointer	7		1)
1031	point of intersection of coordinate grid	10		2)

Cadastral register

Cadastral register contains the descriptive data file and file of documents.
Descriptive data file is the part of cadastral documentation which contains data on the cadastral districts, on real estates, on rights to the real estates, on the owners and other entitled persons namely, in case of a natural person their name, surname, surname at birth, date of birth, personal identity number and legal residence, in case of a legal person their name, seat and identification number, if it is assigned, or other identification data, on the facts connected with the rights to the real estates, on the announced changes as well as on the changes found out by examining the changes, by revision of the cadastral data and by renewal of the cadastral documentation.

File of documents is the part of cadastral documentation which contains namely written forms of contracts, agreements and declarations made in writing by the entering entity of the entry of real estates owned by legal entities, written forms of the decisions of the state authorities and notarial certificates (public deed) as well as other deeds authenticating under the law rights to real estate and the documentation of settlement and non-settlement geographical names. Very important part of set of documents are survey sketches - subdivision plans and land parcel identifications as supplements of contracts also.

3 TECHNOLOGICAL INFRASTRUCTURE

In the Czech Republic, there is one centralized register of real estates: Cadastre of real estates that represents modern information system of state administration and contains the data on real estates from the whole territory of the state – Information System on Real Estate Cadastre (ISKN). Real Estate Cadastre includes both former Land Register (legal rights) and cadastre (technical part) information. The central database is located in Prague and all digital information is stored there. The paper documents based on which the owner´s right was registered are stored in particular cadastral district registries in question.

4 UPDATING PROCEDURES

Existing types

Ther are following main updatable parts of the national land information system frequency of which is described below:

Land register data	Land survey data	Address of register unit	Owner's address
Daily	In general within 10 days. Not required prior to property transfer	Constantly.	Constantly.

Cadastral offices update the data of cadastre of real estates continuously.

Organisations and persons involved

To reach higher quality and reliability of some data of cadastre of real estates data from other registers of state administration are used as follows:

- Registry of inhabitants (source is the Ministry of Interior) – data are updated continuously;
- Territorially identification registry of addresses (Ministry of labour and social affairs)- data are updated in a batch mode weekly;
- Administrative registry of economic subjects (Ministry of Finance) – data are updated in a batch mode monthly.

Updating of cadastral maps is done solely by the privat surveyors or companies, who are authorized to verify survey sketches based on which the updating is realized.
Legal frame for creation of survey sketches and maintenance of cadastral documentation is given in Cadastral Act No 344/1992 Coll. and in the Decree 190/1996 Coll. Survey sketch is made on request of the owner of real estate for following purposes:

- Subdivision of a parcel - The survey is usually made before drawing the deed of sale;
- Change of boundaries of a parcel;

- Drawing of a building or change in its external limits;
- Setting of boundaries of parcels during land consolidation;
- Completion of cadastre with parcel from old, so called simplified registration, if its boundaries are to be marked out in field;
- Graphical expression of range of right that limits the owner of the parcel for the benefit of other person-easements and rights.

Establishment of easements and rights

The client asks an authorized surveyor to make the survey sketch in case he wants to establish an easement or any other right that limits the owner of the parcel for the benefit of other person. He makes a contract with a company or a private surveyor and gives him all necessary information (cadastral district, parcel number, name of the owner and extent of easement). The surveyor then works on the survey sketch and the result is a verified survey sketch, which has to be enclosed to the application for entry of right into the cadastre.

Application for land survey or other survey required to complete mapping of title or other land transaction.

An authorized surveyor works survey sketch on upon the request of the owner. The respective territorial cadastral workplace of the respective cadastral office reserves numbers of parcels to be established upon the request of the authorized surveyor before beginning of land survey. The surveyor gets all groundwork for working on the survey sketch from the cadastral office. Proceeding of survey and calculating works and proprieties of a survey sketch are described in Decree 190/1996 Coll. Completed survey sketch must be verified by an authorized surveyor. All authorized surveyors are registered in the COSMC. Rules for obtaining of this authorization are given in the Act No200/1994 Coll., on Surveying.
Authorized surveyor applies for authorization of survey sketch at the cadastral office. In case there are not insufficiencies in it, cadastral office authorizes the survey sketch and deposits its copy in cadastral documentation to be used in registration of land transactions and rights and to maintain the cadastral maps.
It is in competence of authorized surveyor to ensure the registration of the survey sketch in the cadastral office after making a contract with the client about land survey.The client gets only the registered survey sketch to add to his aplication for entry of right into the cadastre.In case the cadastral office finds some insufficiences in the survey sketch, the client must claim at the authorized surveyor to correct them.
The whole process of surveying and registration takes about 6 weeks for subdivision of parcel and 8 weeks for establishment of easement or right. The deadline depends on many items: the location of the parcel, the extent of work, season of the year, workload of the cadastral office and so on.

Registration of land survey or mapping of the title

It is in competence of authorized surveyor to ensure the registration of the survey sketch in the cadastral office after making a contract with the client about the land survey.The client gets only the registered survey sketch to add to his aplication for entry of right into the cadastre.

Legal effects of registration of land survey or mapping of title:

- In case of subdivision of a parcel, material rights (mortgage, easement, pre-emption right) are still connected with the part of land surface they were connected before with. It means that these rights are registered from the original parcel to those newly established out of it. Easement registered only on a part of the parcel is registered only with this part of the parcel after subdivision.
- Subdivision of parcels is drawn into cadastral maps together with entry of proprietary right to these subdivided parcels. Mapping is a part of registration of proprietary right and legal effects are the same as for this registration.

5 PROVIDED SERVICES

Information form the ISKN is accessible for everybody because Czech cadastre is open for public. You can get all information you need for a fee, limited choice is free of charge. Those, who do not have the on-line access, can get the information and verified Extract from the cadastre of real estates at the desk in every cadastral office and since 2007 also at other places labelled CzechPOINT - in municipalities, post offices and others (www.czechpoint.cz).
Czech POINT is a place, in which the inhabitants can get verified Extract from the cadastre of real estates and also extracts from further registers of the state administration, which makes getting necessary documents more comfortable for them.
For those who have the on-line access ,there are more possible ways, how to obtain information from the cadastre of real estates on-line:

1 - Remote access to the data from the cadastre of real estates

Remote access is a paid www service available at following address: https://katastr.cuzk.cz, that enables on-line access to the data from cadastre of real estates for registered users and enabling them to get following products. There is a special group of customers – government and self governmental bodies, who have this service free of charge.

Products on-line provided via Remote access

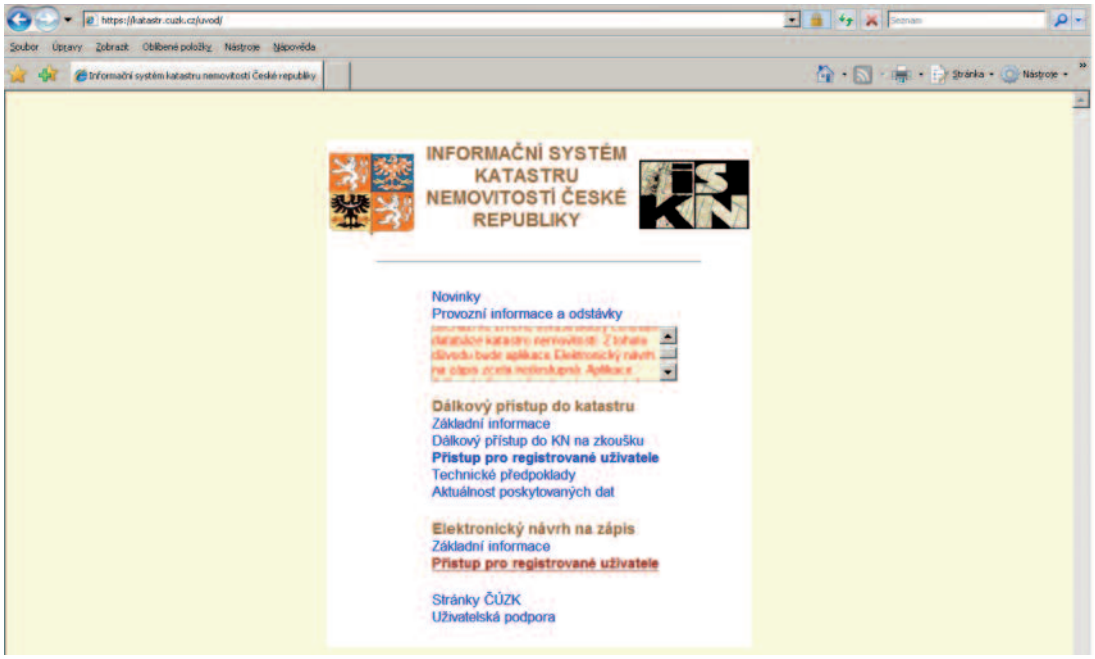
Extract from the cadastre of real estates
It contains basic information about the owner, his identification, address of his permanent stay/ seat and information about real estates and his legal relations to these real estates, included information about easements, mortgages, seizures usufructs, reference to number of proceeding(s) the proprietary right is based on.

Information about course of proceeding
It contains information about participants of the proceeding (names and their roles-purchaser, conveyor), subject of the proceeding and identification of the real estate in question.

Cadastral map-copy
Depicts chosen area included parcel borders and their numbers and borders of buildings.

Information about parcel/building/unit
It contains basic information about parcel/building /unit. It means the number of parcel/building /unit, name of the cadastral district, name of the municipality, area of the parcel, name of the owner and his permanent-postal address).

Information about minor control
It contains coordinates of chosen points of minor control in the cadastral district.

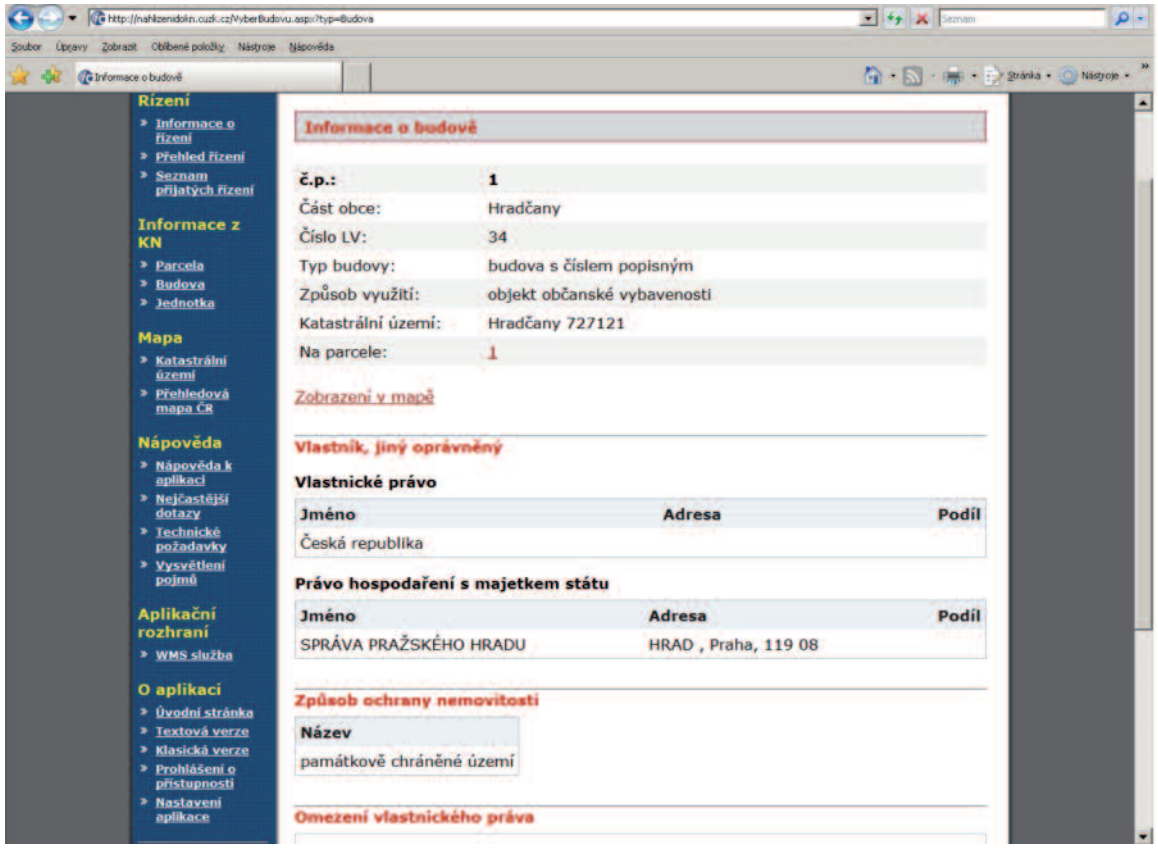


2 - Viewing into the cadastre of real estates

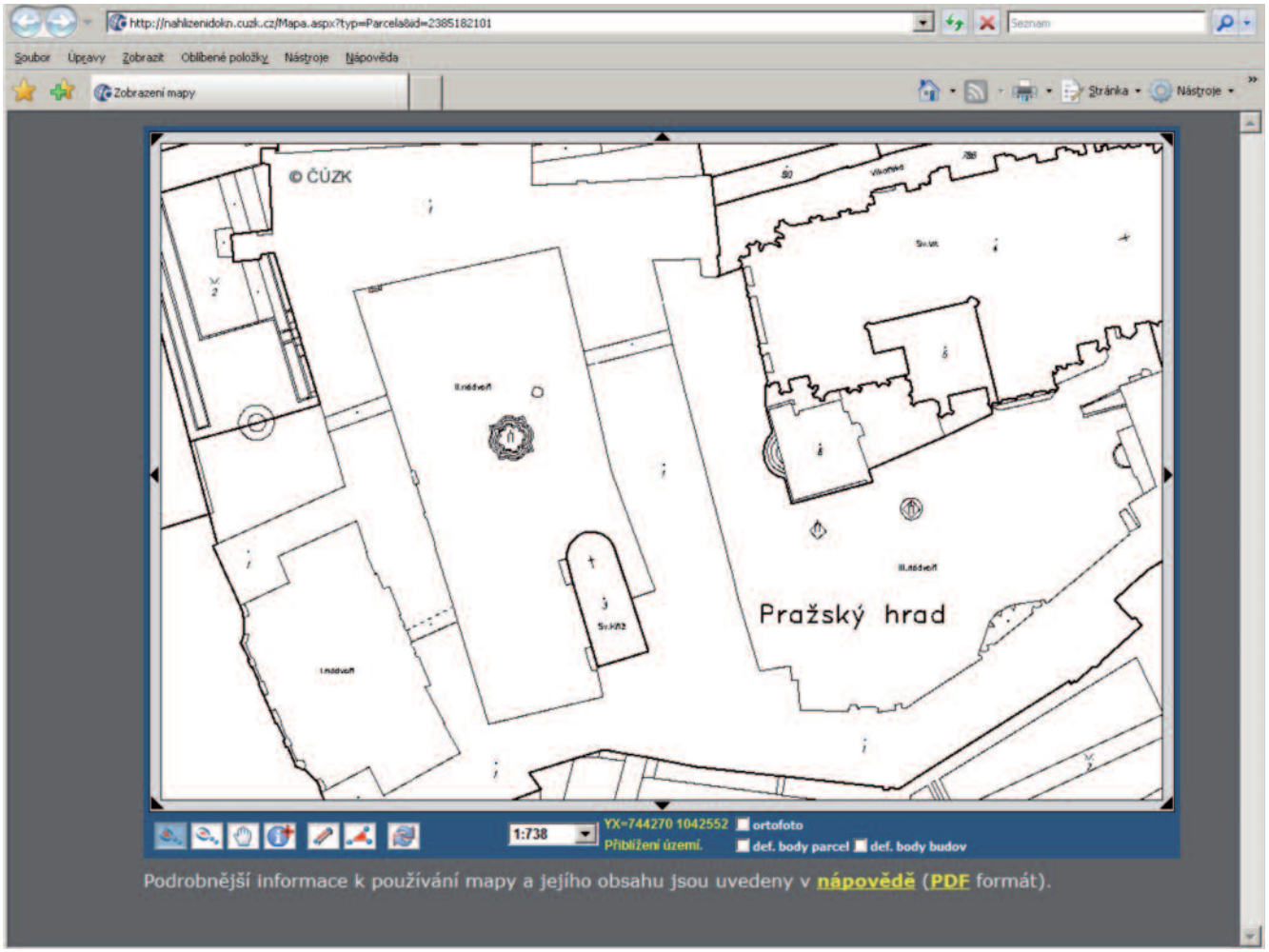
Viewing into the cadastre of real estates is a free of charge service available for everybody, who knows parcel number or number of the building or flat (unit) and the cadastral district or municipality and who wants to know the name of the owner of a special real estate.It serves for information and you cannot get verified extract there.
Information on proceeding is also available free of charge – number of proceeding and Cadastral Office in charge are enough to get the info.
Searching is also possible via cadastral map according to the cadastral district and parcel number or simply by finding the known parcel direct on the map.

Website http://nahlizenidokn.cuzk.cz/

Information on building



Cadastral map on-line



6 RELATIONSHIP BETWEEN CADASTRE AND LAND REGISTRY

Technical part of the cadastre of real estates and legal part- legal rights are in the Czech Republic administered together.

7 RELATIONSHIP BETWEEN CADASTRE AND REAL ESTATE EVALUATION SYSTEM / REAL ESTATE TAXES

Cadastral database in the Czech republic nowadays does not content data about value of real estates for taxation.

Property taxation of real property:

- Taxation of real estates is described in the Act No 338/1992 Coll., on taxation of real estates. It refers to taxation of both parcels and building;
- Tax base of parcels is the price of parcel given in the implementing decree and ranges from 1 to 10 CZK per square meter. Taxation for arable land, hop-fields, vineyards, gardens, and orchards is 0.75% of the tax base. Taxation for permanent grass cover, production forests and fishponds is 0,25% of the tax base. Taxation for built-up areas and courtyards and other areas is 0,1 CZK per square meter, for ground plots it is 1 CZK per square meter. This tax is to be paid quarterly, twice a year or yearly. It depends on the paid amount and it is usually stated with the first payment of the tax;
- Taxation of buildings is used not only for buildings, but also for flats and non-residential premises qualified as units in accordance with the Act On ownership of flats. Calculating of building tax depends on many elements (e.g. built-up area, number of storeys, use of the building, and number of inhabitants in the respect municipality). The best way, how to find out the nominal tax is to use the Act on ownership of flats. This tax is to be paid quarterly, twice a year or yearly. It depends on the paid amount and it is usually stated with the first payment of the tax;
- Real estate-transfer tax is stated in the Act No 357/1992 Coll., on death duty, gift tax and real estate-transfer tax. This tax must be paid in case of paid transfers of real estates, which means the transfers of real estates which are not free of charge according to law. Taxation is unified and it is 3% of the purchase price or of the administered price (it is the price stated by the authorized appraiser) of the real estate in question taking into consideration the highest one. It is to be paid within three months following after the month in which the application for entry of right

into the cadastre was received by the cadastral office.

- Income tax from purchase of real estates, flat or non-residential area is stated in the Act No 586/1992 Coll. Income tax from purchase of real estates included in the commercial property is always requested, which means that commercial property is always taxied. Other real estates can be tax-free under special conditions, which means for instance private property, purchase among close relatives or at least 5 years of living there and others. This tax is to be paid by 31.3. or 30.6. in case you use the service of a tax adviser;
- Gift tax is stated in the Act No 357/1992 Coll., on death duty, gift tax and real estate-transfer tax. This tax is to be paid for unpaid (gifts) transfers of real estates. The base for this taxation is administered price (it is the price stated by the authorized appraiser) of real estate. Taxation depends on the connection between relatives (donor and donee) and ranges from 1% to 40% of administered price of real estate. The donee (acquirer) has to ask for the tax assessment at the financial office within 30 days after reception of the announcement of the registration of transferred real estate. The tax is to be paid within 30 days after reception of the tax assessment from the financial office.

THE CADASTRAL SYSTEM IN GERMANY

www.adv-online.de

December 2008

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Background information Germany

Germany, officially the Federal Republic of Germany (German: Bundesrepublik Deutschland) is a country in Central Europe. It is bordered to the north by the North Sea, Denmark, and the Baltic Sea; to the east by Poland and the Czech Republic; to the south by Austria and Switzerland; and to the west by France, Luxembourg, Belgium, and the Netherlands. The territory of Germany covers 357,021 km² and is influenced by a temperate seasonal climate. With over 82 million inhabitants, it has the largest population of any member state of the European Union.

A region named Germania inhabited by several Germanic peoples has been known and documented before 100 AD. Since the 10th century German territories have formed a central part of the Holy Roman Empire that lasted until 1806. During the 16th century, northern Germany became the centre of the Protestant Reformation. As a modern nation-state, the country was first unified amidst the Franco-Prussian War in 1871.

In 1949, after World War II, Germany was divided into two separate states — the German Democratic Republic (DDR) and the Federal Republic of Germany — along the lines of Allied occupation. The two states were reunified in 1990. The capital and largest city is Berlin. Germany is a federal parliamentary republic of sixteen states (Laender).

Fig. 1 - Mapp of Germany

1.2 History and purposes of the cadastre

Official surveying and mapping in Germany is traditionally a matter for the federal states. This responsibility standard under constitutional law was temporarily interrupted in the period of National Socialism when the executive power was supposed to be transferred to the central state. As therefore one "German" real estate cadastre does not exist, the following explanations should be understood as general overview.

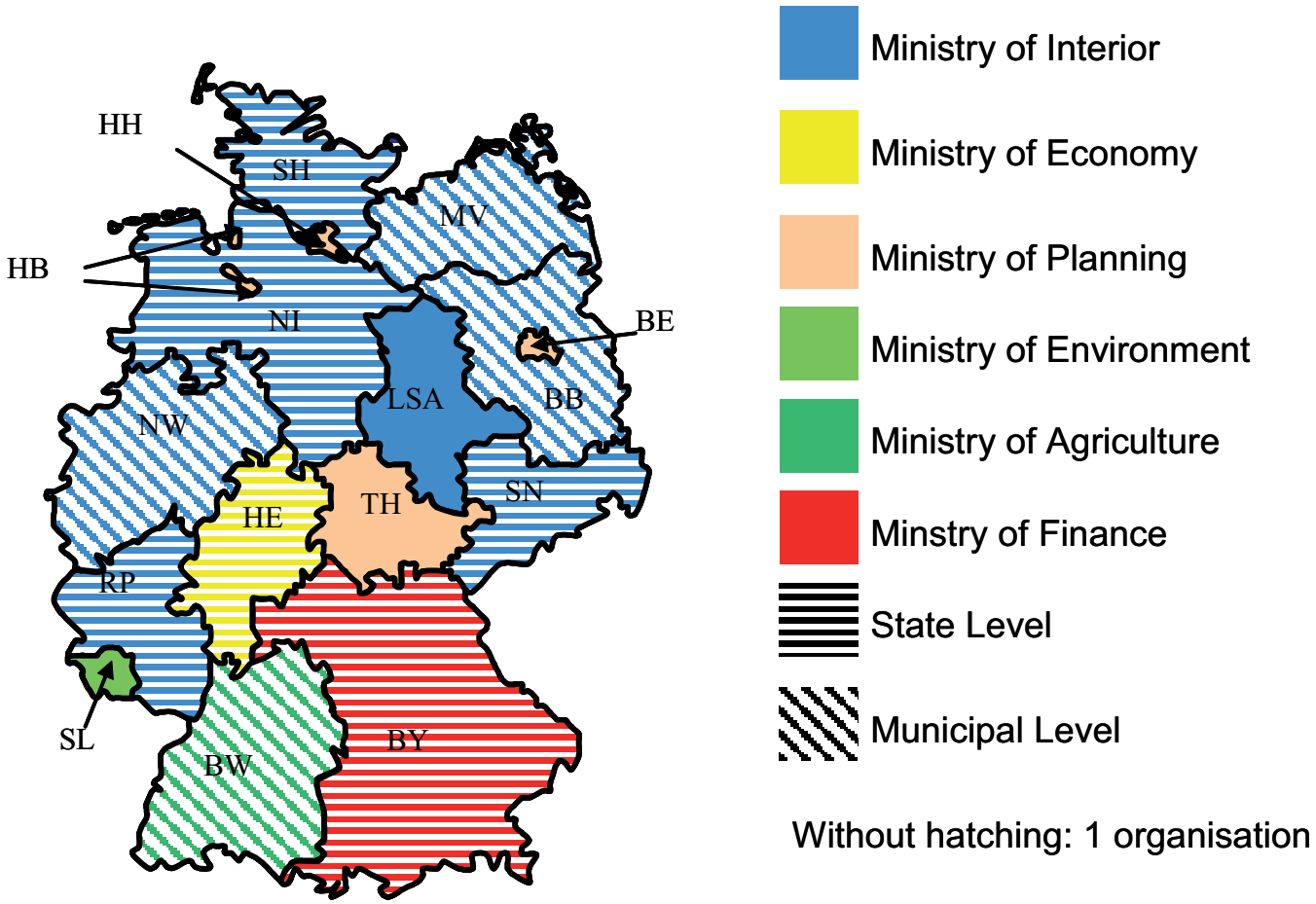
Most of the cadastral systems in Germany were established in consequence of the French Revolution to reach a more fair taxation of real properties. The first task was to serve as a purely fiscal register, the tax cadastre, which, in its time, incorporated a substantial share of formerly established plans and registers (e.g. from land consolidation procedures). In 1872 land registration was enacted and made compulsory in Prussia (from 1900 on in the whole of Germany), relying on the newly established cadastral records - especially the maps – as an integral part. Thus evolved what may be called the property cadastre. After 1934 the results of the official soil taxation are recorded in the cadastre. This was the first step into the direction of a multi-purposed cadastre. As time went by, the information contained in the cadastral records, and growing accuracy in cadastral surveying and mapping made it a public inventory for various purposes and rising demands. Thus it changed to a multipurpose cadastre.

Today the entire territory of Germany is completely covered by the real estate cadastre without any gaps or overlaps. In Germany there exists only one type of real estate cadastre covering the complete territory with all kinds of landowners (private and state) and all kinds of land use (urban, rural, forests etc.). The real estate cadastre in Germany is a parcel-based system, i.e. information is geographically referenced to unique, well-defined units of land. These units are defined by formal boundaries marking the extent of land. Each parcel is given a unique parcel-number. The real estate cadastre will be updated permanently. The bases for this maintaining are cadastral surveyings, statements from the land register or from the tax office (changes in the soil taxation) or because of the results of land consolidation and other land regulation processes.

1.3 Development of the institutional and organisational structure

The constitution of the Federal Republic of Germany accords responsibility for official surveying and mapping, inclusive of the real estate cadastre, to the 16 states (Laender). Due to this each of the 16 states has its own surveying and cadastre law. While these laws are unified in their general regulations, different regulations especially concerning the responsible authorities remain. Below the cadastral laws there are in each state different bylaws and statutes. For the different surveying and cadastre laws refer to www.adv-online.de.

Fig. 2 - Ministries of reference, managing structure



As there are 16 states there are also different ministries in charge of the surveying and cadastral authorities. Fig. 2 shows the ministries of reference. In the moment (2008) 8 authorities belong to the Ministry of Interior, 4 authorities belong to the Ministry of Planning (city development), and 1 to the Ministry of Economy, Finance, Rural Affairs and Environment.

Fig. 3 - Statistics for official surveying and mapping

State	Inhabitants in thousands	Square kilometres	Land parcels in thousands	Number of authorities		Licensed Surveyors
				State authorities (businesses)	Regional authorities	
Baden-Württemberg	10.736	35.752	7910	1	44	150
Bayern	12.469	70.552	10451	1	51	-
Berlin	3.395	892	381	1	12	45
Brandenburg	2.559	29.479	3015	1	18	157
Bremen	663	404	205	1	1	6
Hamburg	1.744	755	240	1	-	9
Hessen	6.092	21.115	4952	1	7	84
Mecklenb.-Vorpommern	1.707	23.180	1864	1	13	78
Niedersachsen	7.994	47.624	6102	1	14	105
Nordrhein-Westfalen	18.058	34.085	9184	1	54	484
Rheinland-Pfalz	4.059	19.853	6395	1	20	89
Saarland	1.050	2.569	1308	1	-	9
Sachsen	4.274	18.416	2557	1	12	120
Sachsen-Anhalt	2.470	20.446	2594	1	-	57
Schleswig-Holstein	2.833	15.799	1831	1	8	41
Thüringen	2.335	16.172	3017	1	-	76
Germany total	**82.438**	**357.093**	**62006**	**16**	**254**	**1510**
Comparison with 1992	**79.722**	**35.6854**	**61281**	**16**	**643**	**990**

All over Germany there are about 250 cadastral agencies with a staff of about 25.000 including state survey (see Fig. 3). Depending on the organisational structure in the states the cadastral offices may belong either to state or district ("Landkreis") administration. Independent from the ministry of reference the official surveying and cadastral authorities belong normally to a two- or three-tier model of public administration (see Fig. 4a and b). In a two-tier model the supervision of the cadastral agencies is mostly done by the ministries, in a three-tier level it is mostly done by the state survey institution or in some cases by regional authorities ("Bezirksregierung") that cover some districts ("Landkreise"). In all cases the supervision is done by the state.

Fig. 4a - Two-tier model

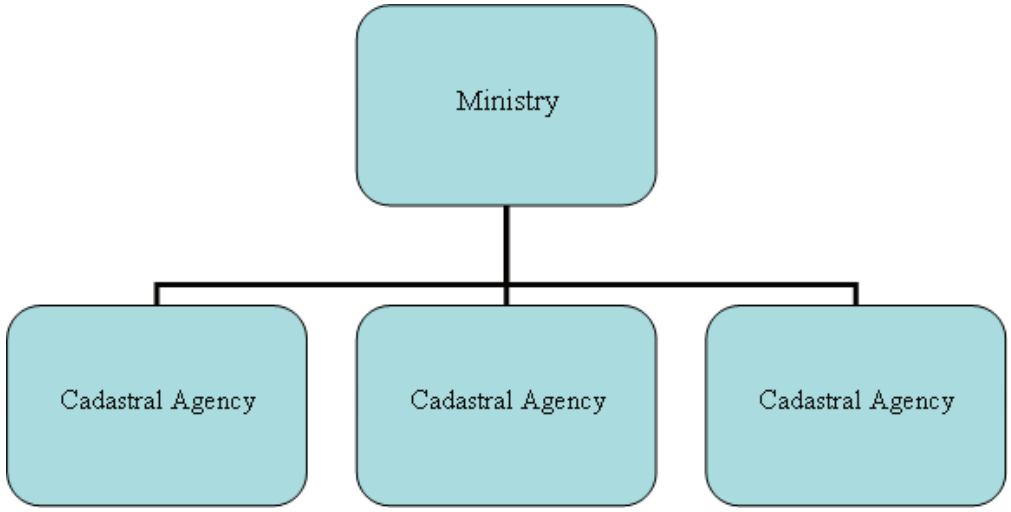
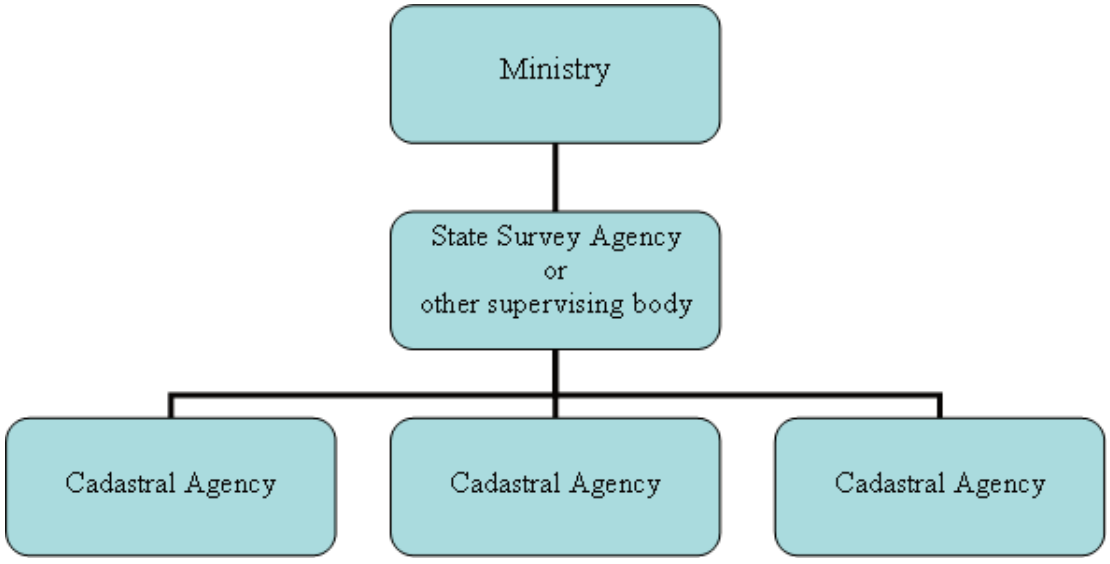


Fig. 4b - Three-tier model



In some states all cadastral agencies and the state survey office have been integrated into one agency. That means that there are no independent cadastral agencies on the local level; they are all branches / departments of the "one" agency.

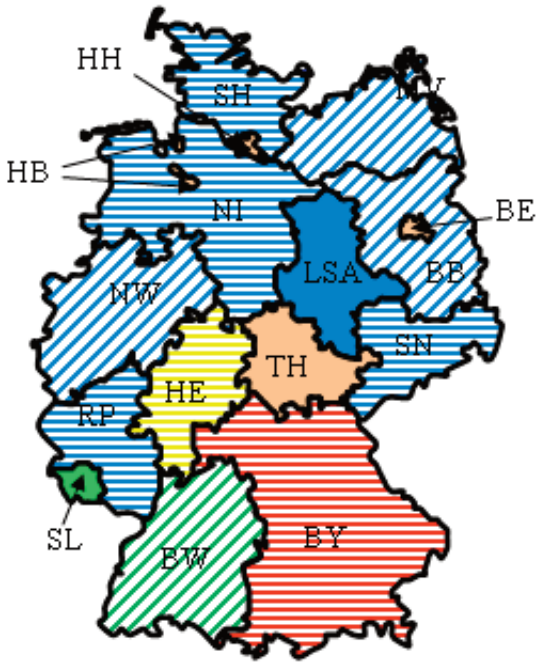
The state survey office always belongs to state level.

For the federal authorities, the Federal Agency for Cartography and Geodesy (BKG) is assigned to the Federal Ministry of the Interior. In co-operation with the federal states, the BKG fulfils tasks in the field of geographic information and geodesy, but not for the real estate cadastre. These are the provision and representation of analogue and digital topographic-cartographic information for the federal area, the provision and maintenance of the geodetic reference networks of the Federal Republic of Germany and participation in the specification and maintenance of global reference systems. Furthermore the BKG is representing the interests of the Federal Republic of Germany internationally in the area of geodesy and geographic information. Nevertheless the BKG is not part of the official German surveying and mapping of the federal states.

As official surveying and mapping in Germany is task of the federal states there has been a necessity to harmonise these activities. In order to achieve, further develop and maintain extensive harmonisation and standardisation, representatives of the American Zone surveying and mapping authorities met already in May 1948. In October 1949, the working group, expanded by the surveying authorities of the British and French Zone was formed and has borne the name ("AdV" - Working Committee of the Surveying Authorities of the States of the Federal Republic of Germany) it has today since this time. Later, West Berlin (1952), Saarland (1957) and the five new federal states after the reunification joined the AdV.

AdV as an organisation on a voluntary basis is responsible for the coordination of official surveying and mapping. As well as the specialist authorities of the federal states responsible for official surveying and mapping, the Federal Ministries of the Interior, Defence and for Traffic, Construction and City Development are cooperating in the AdV. The German Geodetic Commission (DGK) as representative of geodetic education and research and the Bund/Länder Working Committee for Sustainable Rural Development ("ArgeLandentwicklung") have guest status in the AdV.
The AdV is assigned to the Permanent Conference of Ministers of the Interior.

Fig. 5 - Members of AdV



Federal Ministry of the Interior

Federal Ministry of Defence

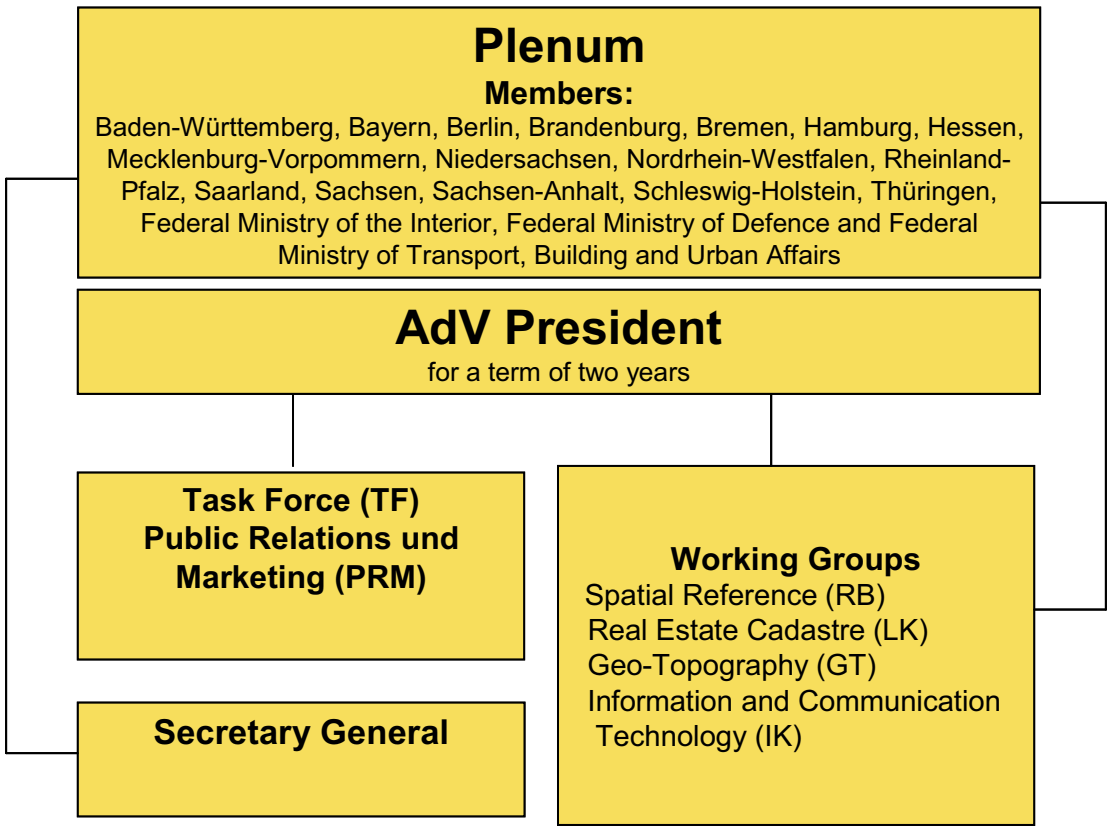
Federal Ministry of Transport, Building and Urban Affairs

Bund-Länder-Arbeitsgemeinschaft ARGE LANDENTWICKLUNG

German Geodetic Commission

Its organs are the plenum and the president. The plenum defines the technical and strategic alignment of the AdV and makes decisions of fundamental importance. The plenum elects a state representative as president every two years. The president ensures that the AdV objectives are continuously pursued and that its tasks are completed. He chairs the annual plenum meetings and represents the AdV to the outside world. The plenum uses specialist working groups and a business office to support the work (see Fig. 5).

Fig. 6 - Organisational structure of AdV



The member authorities collaborate in the AdV to standardise technical matters of fundamental and national importance for official surveying and mapping, to create a stock of standardised geospatial reference data oriented to the requirements of the information society and to provide the infrastructure for the geospatial reference data as an important component, particularly for modern eGovernment architectures.
Thus, the AdV forces the development of digital processes for official surveying and mapping. It uses the federalism as a competent platform for competition, optimisation and progress. The surveying,

cadastral and geoinformation authorities take over the ALK (Automated Legal Parcel Map), ALB (Automated Property Register), AFIS® (Official Control Point Information System) , ATKIS® (Authorative Topographic-Cartographic Information System), ALKIS® (Authoritative Real Estate Cadastre Information System) national standard methods developed by the AdV and their integral modelling. The specifications of the German SAPOS® positioning service are also produced from the collaborations in the AdV. The users of geospatial reference data therefore have the benefit of a standardised, digitally managed range of products. In order to be integrated in international developments, AdV representatives are involved in standardisation (DIN, OGC) and other technical bodies. At the European level, these are EuroGeographics as representative of the national mapping and cadastral authorities in Europe, the Permanent Cadastre Committee (PCC) as association of the cadastral authorities within the European Union and the Working Party on Land Administration (WPLA) of the United Commission for Europe (UN-ECE).

1.4 Financial and organisational issues

The cadastral agencies are financed by the government, either state or district (local) level. But they levy a charge for their services in addition to the cadastral authorities. These charges do not re-finance the whole costs of the agencies. But some parts achieve a more or less full cost recovery (e.g. the charges for the cadastral surveyings). The charges have been defined in scale of charges (by-laws). In general the charges for cadastral surveyings depend on different factors (e.g. value of the parcels, number of new parcels, number of boundary points, expenditure of time etc.). The charge for the cadastral registration is calculated as a percentage of the charge for the surveying. All these charges are the same for all customers, both private and public.

Some examples (rough estimate; based on the regulations in Lower Saxony):

- Excerpt (on paper or digital) from the cadastral register: 20 €;
- Excerpt (on paper or digital) from the cadastral map: 20 € in the format up to DIN A4; (more for larger formats).

It is nearly impossible to name the charge of a cadastral surveying, because it depends on different factors. The charge for the subdivision and registration of a new parcel with 4 boundary points comes to (very roughly) about 1400 € (600 € for the survey and the calculation, 36% of this sum for the registration, 135 € for the documents needed to perform the cadastral surveying plus VAT).

1.5 Decentralisation, involvement of the private sector

In all states except Bavaria publicly licensed surveyors are mandated to do cadastral surveyings, but not the cadastral registration. The publicly licensed surveyors are freelancers, but work under supervision of the surveying authority of the federal state. The license is granted by the state (not by a chamber) only to individuals and not to companies.
A licensed surveyor is authorized only for one state and acts on behalf of the state. So he/she can be described as a civil servant concerning administrative law. Due to this the requirements for the licensing are the same as for a comparable civil servant. In general the licensing requires 4-5 years of studying at a university plus an additional traineeship on state level with an examination ("second state examination") plus one year of experience in the job. Because of the strong relation to the public authority a licensed surveyor uses the seal of the state for signing surveying documents produced in the job.

In Germany the job of a licensed surveyor is seen as a regulated profession which is subject to Art. 45 EG Treaty. Therefore it is not a Public Private Partnership (PPP).
The publicly licensed surveyors are paid by the applicant of a cadastral surveying on the basis of the same scale of charges the cadastre office uses. To avoid unfair competition the scales of charges are the same as for the cadastral authorities.
The licensed surveyors have a market share regarding the survey of parcels and buildings of 60-80% (all over Germany, but the figures vary between the federal states).

The licensed surveyors in Germany have united in the German Association of Publicly Appointed Surveyors – BDVI - (www.bdvi.de) to represent their common interests effectively.
At present the association has approximately 1,300 members which is equivalent to a degree of organisation of more than 90%. The BDVI, a federal association, is registered in the register of associations as well as it is registered as a partner of the parliamentarians of the German Bundestag.

2 CONTENT OF THE CADASTRE

The real estate cadastre in Germany consists of the:

- cadastral register („Liegenschaftsbuch");
- cadastral map ("Liegenschaftskarte").

All states have agreed some years ago to transfer this system to a newer one. In this new system the cadastral register and the cadastral map will be merged to ALKIS® (Authoritative Real Estate Cadastre Information System). Most of the states will start with this migration in 2009.

In the numerical data ("Vermessungszahlenwerk") information for the determination of the boundary points, buildings, co-ordinates etc. are stored.

2.1 Cadastral maps

The cadastral map gives a graphic presentation of the real estate cadastre. The analogue cadastral maps exist generally in form of grid-maps scale 1:1,000 based on Gauss-Krüger co-ordinates. These former analogue maps are now totally replaced by digital maps (ALK = Automated Legal Parcel Map).

The cadastral map contains the following information:

a. parcel boundaries and boundary point markings;
b. numbering of parcels;
c. boundaries of districts;
d. survey control points;
e. outlines of houses and buildings;
f. house numbers;
g. street names;
h. results from official soil taxation;
i. type of land use;
j. topographical details like kerbs, cycle tracks, trees, embankments, walls etc.;
k. There is no separate building cadastre, because the buildings are part of the parcel.

The cadastral map must be suitable as a basis for development plans and for the revision of the official topographic map series. According to the legal tasks of the cadastral maps the contents are based on terrestrial surveyings (boundaries, houses and buildings).

Topographical details sometimes may be put into the maps by photogrammetric measurements. In areas with a high accurate cadastre it is possible to create new legal boundaries from existing plans by calculating without surveying in the field (see Fig. 7).

Fig. 7a - Cadastral Map – city area

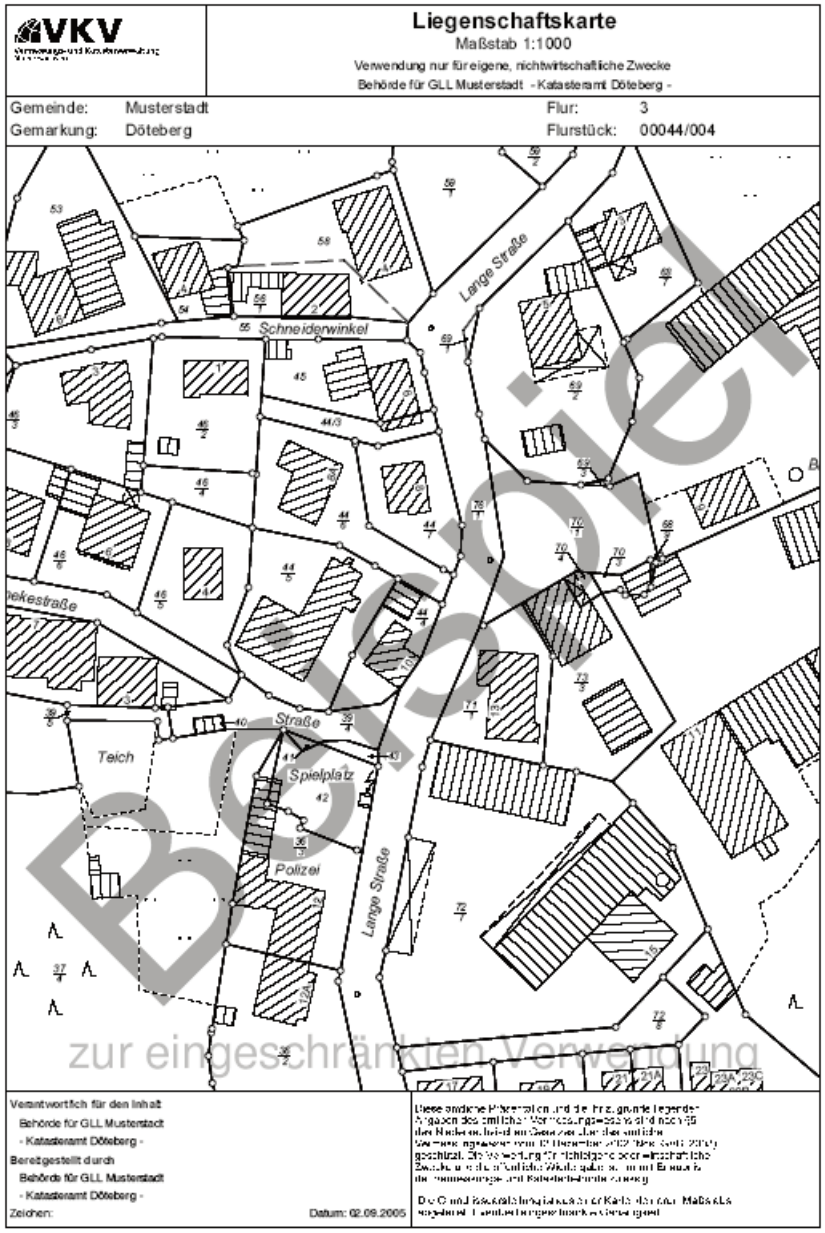


Fig. 7b - Cadastral Map – rural area

2.2 Cadastral register

The former parcel register in most parts of Germany is operated in a digital system called Automated Property Register (ALB) (see Fig. 8).

Fig. 8a - Cadastral Register – parcel

VKV

Liegenschaftsbuch
Flurstücksnachweis
Standardpräsentation

Gemarkung:	034847	Döteberg	Seite: 1
Gemeinde:	03253014	Musterstadt	Datum: 13.09.2005
Finanzamt:	2327	Hannover-Land II	
Flurstück:		034847-003-00052/003	

Gemarkung Döteberg
Flur 3 Liegenschaftskarte 4004A
Flurstück 52/3 Flurstücksfläche 5 646 m²

Lage Dorfstraße 5

Tatsächliche Nutzung
3 887 m² Gebäude- und Freifläche
Wohnen
251 m² (Gebäude und Freifläche Zu)
Straße
1 508 m² Grünland

Weitere Angaben

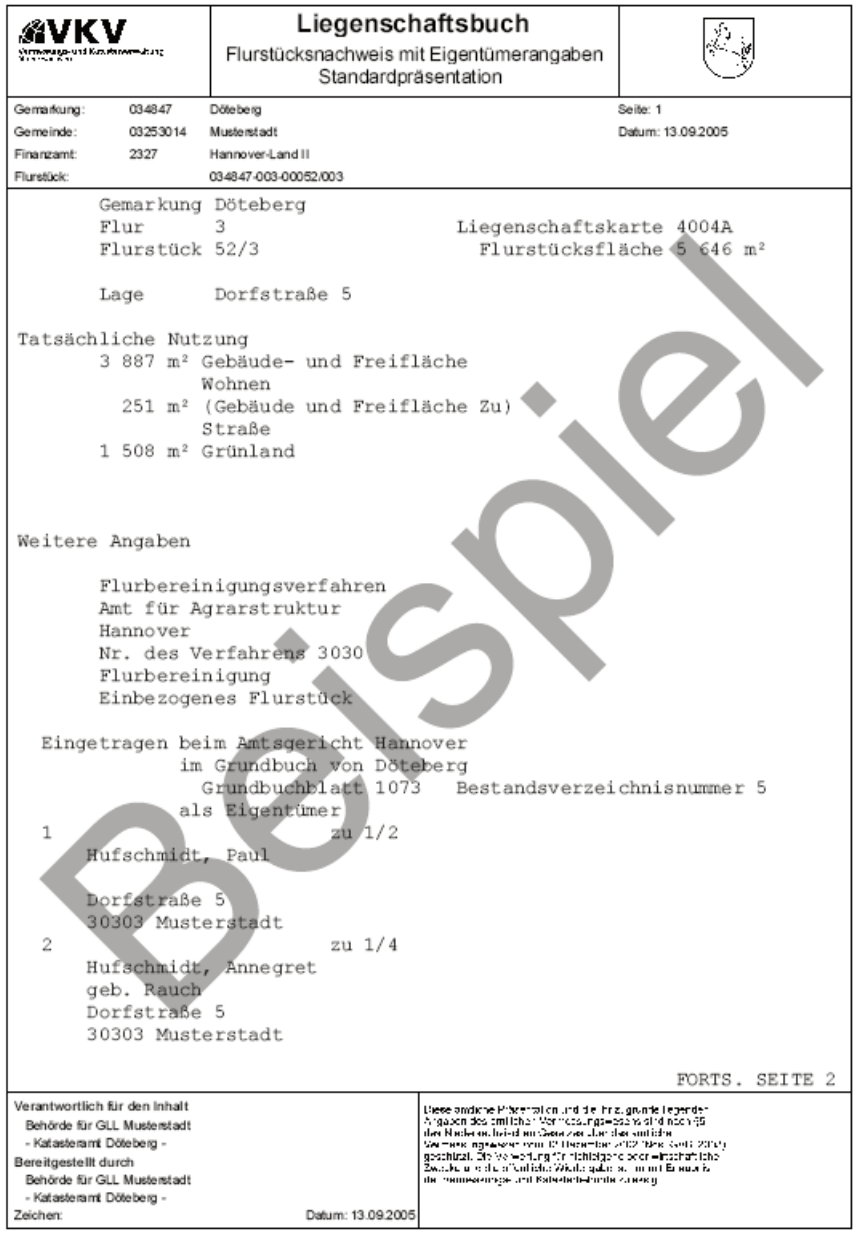
Flurbereinigungsverfahren
Amt für Agrarstruktur
Hannover
Nr. des Verfahrens 3030
Flurbereinigung
Einbezogenes Flurstück

Eingetragen beim Amtsgericht Hannover
im Grundbuch von Döteberg
Grundbuchblatt 1073 Bestandsverzeichnisnummer 5
Eigentum

Verantwortlich für den Inhalt
Behörde für GLL Musterstadt
- Katasteramt Döteberg -
Bereitgestellt durch
Behörde für GLL Musterstadt
- Katasteramt Döteberg -
Zeichen: Datum: 13.09.2005

Beispiel

Fig. 8b - Cadastral Register – parcel and owner



VKV

Liegenschaftsbuch

Flurstücksnachweis mit Eigentümerangaben
Standardpräsentation

Gemarkung:	034847	Döteberg	Seite: 1
Gemeinde:	03253014	Musterstadt	Datum: 13.09.2005
Finanzamt:	2327	Hannover-Land II	
Flurstück:		034847-003-00052/003	

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Eingetragen beim Amtsgericht Hannover
im Grundbuch von Döteberg
Grundbuchblatt 1073 Bestandsverzeichnisnummer 5
als Eigentümer

1 zu 1/2
Hufschmidt, Paul

Dorfstraße 5
30303 Musterstadt

2 zu 1/4
Hufschmidt, Annegret
geb. Rauch
Dorfstraße 5
30303 Musterstadt

FORTS. SEITE 2

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- Katasteramt Döteberg -
Bereitgestellt durch
Behörde für GLL Musterstadt
- Katasteramt Döteberg -
Zeichen: Datum: 13.09.2005

Diese amtliche Information und die ihr zugrunde liegenden Angaben des amtlichen Vermessungswesens sind nach §5 des Niedersächsischen Gesetzes über das amtliche Vermessungswesen vom 12. Dezember 2002 (Nds. GVBl. 2003) geschützt. Die Verwendung für nichtstaatliche oder -wirtschaftliche Zwecke sowie die entgeltliche Weitergabe an Dritte ist nur mit Erlaubnis der Vermessungs- und Katasterbehörde zulässig.

Cadastral unit is the parcel.

In the cadastral register the following information for each parcel is stored.

1 parcel identifier consisting of:
   a two-digit numerical code of the state within the Federal Republic of Germany; e.g. 03 for Lower Saxony;
   b four-digit code of the cadastral district (Gemarkung);
   c three-digit code of the cadastral sub-district (Flur) within the cadastral district;
   d five+three-digit parcel number; five digits as numerator and three digits as denominator; e.g. 1234 or 1234 / 567 or 432/1).

2 affiliation of district, municipality (Gemeinde), administrative district (Landkreis) or administrative district in its own right (kreisfreie Stadt) and tax office (Finanzamt);
3 location of the parcel (e.g. street-name, house number, centre-co-ordinates);
4 year of origin of the parcel, year of maintenance;
5 number of cadastre map, number of survey plans;
6 type of land use of the parcel including the area of the parcel's parts (Abschnittsflächen des Flurstücks);
7 results from official soil assessment (only for rural parcels);
8 area of the parcel (sum of the areas of the parcel's parts of real use);
9 additional details about the parcel (e.g. like parcel is part of a consolidation project, polluted soil, historical monuments, parcel is part of a nature reserve or a water reserve etc).

In addition to the cadastral information there are also the following land book data stored:

   a Land book identifier (consisting of two-digit numerical code of the state within the Federal Republic of Germany, the code of the land book district and the number of the land book folio);
   b responsible district court;
   c number of folio;
   d type of ownership (e.g. leaseholds, co-ownership, etc.);
   e name of the land owner(s), address, shares in co-ownership (e.g. ½).

AdV decided in 1991 to introduce the European Terrestrial Reference System 1989 (ETRS89) for the sectors state survey and real estate cadastre. In 1995 it confirmed this decision and established the Universal Transversal Mercator projection (UTM) as projection system. The transition from the old system (Bessel Ellipsoid (1841) and computed by use of the Gauss-Krüger projection) to the new one has been performed since that time, but is not finished. Most of the cadastral authorities will perform this transition in combination with the migration from the "old" system ALK and ALB to ALKIS®.

3 UPDATING PROCEDURES

3.1 Existing types

The Real Estate cadastre is updated permanently, whenever a change has taken place.
As a rule, cadastral surveys are being executed only on application in Germany. In some cases the cadastre office may proceed without being asked to do so, e.g. in determining changes in the land use or in the context of land consolidation. Property may be sold in Germany without surveying, provided only whole parcels are affected. If a part of a parcel is to be sold, the law requires that part has to be surveyed before recording the subdivision in the land book and before it takes legal effect. The portion of land must be identified and described in exact terms recorded by an official surveying body, either the cadastre office or a licensed surveyor (Öffentlich bestellter Vermessungsingenieur).

As the territory of Germany is completely covered by the Real Estate Cadastre, that will be updated permanently, we have either numerical information (e.g. coordinates in a German or state wide system; this is the general situation) or at least graphical information (only in very few rural areas with very low activities regarding land market), but not on a topographical map. All new cadastral surveys have to be connected with the reference system.
In general a cadastral survey consists of:

- re-allotment of boundaries ("Grenzermittlung"); in general by comparing the cadastral documents (both numerical and graphical) with the locality (reality); if the cadastral documents and the locality fit (within a defined accuracy), the boundary can be determined (see below); if the differences extend the defined accuracy the surveyor has to decide what is more reliable, the data in the documents or the locality; if the owners agree to this decision the boundary can also be determined; in the other case there may a dispute about the legal boundary and perhaps a court has to decide (not the surveyor);

- determination of boundaries as an administrative act ("Grenzfeststellung") and;
- marking ("Abmarkung"); in some states the marking is not mandatory, because the cadastral documents define the boundary and not the boundary pillars; but in general the owners prefer the marking as a sign, e.g. to know where to build a fence.

The rules according to accuracy and reliabity depend on the situation in the different states. E.g. in Lower Saxony the accuracy of cadastral measurements done since 1986 should not exceed 4 cm. For measurements in other areas the accuracy may be lower (e.g. depending on the length of the boundary or the reliability of the used data – numeric or graphical).
Other types of cadastral survey include:

- new survey because the boundary cannot be established anymore;
- boundary adjustment (Grenzwiederherstellung): survey in order to establish the legal boundary in case the course of the boundary is doubtful or controversial.

It is also possible to do a subdivision of a parcel without a local survey only by mathematical operation (Sonderung). This type of cadastral "survey" requires an exact framework of co-ordinates for all boundary points to be used including a high reliability.

After the cadastral survey the maintenance of the Real Estate Cadastre is performed by the responsible cadastral agency. As it is an official authority the registration document is signed by a civil servant of the cadastral agency. It is not necessary that the head of the office does it. Rules of procedure (Geschäftsordnung) regulate who is entitled to sign the registration documents. These are the same for all cadastral agencies in a state (varying from state to state).

3.2 Organisations and persons involved

Based on authorisation by law or agreements between the administrations, third parties too are involved in the settlement of these tasks. In the field of Real Estate cadastre the states are being supported by licensed surveyors and other administrative bodies at state or municipal level fulfilling the relevant staff requirements.

4 PROVIDED SERVICES

4.1 Services for the citizens

The real estate cadastre is a public register. An individual may get access to it, if it has a so called legitimate interest (i.e., somebody, who plans to buy a parcel, does not know the owner or needs information about the area, land use etc.). In such a case this information can be received (not for free). It is, however, not possible to get e.g., information about "all parcels in a community". Direct access, if available, to the Real Estate cadastre e.g. via internet is only open for authorized persons (e.g. publicly licensed surveyors or notaries).

4.2 Services for the authorized persons or institutions

As the real estate cadastre is totally automated, there is the full online access available for the cadastral agencies. Depending on the legal regulations it is also open for the local authorities, licensed surveyors, and notaries. Local authorities and licensed surveyors are in some states also entitled to offer the data under the same conditions to citizens.

5 LINKS BETWEEN CADASTRE AND LAND REGISTRY

Laws on the field of land tenure in Germany are separated in a material and a formal part. The material right contains the regulations for changing rights on a piece of land, selling and buying, regulations of the relationship from person to person and from person to land. The material law is part of the private law (in German "Bürgerliches Gesetzbuch, BGB").

The formal law – "Land Registry Act" (in German "Grundbuchordnung, GBO") contents the regulations for the land registration, the offices and the rules how to register the different forms of land tenure. Both laws are federal laws.

The real estate cadastre in Germany is defined as the official register of all parcels and buildings in a state, in which all parcels are described with graphical and textual data. In addition it contains additional information, like the results of the official soil assessment. With some parts of its contents the cadastre enjoys the "public faith" of the land book, like parcel-identifier in maps and records. The real estate cadastre is designed to show the de facto status of property. As far as legal property titles are concerned,

the cadastre shows their scope and the part of the surface to which they extend. All relevant facts, such as designation, location, size and use, plus the boundaries as surveyed by authorised government agencies and licensed surveyors are described.

Since 1900 land book in Germany is part of the voluntary jurisdiction. This is a part of the ordinary jurisdiction and takes place in the district courts ("Amtsgerichte"), except in some parts of the state of Baden-Württemberg; there the land book belongs to the local community. The land book is based on federal law and the registration work is done by the land book offices ("Grundbuchämter"). The land book shows the legal status of all real properties, which are described by reference to the real estate cadastre. In its documentation and publication role it works as the statutory basis for property conveyance, in particular to ensure unequivocal status of ownership and other titles, as well as for mortgage loans.

German Land Registry Act requires the real estate cadastre as detailed register for property specification and individualisation. This construction makes a continuous data exchange necessary and vital. Thus, data exchange between both registers is a problem of particular importance. In Germany the principle "superficies solo cedit" is known. There is an exception for the States of the former GDR. It is also possible to register strata titles and condominiums (in condominium registers). Another possibility is the registration of building leases (in land books for building leases). In the former GDR it was possible to be the owner of a building without being the owner of the parcel. These rights were registered in the building land book ("Gebäudegrundbuch"). Over and above that there were also large numbers of unsurveyed land plots (so called undivided courtyards – "ungeteilte Hofräume"). It was very important to create land plots on which property loans can be granted in the "undivided courtyard" sector. After the reunification these problems were solved by special laws and acts ("Courtyard Ordinance" and "Land Separation Act").

6 LINKS BETWEEN CADASTRE AND REAL ESTATE EVALUATION SYSTEM / REAL ESTATE TAXES

The cadastral authorities are not directly involved in the real estate taxation, but they assist the tax offices with their information and store the information for rural land. Although it is not the task of the cadastral authorities the following information concerning the real estate taxation will be given.
The structure of the German real estate taxation system includes different levels of burden tax that are related to each government levels provided by the Constitution: Federal Government (Bund), State

Governments (Länder), and Municipal Governments (Gemeinde). Each of these bodies has its own power in making laws in the sectors expressly specified in the Fundamental State Law and has a marked financial autonomy that comes both from the collection and management of the taxes for which the law provides it as the sole beneficiary than from the sharing of the yield of some taxes (as, for example, Value Added Tax and Income Tax).

With reference to the real estate sector, a brief overview of the main taxes follows.

6.1 Real estate taxation concerning the ownership

6.1.1 Real estate tax (Grundsteuer)

Law of reference: Real Estate Tax Law on the 7th of August 1973 (and subsequent amendments).
Tax receiver: Municipalities (it is not excluded that the Federal State and the Länder could participate in the sharing of a portion of the taxation yield).

Taxable person is the owner (even if it is possible to provide, in the lease contract, the transfer of this tax from the lessor to the leaseholder).
The tax is divided into two typologies: "A" for rural land and "B" for the building and the urban areas on which it is possible to build up.

The tax is calculated on the base of the unit values ("Einheitswert"), fixed by the Financial Administration particularly with reference to the typology of the real estate (the last general assessment in the former West Germany dates back to the 1964 while for the former East Germany to the 1935), through the use of a rate, fixed at federal level and related to the real estate typology and of a multiplier that varies in relation with the different geographical areas.

The unit value of the properties is not the market value and it generally is much lower.
Special laws are in force in the former East Germany.

6.1.2 Tax on the real estate potential income

No potential income is putted down to the owner. So, the owner that uses for himself the real estate or that does not lease the real estate to another person, does not add to his annual total income any potential income coming from the ownership of the real estate.

6.1.3 Tax on income coming from real estate lease

Income tax "Einkommensteuer"
Reference law: Income Tax Law on the 16th April 1997 (and subseq. amendments.).
Tax receivers: Federal State 42,5%; Länder 42,5%; Municipalities 15%.
The income coming from a real estate lease has to be add to the total annual income of the lessor. The total income is taxed in accordance with progressive income brackets through different rates: from 15% (income from 7.665 ¤ for single and 15.330 for married – down there is the no tax area) up to 42% (over 52.152 ¤ for single and 104.304 for married).

In Germany also an additional tax is in force (Solidaritatszuschlag – established after the reunification of the former East Germany and the former West Germany) that amounts to the 5,5 % of the total income tax (so the final rates altogether vary from 15,83% up to 44,31%).

6.1.4 Tax related to the transfer of real estate rights

Tax on the transfer of real estate rights "Grunderwerbssteuer"
Reference Law: Real Estate Transfer Tax Law on the 26th of February 1997 (and subseq. amend.).
Tax receivers: Länder
Gifts and inheritances are excluded from this tax.
The tax amounts to the 3,5% of the price declared in the deed. If the price is not determinable for certainty from the deed, the taxable base is fixed to the ¾ of the real estate market value. Seller and purchaser are jointly responsible for the tax payment even if the tax is generally paid only by the purchaser.

Remark:
Without paying the "Grunderwerbssteuer" there is no registration in the Land Registry. Possible this will be checked by the notary and the land registry office.

Charge for the registration in the "Grundbuch"
The charge amount depends on the real estate value and on the typology of deed. The tax varies from the 0,8% up to the 1,2% of the declared value.
For mortgages the registration tax amounts to the 1,2% of the declared value.
This is charged by the land registry office and not by the tax authority.

Tax related to gifts and inheritances "Erbschaft und Schenkungsteuer"
Reference Law: Inheritance and Gift Tax Law on the 27th of February 1997 (and subseq. emend.).
Tax receiver: Länder
The tax varies from the 7% up to the 50% of the real estate values (it varies also if the transaction is an inheritance or a gift).
The rates vary in accordance with the degree of kindred between the donor and the beneficiary and with the real estate value.
Several deductions are subtracted from the taxable base in accordance with the degree of kindred between the donor and the beneficiary.

THE CADASTRAL SYSTEM IN ITALY

www.agenziaterritorio.it

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1 BACKGROUND INFORMATION

1.1 The history, legacy and aims of the Italian cadastral system

The Italian cadastre, an inventory of the real property present throughout the national territory, was implemented through the subsequent establishment of two distinct registers: the first (horizontal) – called *Nuovo catasto dei terreni*, the New Land Cadastre – comprising a list of all rural properties, and the second (vertical) – called *Nuovo catasto edilizio urbano*, the New Urban Building Cadastre – listing buildings for civil, industrial and commercial use.
These two registers, which were established for civil and tax purposes, were implemented over a lengthy lapse of time with the aim of solving the lack of territorial information and the structural non-homogeneity of old cadastres, where they existed, as well as the deep tax inequalities between the different pre-existing States that merged into the Italian State in 1861. More specifically, the founding objectives can be defined as follows:

- to ascertain the existing real property and highlight the changes therein;
- to equalize property taxes.

The establishment of the Land Cadastre, pursuant to Law n. 3682 of 1 March 1886, required several decades of work, also in view of the morphological and orographic features of Italy and of the warring episodes that occurred while the operation was in progress. The set-up was completed over almost the whole national territory only in the '40s (in some limited areas of the national territory the inventory work continued till 1956). The regulation for the "maintenance" of the Land Cadastre was approved with Royal Decree n. 2153 of 8 December 1938.

The Land Cadastre is geometrically configured in parcels, the minimum inventory items represented on the maps, containing information on both their geometric (topographic – shape and size) nature and on their technical and economic features (technico-physical characteristics and income).
The information is structured so as to be able to track building ownership via the names of the persons holding rights *in rem* on the real property and also the other way around, it is possible to trace the persons holding title to the real property as well as other types of cadastral information (size, variety of crops, productivity, etc.) through the elements identifying the real property or its location on the territory.
However, through the above mentioned Law n. 3682/1886 the cadastral system did not become homogeneous over the whole national territory. Owing to its high quality, the pre-existing so-called "land book" system remained in force in some areas of the North of Italy (the provinces of Trento,

Bolzano, Trieste, Gorizia and in several municipalities of the provinces of Udine, Brescia, Belluno and Vicenza). This different type of system, which is undergoing specific updating processes, is essentially based on the principle of "concordance", whereby every real property update in the Land Book must concord with an analogous operation in the Land-book Cadastre. This concordance endows the system with a probative nature that does not exist in the cadastral system in force in the rest of Italy.
The establishment of the Urban Building Cadastre, which followed the Land Cadastre, was pursuant to Law n. 1249 of 11 August 1939, which was subsequently amended by Legislative Decree n. 514 of 8 April 1948. The relative implementing regulation was later approved with Presidential Decree n. 1142 of 1 December 1949.

The Urban Building Cadastre went into operation on the 1 January 1962 with homogeneous regulations throughout the Italian State (except for the province of Trieste, where it became operational on the 1 January 1966).
In order to guarantee full and homogeneous information on the whole national building asset, Law n. 133 of 26 February 1994 provided that the inventory of the Urban Building Cadastre also includes "rural" buildings whose functions were strictly instrumental to the management of farming estates and which were originally only registered in the Land Cadastre, through little information both technical and graphical. The Urban Building Cadastre, having thus become a unified database containing both urban and rural buildings, was later renamed "Building Cadastre".

The Building Cadastre is configured analogously to the Land Cadastre insofar as it contains both geometric (plans) and technical and economic (technico-physical characteristics and income) information on the minimum inventory item, i.e. the real estate urban unit, which will be further defined below.
Compared to the original approach, which was essentially aimed at fulfilling tax-related functions, the cadastral system (comprehensive of lands and buildings) progressively acquired an increasingly greater role also in the fulfilment of other tasks, which could be administrative, policy-oriented or economic, but that were nonetheless connected to land administration issues.

1.2 The evolution of the institutional and organizational structure of the Cadastre

The laws that provided for the establishment and maintenance of both the Land Cadastre and the Building Cadastre also provided that they were managed by the Ministry of Finance.
The management was assured, up to 1991, by the *Direzione Generale del Catasto e dei Servizi Tecnici Erariali* (Directorate General of the Cadastre and of Technical Revenue Services), one of the 11

Directorates General comprised in the organization chart of the Ministry, through its peripheral provincial offices which were originally called *Uffici Tecnici del catasto* (Technical Offices of the Cadastre), subsequently *Uffici Tecnici Erariali* (Technical Revenue Offices) – today *Uffici del Territorio* (Land Offices). The Land Cadastre Offices and the Urban Building Cadastre Offices, each of which made up a Section, were part of a broader Technical Revenue Office that, in addition to performing cadastral tasks, also provided technical consultancy to the Revenue Service and to all the State Administrations that were not endowed with in-house technical departments. First and foremost among said consultancies stands the appraisal of real estate properties for the purpose of applying indirect taxes.
Law n. 358 of 29 October 1991, which reformed the Finance Administration, provided to group the original 11 Directorates General into:

- 3 Departments (Customs, Revenue and Land);
- 1 Directorate General for General Affairs and Personnel.

The Cadastre thus falls under the competence of the Department of Land, together with the Real Estate Rights & Mortgage Registers.
The aim of the legislator was to group into a single structure all the offices handling land information of interest to the Finance Administration, comprising:

- a descriptive and fiscal inventory of all real estate properties (cartography, data of the Land Cadastre and of the Urban Building Cadastre);
- an inventory of the State's public property portfolio and public domain assets;
- the Real Estate Rights & Mortgage Registers enabling the tracking of title to real property.

The aforesaid reform of the Finance Administration was subsequently amended by Law n. 59 of 15 March 1997 and by the relative implementation decrees.

More specifically, Presidential Decree n. 112 of 31 March 1998 provided for the decentralization of cadastral functions by transferring the competence for cadastral issues to Municipal Authorities.
With this reform, aimed at delegating the task of updating cadastral data to Local Authorities, the intention of the law-maker was to make cadastral information on real property available in offices that had a more capillary distribution over the territory and that were already handling other important kinds of information. The ultimate aim was to establish a land information database that can be shared,

integrated, correlated and harmonised with those existing in other sectors of the Public Administration or in external agencies, in order to achieve the following objectives:

- optimizing real estate taxation systems;
- optimizing the land management information system;
- optimizing customer services (to users, companies, professionals, agencies and other Administrations, etc.);
- striving for greater consistency between the technical information on real estate properties and legislative provisions, with a view to guaranteeing the certainty of title.

Lastly, Legislative Decree n. 300 of 30 July 1999 set forth the comprehensive reform of the Finance Administration by removing the Departments and creating the Tax Agencies. The *Agenzia del Territorio*, the Italian Land Agency, which began operating on the 1 January 2001, was assigned both cadastral functions (cartography and other cadastral data) as well as functions associated with the Real Estate Rights & Mortgage registration system.

Law n. 296 of 27 December 2006 gave new momentum to the decentralization process which had by then come to a standstill. According to this law, the State maintains the task of setting the "rules" (how to maintain the inventory and assess the cadastral incomes) and, above all, the task of guaranteeing a homogenous and certified management of cadastral data and updating inputs, with a view to establishing a real property register that might be homogeneous throughout the territory.
Moreover the State, through the *Agenzia del Territorio*, undertakes to assure the management of the cadastre on the basis of ad hoc covenants with the Local Administrations that do not intend to exercise themselves the functions conferred to them by law for their territory of competence.

1.3 Organizational and financial aspects of the cadastral Administration

As was already mentioned, the administration of the cadastre is currently entrusted to the *Agenzia del Territorio*[1]. The Agency, a non-economic public body operating under the control of the Ministry of Economy and Finance, is endowed with great regulatory, administrative, asset-management, organizational, accounting and financial autonomy.

The organizational structure of *Agenzia del Territorio* is configured around 9 Central Directorates, which are assigned with the task of setting guidelines, planning and control, 19 Regional Directorates, assigned with

[1] The decentralization of the State's cadastral functions to Municipalities, pursuant to the above mentioned Presidential Decree 112/98 and also considered under the more recent Law 296/2006, to date has not yet been implemented.

the task of coordinating and controlling local sub-structures, and 103 Provincial Offices, with essentially operational tasks, thus guaranteeing a capillary institutional presence throughout the national territory.
The relations with the Ministry of Economy and Finance are regulated through a three-yearly Covenant (which is updated on a yearly basis) that defines the annual objectives to be achieved and provides for the allocation of funds that represents the Agency's main source of finance[2].

2 THE CONTENTS OF THE INFORMATION SYSTEM

The Italian cadastral information system comprises 4 databases which are different in nature (alphanumerical or graphic) although they are closely inter-correlated:

- the Cartographic database;
- the Land Cadastre database (alphanumerical);
- the Building Cadastre database (alphanumerical);
- the plans database of real estate urban units.

As already said, the minimum inventory item comprising the core of the Land Cadastre is represented by the land parcel. The conventional definition of a land parcel is a continuous piece of land located in a single municipal area, owned by one or more personal or juridical persons, planted with a homogeneous type of crop (variety) and level of productivity (class). The Land Cadastre database contains technical, physical, legal and economic information on each single parcel. The cartographic database, with its cadastral maps, defines the parcel's shape and location on the territory.

Conversely, the minimum inventory item comprising the core of the Building Cadastre is represented by the real estate urban unit. The conventional definition of a real estate urban unit is a portion of a building (for example, a dwelling, a shop, an office, etc.), a whole building (for example, a hospital, a hotel, etc.), a group of buildings (for example, an industrial plant) or an urban area that is independent in terms of its functions and profit capacity.

The Building Cadastre database contains technical, physical, legal and economic information on each single real estate urban unit. The plans database contains graphic representations (distribution of rooms on different floor levels) of the real estate urban units, placed in each building.

[2] Additional funds, albeit more limited in nature, come from the provision of particular services offered on the market which, however, are not normally associated with cadastral functions but with other functions customarily assigned to the Agency (first of which is the advice and appraisal provided to other Agencies and Public Administrations).

2.1 The cartographic database

The establishment of the Land Cadastre (Law 3682/1886), officially gave way to the constitution of the Italian cadastral cartography. By providing for the development of a national inventory of real property both in rural and urban areas based on a geometric parcel configuration, the aforesaid law was intended to overcome the considerable differences in cadastral contents and methods (where these existed) in use prior to the unification of the Kingdom of Italy[3], with the aim of ascertaining real estate ownership, tracking the changes thereto and determining the taxes thereon.
Thus, the establishment of a cadastre based not only on surveys but also on measurements entailed the need to represent the shape and the extension of single land parcels – the minimum inventory item of reference – and represent them on maps linked to trigonometric points, which subsequently went to constitute the official national cadastral cartography[4].

The specific task assigned to cadastral cartography is therefore to represent the real-property consistently with the different real estate rights claimed on them, an aspect that, among all the official cartographies held by the State, can only be found on cadastral maps. This is the reason why one of the fundamental elements of cadastral maps is represented by the boundary lines between different estates that divide them into separately parcels. Through the map it is also possible to determine the area of parcels: a particularly relevant element in the case of agricultural land, insofar as it is taxed in proportion to its area.

As already mentioned above, the Italian cadastral cartography was mostly formed through direct detailed field measurements based on topographical methods (tacheometry, alignment marks, surveyor's cross-staff, etc.), which meant that several decades had to go by before it was completed, for most of the national territory, in the '40s, leaving out only limited territorial areas on which measurements were finalized only in 1956. Cadastral maps normally refer to a municipal territory[5] and are subdivided into sheets, identified through progressive cardinal numbers.

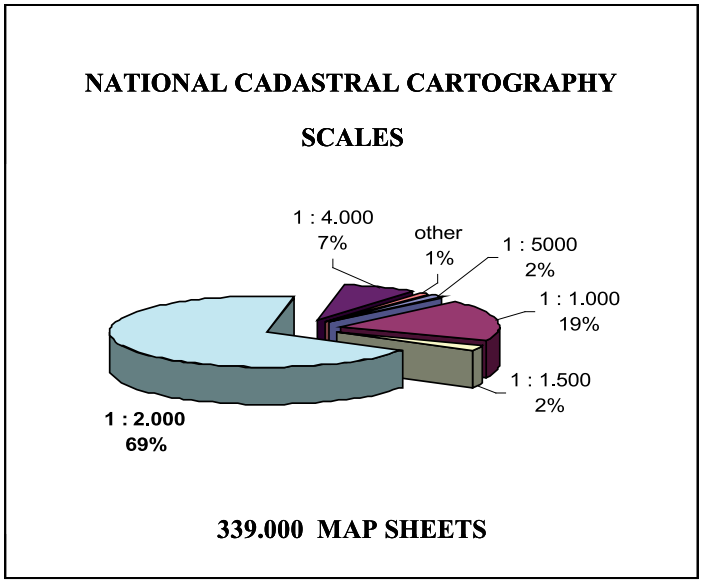
Cadastral cartography may be defined as a "large scale" representation. Indeed, cadastral maps are normally in a scale of 1:2.000. Instead, towns and their relative expansion areas, as well as those portions of the territory in which the average area of a parcel is less than 20 ares are in a scale of 1:1.000. In Municipalities in which this subdivision exceeds the 75% of the territory, the whole municipal maps are in scale of 1:1000.

For the portions of territory in which the average parcel area is not less than 5 ha (mountain areas in which estates are not highly subdivided and in which no relevant parcel changes are expected), the map

[3] The cadastral systems that existed prior to the unity of the Kingdom of Italy were greatly non-homogeneous: some were geometric while others were descriptive, some lacked triangulation, measurements and sometimes even representation scales.
[4] Law n. 68 of 2 February 1960 established the Administration of the Cadastre and of Technical Revenue Services (now, *Agenzia del Territorio*) as one of the cartographic bodies of the Italian State.
[5] In some cases, the municipal territory is subdivided into census sections and the cadastral map was formed on the basis thereof.

is in a scale of 1:4.000. Lastly, the portions of the territory in which average parcel area is less than 3 ares are represented in a scale of 1:500[6].
In relation to the scale of representation used, the national cadastral cartographic database is subdivided, at present, as follows:

1: 500	5,000 maps;
1:1000	85,000 maps;
1:1500	7,000 maps;
1:2000	216,000 maps;
1:4000	23,000 maps;
other scales	3,000 maps.



The original paper map sheets, whose standard format is 70 x 100 cm, are configured as "closed perimeter" maps, in the sense that the portion of territory represented on each sheet is enclosed within a polygon commonly defined as a "sheet boundary" wherein each parcel is entirely projected onto a single map sheet and its identification, which follows a sequential numbering system for each Municipal area and for each sheet, is consistent with the data contained in the corresponding cadastral database (which will be mentioned in the following paragraph) in which information relative to single

[6] The use of a different scale of representation from the ones listed above, although possible, would have required the express authorization of the Cadastre Administration.

Municipalities is stored according to the reference number of the parcels and of the sheets on which they are represented. When it became necessary to up-scale some particular portion of territory that was on a map sheet in a smaller scale (2.000, 4.000 or 1.000), the portion was, wherever possible, "enlargements" onto the free space on the same map sheet. When such a procedure was not possible due to the lack of free space on the map sheet, said detail was represented on a separate map sheet, thus giving rise to the so-called "annexes".
In relation to the identification of single map sheets, it should be noted that:

- the census sections in which the Municipal area is eventually subdivided are indicated in capital letters (A, B, ...);
- the map sheets are identified by means of Arabic numerals (1, 2, ...);
- the "enlargements" are identified by means of a capital letter written into the perimeter of the area of the map sheet that is enlarged and reproduced at the top of the up-scaled graphic drawing located on the same map sheet;
- the "annexes" are identified by means of Arabic numerals (1, 2, ...).

Today, the Italian cartographic database, which covers the whole national territory (roughly 300.000 Km^2), comprises 339,000 maps, of which:

- 278,000 ordinary map sheets;
- 20,000 "annexes";
- 41,000 map sheets containing "enlargements".

As for the contents, cadastral maps show:

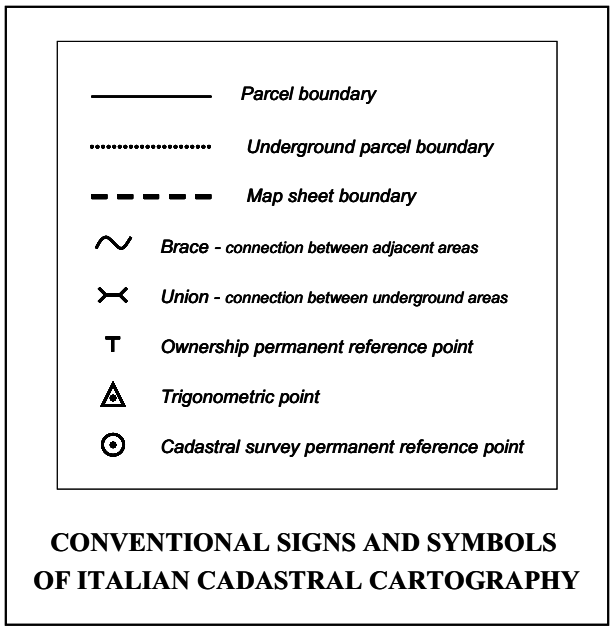
- a) the territorial boundaries of Municipalities, Provinces, Regions and of the State, the boundaries of census sections, sheets, enlargements and annexes, as well as the boundaries of the areas under easement or lien (easement for military purposes, forestry constraints, defence consortia, drainage and reclaim);

- b) the boundaries of portions of land making up separate land parcels and those bordering spatial areas occupied by roads, squares, rivers, streams, lakes, ponds, canals and the like, all of which comprise public property;

- c) the trigonometric points and, more recently, the so-called "cadastral survey permanent reference points"[7];

- d) the isohypse or altitude points (on integrated altimetric relief maps).

The table lists the principal conventional signs and symbols used on Italian cadastral cartography. Curved lines are always represented by a series of straight lines. This allows, by knowing the coordinates of the vertexes, to perform the analytical calculation of the area of parcels.



CONVENTIONAL SIGNS AND SYMBOLS OF ITALIAN CADASTRAL CARTOGRAPHY

In the course of the few decades (1886 - 1956) that proved necessary to create the cadastral cartography of the whole national territory, the cartographic projection system used was not always the same. In fact, it is possible to find cadastral maps that were created by using the Sanson-Flamsteed equal-area cartographic projection system, the Cassini-Soldner aphylactic projection and the Gauss-Boaga conformal projection systems (besides other, very little used, systems).
Pursuant to Law n. 3682/1886, the Sanson-Flamsteed projection system was abandoned, mainly due to the very large number of axes with a limited extension that were required in order to limit the effects of

[7] A "cadastral survey permanent reference point" is an univocally determined and geometrically defined topographic detail liable to be used as point of reference for any measurement associated with cadastral updating operations and with the drafting of geometric updates by professionals. The "cadastral survey permanent reference points" can not only be identified through their position on the map but also through descriptive monographic datasheets.

distortion, in favour of the Cassini-Soldner projection system, which was subsequently used in creating the great majority of Italian cadastral cartography.

Many of the cadastral maps previously created through the Sanson-Flamsteed projection system (some provinces of central/northern Italy) were subsequently projected in the Gauss-Boaga system.
The reference grid used in the determination of coordinates relies on the geodetic grid of the *Istituto Geografico Militare*, order I, II and III, the density of which is increased with grids and sub-grids, containing the above-mentioned "cadastral survey permanent reference points" in order to show greater detail.

The geodetic system used in creating the most Italian cadastral cartography refers to the Genova oriented (definition 1902) Bessel ellipsoid.
In order to limit distortions in the projection system used, cadastral maps refer to different local reference systems (polycentric cartography). Out of these local reference systems, 32 have a wide extension (including one or more adjacent provinces) and cover two-thirds of the national territory, while another 817 have a narrow extension and cover a little less than one third of the national territory.

However, not all the cadastral maps were created through direct field surveys using a well-defined and adequately oriented reference system of coordinates, following the "closed perimeter" logic described above. This is true for pre-Unification cadastral maps (former Austrian cadastre, the Pontifical cadastre, the Modena cadastre, etc.) that, even if they were sometimes fit to be used in creating the Italian Cadastre, they were nonetheless completed, reviewed and updated, although they were not originally linked to the vertexes of trigonometric grids.

In 1940, the Gauss-Boaga projection system was firstly only introduced with geodetic functions connected to the calculation of triangulations, but was later used in 1946 also for cartographic purposes, with the aim of creating the Italian cadastral cartography. Approximately ten Italian Provinces are wholly or partly endowed with cadastral maps created through this projection system.

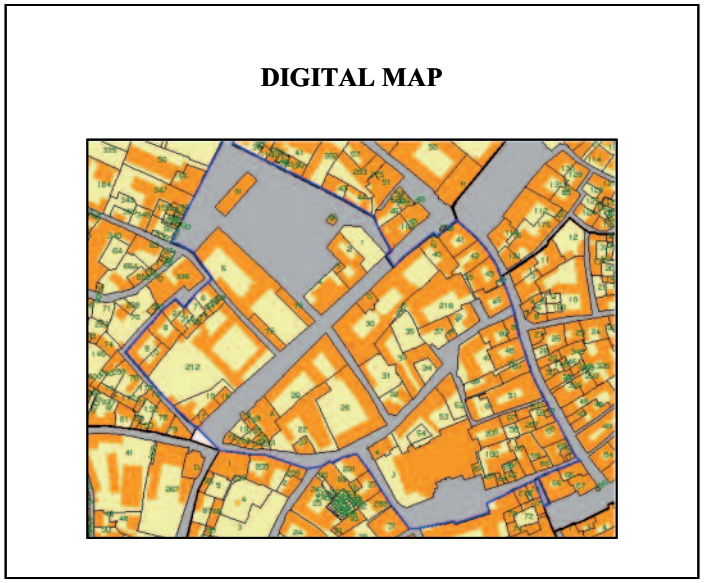
ORIGINAL PAPER MAP SHEET

With a view to keeping in check the progressive deterioration of the cadastral maps, which were originally produced on paper (originals on hard paper copy, transparent plastic templates, paper copy for users searches), a digitalization and computerization project was launched in '80s to handle cadastral cartography databases.

That computerization, initially started with the direct digitalization of the original paper map sheets, afterwards continued with the conversion of paper map sheets into raster images and, finally, through their digitalization in order to create vector graphics.
In consideration of the way a cadastral map is created, the latter reveals to be topologically consistent only inside the single map sheet, as a topology does not exist across adjacent map sheets.
The Italian cadastral cartography, wholly available in vector format, is managed through a single GIS application system called WEGIS (Web Enable GIS) throughout the national territory, which operates in a Web environment. This application software's functions make it possible to query cartographic databases, provide users (professionals, citizens) with abstract of cadastral maps upon request, update cadastral cartography in vector format either through digitalization procedures or by supplementing

updating inputs provided by professionals through the Pregeo software procedure (see updating procedures – paragraph 4.2.1).

With a view to facilitating the exchange of cadastral cartographic data with users (professionals, companies, other Public Administrations), the system makes it possible to export data in different formats (DXF, CXF, CML).



Cadastral cartography, which was originally mainly created for taxation purposes, is today assuming a vital role in a wide range of general land administration activities.
In addition to being a relevant information sub-system also if used on its own, cadastral cartography constitutes the support for the geo-referencing of all the other cadastral information, thus characterizing the cadastral database as a system that is not only time-linked (historical) but also geographically referenced.

The possibility offered of geo-referencing territorial information on a support that:

- targets an issue that is unique on the scenario of territorial data: boundaries of ownership;
- provides a large-scale representation of the territory (normally 1:2000);

- is homogeneous and available throughout the national territory;
- is updated in real-time and on a daily basis thanks to the documentation submitted by professionals;
- is available in vector format,

has led to considering cadastral cartography as the core element of territorial information databases of both central and local Public Administrations.

Furthermore, cadastral cartography also constitutes one of the official cartographic bodies of the Italian State[8].

2.2 The Land Cadastre database

For each land parcel, the Land Cadastre database contains data relative to:

- **cadastral identification code**: this is an alphanumerical code comprising several information fields:
  - Name of the Municipality (a territorial area, normally coinciding with the homonymous administrative territory administered by local Municipal Authorities);
  - Section number (a territorial area that is not always present and that identifies a sub-portion of the municipal territory presenting homogeneous socio-economic features);
  - Map sheet number (which identifies the map sheet representing the territorial area in which the parcel is located);
  - Parcel number (which identifies, in a unambiguous way, the parcel on the map sheet);
  - Sub-parcel number (used exclusively to identify a specific portion of a rural building).

- **district**: this is an indication aimed at facilitating its location on the territory (address or zone naming);
- **type of crop**: this information is provided in a code number that refers to a general national classification system currently listing 113 different types of crop (sowable, meadows, vineyard, orchard, woodland – see Annex "A");
- **class (level) of productivity**: this information is provided in a code number expressing different potential degrees of soil production levels (class 1, class 2, and so on);
- **size**: expressed in hectares, ares and centiares of area;
- **cadastral income**: in the case of land parcels, cadastral income is subdivided into two separate economic data:

[8] See note n.4

- landlord income, intended as the part of the income arising from land ownership, that is net of any encumbrance on the property, except for taxes;
- agrarian income, intended as the earnings from working capital and from the intellectual work of the agricultural practitioner.

For tax-levying purposes, in the cases in which the tax base is determined through cadastral data, the landowner is taxable for the landlord income while the person running the productive agricultural practice is taxable for agrarian income.

In order to determine the cadastral income of single land parcel, it proved necessary to first determine the so-called "cadastral tariffs", namely the income (landlord and agrarian) per unit of area, calculated for each type and class of crop on the basis of estimates performed on specific farms of reference. The landlord and agrarian income from a land parcel can therefore be obtained by multiplying its area by the cadastral tariffs (landlord and agrarian) corresponding to the type and class ascertained. This income calculation approach also includes any income eventually arising from rural buildings.

Land parcels that, for their very nature, do not produce income are considered to be "exempt" and are not associated with any income data (e.g. the areas occupied by cemeteries, parks, the bed of rivers and streams, public lakes, national, provincial and municipal roads, etc.).

The cadastral tariffs currently in force, which are the outcome of the review provided for through a decree issued by the Ministry of Finance dated 13 December 1979, refer to the economic period 1978/79. In between cadastral tariffs revisions, landlord and agrarian incomes are updated through multiplier coefficients that are periodically established by law.

- **ownership**: natural persons (subjects) or legal persons (companies, agencies), holding title to the land parcel. Natural persons are identified through their name, surname and their place and date of birth, while legal persons through their corporate name, trade name and registered offices. In both cases, the afore-stated data are supplemented with the indication of the tax code number (an alphanumerical code number valid for use in relations with the Finance Administration) which univocally identifies the owner. For each owner, additional information is reported on the type of rights held (ownership, possession, use, usufruct, ground rent, emphyteusis) and on the share of interest held in the property, in case this is split.
- **changes**: this refers to the reference number of the deeds or actions that determine some change in the status of the owner (for example, transfer of real estate rights) or in the state of the land (for example "land parcelling out", the technical operation used to update the technical and physical features of the land parcel in consequence of a parcel subdivision), as well as to the date in which said changes were registered in the cadastral database. When changes are registered, the data relative to land parcels are time-linked for subsequent phases of search.

This makes it possible to ascertain the origin of the parcel and follow the chronological succession of the deeds that produced a transfer of real estate rights.

As for the present size of the Land Cadastre Database, the number of land parcels registered total roughly 82,200,000[9] (in 1956, on completing the start-up phase, they amounted to roughly 57,000,000); out of these, approximately 59,800,000 produce a cadastral income. The remaining land parcels concern areas containing buildings and other areas that are exempt from cadastral income valuation.
The Land Cadastre Database is now completely computerized and organized into an Oracle database.

2.3 The Building Cadastre Database

Analogously to the Land Cadastre Database, the Building Cadastre Database contains information on each real estate urban unit and namely:

- **cadastral identification code**: this is an alphanumerical code comprising several information fields:
  - Name of the Municipality (a territorial area, normally coinciding with the homonymous administrative territory administered by local Municipal Authorities);
  - Section number (portion, not always present, of the municipal territory presenting homogeneous socio-economic features);
  - Map sheet number (which identifies the map sheet representing the territorial area in which the real estate urban unit is located);
  - Parcel number (which identifies on the map sheet, in a unambiguous way, the building in which the real estate urban unit is located).
- **Sub-parcel number** (used exclusively in the case in which more than one real estate urban unit is located in the same building);

- **address**: this refers to toponymy that might be useful in locating the real estate urban unit, coded according to the official street guides provided by Municipal Authorities;
- **typology**: defines the permitted use of the real estate urban unit (residence, office, shop, stockroom, bank, industrial plant, cinema theatre, etc.), and, only for residential use, the building technical quality. This coded information refers to a general national classification currently listing 45 different permitted uses organized into 5 groups identified as letter A (residential use), B (public use), C (commercial use), D (industrial and special commercial uses) and E (uses of community

[9] Source: DWH *Agenzia del Territorio* (August 2008).

interest). The last two groups (D and E) identify real estate urban units having special technical features and, therefore, they are not very numerous. For inventory purposes provided for under civil law, particular real estate urban units that, for their nature or state of construction, do not have the capacity of producing income (unbuilt urban areas, real estate urban units under construction, etc.), are registered under a special typology (group F), bearing no indication of cadastral income (see Annex "B");

- **class (level) of productivity**: this is expressed only for the real estate urban units registered under typologies of groups A, B and C and is coded information outlining different levels of possible income (class 1, class 2, ...) normally connected to the features of the urban area in which the real estate urban unit is located;
- **size**: this is expressed differently according to the typology under which the real estate urban unit is listed. For real estate units listed under group A, it is expressed in number of main rooms[10]. For real estate units listed under group B, it is expressed in m^3, while for real estate urban units listed under group C, it is expressed in m^2 of net area. Size is not expressed for real estate units listed under group D and E.

In addition to the size information originally provided for in the founding law of the Urban Building Cadastre, the subsequent Presidential Decree n.138 of 23 March 1998 provided that size of the real estate urban units listed under typologies of groups A, B and C also be determined, at present only for internal use, in m^2 of gross area. It follows therefore, for example, that now the size of each civil housing unit (typology A/2) is expressed both in terms of number of main rooms and in m^2 of gross area;

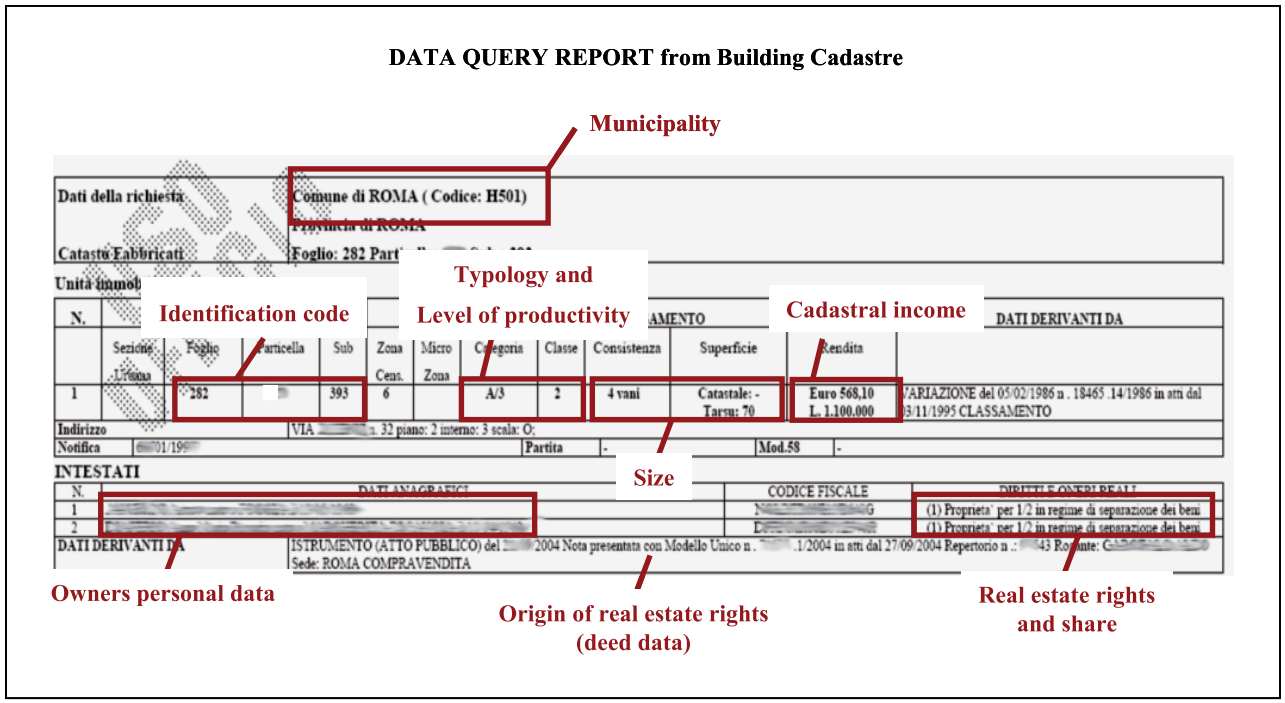
- **cadastral income**: is defined as the ordinary before-tax income that can be potentially produced from the real estate urban unit, after having detracted usual expenses for maintenance and eventual losses for vacant periods. For real estate urban units listed under groups A, B and C, the law provides for the determination of the cadastral income through a system of classes and cadastral tariffs. Thus, for real estate urban units belonging to the above-stated typologies, it first proved necessary to determine the so-called "cadastral tariffs", that represent incomes per unit of size for each typology and level (class) of productivity, on the basis of estimates performed on a sample of real estate urban units of reference. It follows therefore that the cadastral income of a real estate urban unit can be obtained by multiplying its size by the cadastral tariff corresponding to the typology and class of productivity under which it is listed.

In order to determine the cadastral income of the real estate urban units listed under typology groups D and E, the estimated value is on a unit-by-unit basis, and does not rely on the class and cadastral tariff system. The cadastral tariffs, and consequently the cadastral income, currently applied to real estate urban units refer to the economic period 1988/89, pursuant to the estimate

[10] A main room is considered to be a space enclosed within walls or partitions from the floor to the ceiling, generally receiving direct light and having free floor-space, thus considered to be standard under the typology or class in which it is listed. The term "main room" normally refers to the rooms mainly used in the real estate urban unit (bedrooms, kitchen, living room). Each supplementary room (bathrooms, cabinets, corridors, etc.) is calculated to amount to 1/3 of main room. Their over-all size is rounded off to amount to 1/2 of main room.

revision provided for by a Decree of the Ministry of Finance of 20 January 1990. In between cadastral tariffs reviews, cadastral income levels are updated through multiplier coefficients established by law;

- **ownership and changes**: the indication of the owner, the title and percentage of ownership, their changes and those related to the technical feature of real-estate urban units, occur according to the very same procedures described above in relation to land parcels registered in the Land Cadastre Database.



As for the size of the Building Cadastre Database, the number of real estate urban units registered totals roughly 63,400,000[11]; out of these, approximately 56,000,000 produce a cadastral income. The remaining real estate units involve "unproductive common property[12]" or real estate units that do not produce a cadastral income (group F).

As in the case of the Land Cadastre Database, also the Building Cadastre Database is now wholly computerized and organized into an Oracle database.

[11] Source: DWH *Agenzia del Territorio* (August 2008)

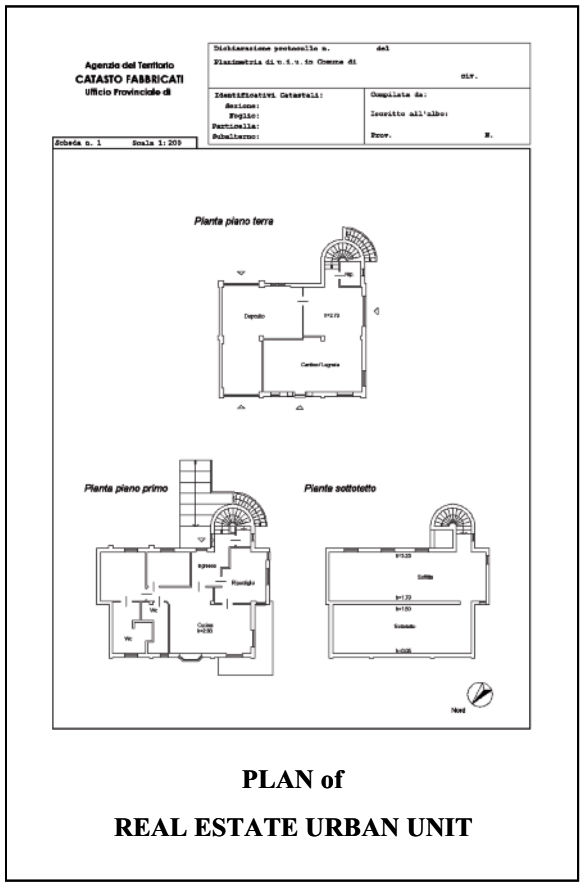
2.4 Plans Database of Real Estate Urban Units

In addition to the registration information described above, the Building Cadastre Database also includes graphic information. More specifically, each real estate urban unit comes complete with a planimetric representation (distribution of rooms on different floors) that is normally projected in a scale of 1:200[13]. Unlike all the other types of information described above (cadastral and cartographic data), the planimetric representations of real estate urban units, which were originally required in order to support cadastral income assessment procedures (through the attribution of typology, class and the computation of size), can be accessed, for requesting a copy or certificate, only by the rightful holders of title thereto or by the proxy-holders thereof.

The real estate units that do not require cadastral income assessment are represented through a special graphics datasheet that defines their shape and position within the building in which they are located.

The Plans Database of real estate urban units is now entirely computerized and cross-referenced with the Building Cadastre Database through the cadastral identification code of real estate urban units. While existing plans on paper support were entered into the Plans Database through the acquisition of their raster images, starting from the beginning of the '90s, thanks to the automation of updating procedures (see the Docfa procedure), new real estate urban units (new buildings or changes to the units already registered) are entered into the information system with attached their planimetric representation already in electronic format, which is provided directly by the professional concerned.

Well beyond initial expectations, the plans database contains information on the entire national building stock (vertical cadastre) and, with the passing of time, has become an essential tool not only for civil law-regulated transactions (the transfer of real estate rights), but also for broader administrative purposes aimed at land and urban planning and management.



PLAN of

REAL ESTATE URBAN UNIT

[12] "Unproductive common property" refers to the common property belonging to several real estate units that do not independently produce an income (community courtyards, staircase wells, etc.).

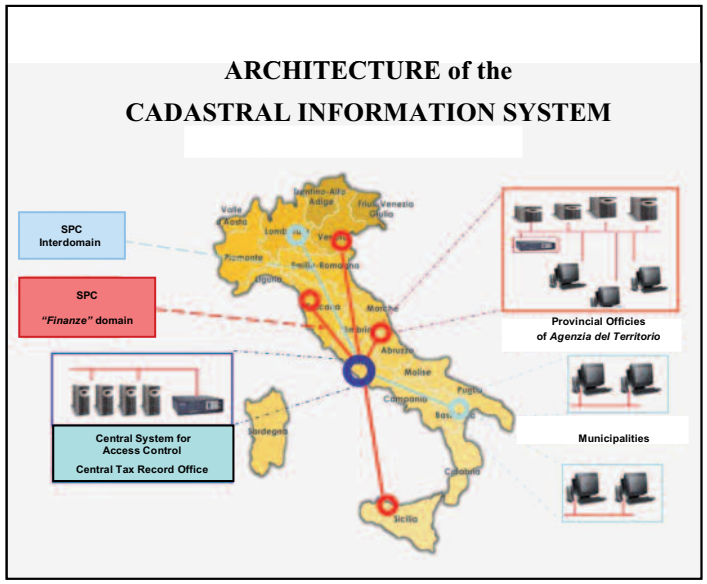
[13] In consideration of the standard format used in planimetric representations, if the characteristics of the real estate urban unit require it, representations in a scale of 1:100 or 1:50 can exceptionally be accepted.

3 THE TECHNOLOGICAL INFRASTRUCTURE

The Cadastre's information system is supported by a technological infrastructure that evolved and was upgraded starting from the '70s, passing from a mainframe architecture – networked terminals containing electronic databases – to a client-server architecture containing relational databases in 2000, and to a web architecture in 2003.

The web architecture enables continuous and simultaneous software updates for all users, thus assuring system alignment through the latest and continuously developing IT procedures. Furthermore, this architecture provides access to information databases to new organizations and users in compliance with IT security requirements as, for example, is required in decentralizing cadastral functions to Municipal Authorities.

The architecture of the Cadastre's IT system is still to date structured around a central component and peripheral elements. Information is stored in both central and peripheral data banks. The central data banks are located at the Electronic Data Processing (EDP) Center of the Central Tax Record Office at the So.Gei.I. S.p.A.[14] headquarters; the peripheral systems are instead located at the Agency's Provincial Offices, each of which hosts a local network linking workstations to the Office's systems. In turn, the Office systems are connected to the central systems of the Central Tax Record Office through the network of the "*Finanze*" domain belonging to the Public Connectivity System (SPC – *Sistema Pubblico di Connettività*).



The cadastral databases – cartography, Land Cadastre Database, Building Cadastre Database – are hosted at the server systems located in the EDP Center of the Provincial Offices and store information on real estate property sited in the Office's provincial territory of competence. Said information is also stored in the central Integrated Data Bank, which also contains mortgage information and provides online services addressed to external users.
Information is accessed through the central Access Control System which validates user identity and controls user authorization, namely the user's right to operate on the database. The Access Control System for internal users is integrated with the Human Resource personnel record and applies automatic user disabling rules.

The technological infrastructure's flexibility has made it possible to rely on telework in assigning tasks, also in consideration of the distribution of human resources throughout the territory. The gain in efficiency has made it possible to drastically reduce the backlog of arrears.
The *Agenzia del Territorio* provides online services to general users, professionals and to external Institutions (Municipal Authorities, Public Institutions), which can be accessed through the Internet, the Public Connectivity System (SPC) or through private networks holding a dedicated link.
Thanks also to the fact that cadastral data query reports are free of charge, online users have currently hit a peak of 170,000.
The central online access points are protected by "firewall" systems that filter and control connections;

- by only enabling the traffic necessary for the provision of the service requested and for which the user is authorised;
- blocking access to the Agency's other resources;
- protecting the system against attacks waged through the network.

As to the type of user, the type of service and the type of data handled, suitably sound authentication mechanisms are in place as well as adequate access transmission channels.
Some of the services providing for the transmission of documentation by the user utilize the Agency's digital signature or advanced electronic signature, with a view to guaranteeing the completeness, confidentiality and non-repudiability of communications.
On the Internet, the exchange of information necessary for user authentication and for accessing data content is kept confidential through the use of network encryption (SSL protocol). The services available on the Internet are delivered through central servers on a dedicated (demilitarized, DMZ) network,

[14] So.Ge.I. S.p.A., ICT company wholly held by the Ministry of Economy and Finance, is the technological partner of the *Agenzia del Territorio*.

separated from both the Internet and from the Internal Revenue Administration by a firewall system. Throughout the decentralization process of cadastral functions to Municipal Authorities, the Public Connectivity System (SPC) shall assure a secure connection to Local Public Administrations (PAL). Users operating on cadastral databases of Municipal Authorities shall use the same office applications of the *Agenzia del Territorio* and the same centralized "Unified Access Control" system and shall have to follow the user handling rules set out by the Agency in order to meet online information security requirements.

4 UPDATING PROCEDURES

4.1 The updating procedures and the players involved

Whereas it was the State that established the Cadastre, its updating processes are essentially delegated to real estate or land owners, through professionals.
The State, in addition to managing the databases, has full competence over the following activities:

- creating new cartography;
- performing topographic surveys of public interest;
- checking and validating updates submitted by the professionals;
- performing ordinary (five-yearly) and extraordinary revisions of registrations.

In order to present almost all the documents required for the updating procedures, users must avail themselves of licensed professionals (engineers, surveyors, etc.).
It follows therefore, that the updating of cadastral databanks can either be done by the cadastral offices or directly by the parties and may concern changes on the objects (variations in the physical state of the property and/or in their income potential) or in the subjects (variations in the real estate rights).
A particular form of *ex officio* revision is the review of cadastral tariffs and of the classification of land parcels or of real estate urban units. These revisions can either be general, if extended to the whole national territory, or partial, if limited to the whole or part of a Municipal area or to several such areas. The revision of cadastral tariffs becomes necessary when these need to be updated or integrated in order to add new crop varieties, real estate urban typologies and classes within a given Municipal area. Instead, the revision of classification consists in performing checks on the type of crop, typology and class assigned to single land parcels or real estate urban units against their actual state and condition, the real estate market trend and changes in urban quality (local provision of public and private facilities and infrastructures).

With reference to the Land Cadastre, the changes that need to be notified by private parties concern variations in the size, shape or type of crop of land parcels and are activated through the submission of the following type of updating documents:

- **land parcelling out**, the subdivision of one or more existing parcels with the aim of creating new parcels different in shape and size, is generally filed when a parcel is about to be sold, with the aim of establishing proportional rights on different portions of the parcel. Thus, the primary object of the survey is constituted by the dividing lines;
- **building representation on the map**, which is required when a new building or other permanent construction is built or expanded on a parcel. The primary object in this case is constituted by the outlines of the buildings and possibly also by the definition of the area of pertinence. The procedure also requires that a declaration be filed with the Building Cadastre containing the real estate urban units involved in the change;
- **crop variation**, in case the parcel is planted with a different crop from the previous one, which might entail an increase or a decrease in cadastral income;

With reference to the Building Cadastre, the technical updating documents concern:

- **new building**, which is required when a new building or other permanent construction is built. The filed updating document includes both cadastral data (size, typology, class, cadastral income) and plans for every real estate urban unit located in the new building;
- **variations in the state or size of registered real estate urban units** arising from restructuring work entailing an increase or decrease in their cadastral income or a different distribution of interior spaces (changes in the representation).

In all the above-listed procedures (except for the variation of crop on a given land parcel), the interested party must request the assistance of a licensed professional in order to prepare and sign the technical updating documents required by the *Agenzia del Territorio*.

The changes involving subjects mainly concern applications for ownership changes registration, that are required anybody under the obligation to register the civil deeds or court decisions producing a transfer of the rights registered in the cadastre (public notaries, officials certifying public deeds, court clerks, etc.).

The same obligation to file an application for cadastral registration changes applies to the transfer of property rights consequent to death, on the part of anybody under the obligation to file for succession rights.

4.2 Software packages for professionals and users

Thanks to the computerization of cadastral records, the Cadastral Administration has progressively adopted procedures aimed at enabling users to submit online applications for cadastral registration changes in digital format so that the resulting proposed updates might be registered in databanks in real time, with the specific intent of not creating a back-log of outstanding updating documents, as was customary in the past.
The application software, developed by the *Agenzia del Territorio*, is made available to users (both professionals and not) free of charge (it is possible to download them directly from the website of the *Agenzia del Territorio* – www.agenziaterritorio.it).

The procedures involve all aspects of the cadastral updates described above, and specifically those of a descriptive nature containing information on the personal data of owners, on the characteristics of real estate assets and on those affecting the valuation thereof (including the computation of a proposal, not definitive, for cadastral income), as well as those connected to cartographic aspects.
These procedures were provided for by Decree n. 701 of 19 April 1994 of the Ministry of Finance, within the framework of the automation of the updating process of Cadastre and of Real Estate Rights & Mortgage Register pursuant to Laws n. 75 of 24 March 1993 and n. 133 of 26 February 1994.
The software application packages are the following:

- PREGEO (PREtrattamento GEOmetrico) – is used to configure cartographic updating operations (land parcelling out prior to parcel sale and introducing the geometry of buildings on the lots following their construction). This software package, version n.10, allows the automatic updating of geo-database and the land cadastre database without the need of cadastral officer assistance,
- DOCTE (DOcumentazione Catasto TErreni) – can also be used directly by users holding title on rural parcels in order to file cadastral changes arising from variations in the variety of crop grown on the land parcel possibly affecting the cadastral incomes (landlord or agrarian) thereof.
- DOCFA (DOcumentazione Catasto FAbbricati) – is used to collect data on newly built real estate units or on pre-existing buildings subjected to variations;
- VOLTURA - can also be used directly by users holding title to the real estate property in order to file cadastral changes arising from variations in ownership consequent to deeds that do not require to be registered by the attesting official (who can dispose of other online procedures through which it is possible to change the name of the registered cadastral title-holder concomitantly to registering the rights thereof in the Register of Real Estate Rights & Mortgage, thus creating a continuum between the information contained in the two databases).

4.2.1 The PREGEO procedure

The PREGEO software was developed for professional technical experts operating in the cadastral sector and is used to prepare Land Cadastre (geo-DB and cadastral DB) updating files.

LAND CADASTRE UPDATING
PREGEO SW PROCEDURE

PREGEO processes the measurement data contained in the "survey file" and provides the position (coordinates) and accuracy of surveyed points. It comprises a number of functions, including the following:

- entry of the measurement data and of the geometric description of the objects surveyed;
- description of the cadastral operations required for geometric updating procedures (subdivision, groupings, type of crop or class variations of land parcels), that cause changes in land cadastre database;
- display of the graphic representation of the object surveyed;
- management of the abstract of maps issued by the Office or self-configured;
- drafting of the updating proposal (updated abstract of map);
- preparation of the updating files to be submitted to the cadastral office;
- preparation of the updating files to be submitted or transmitted online;
- printing out of the updating file with its control code number.

4.2.2 The DOCTE procedure

The DOCTE software programme was developed in order to facilitate the registration of variations in the cadastral income of land parcels.
This procedure makes it possible to assign a new variety of crop to land parcels undergoing variations, as declared by the party concerned, while automatically showing the prevailing class existing on the map sheet. In case the crop variety indicated does not exist in that map sheet, the system automatically provides the average class present in that Municipality.

LAND CADASTRE UPDATING
DOCTE SW PROCEDURE

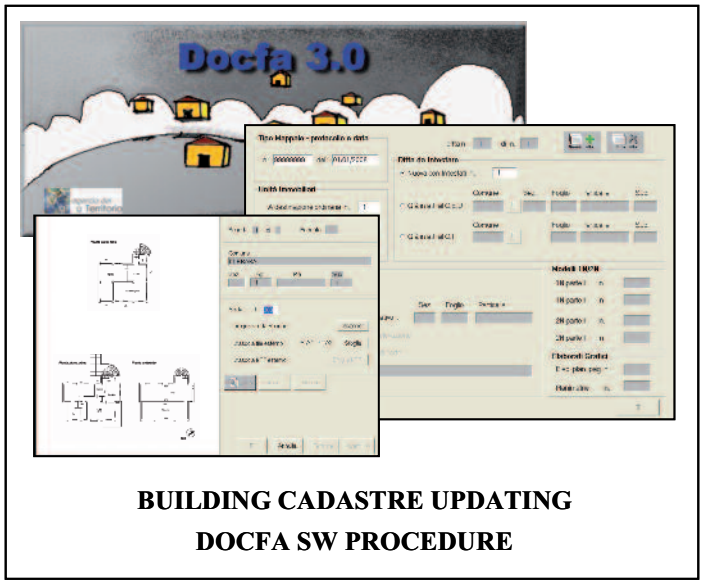
In case no such variety exists in the Municipality, the procedures controlling cadastral change registrations will issue an alert in relation thereto so as to enable the cadastral Office to process the variety declared by the party concerned.
The automatic attribution of a class is also performed on all the portions in which the land parcel might be parcelled out.

Analogously to the procedure envisaged in the DOCTE software, as of 2007 the crop variety updating process is automatically activated also on filing applications for Community funds by practitioners in the agricultural sector.

4.2.3 The DOCFA procedure

The DOCFA application software is destined for use by professionals qualified to draft Building Cadastre updating files.

The procedure makes it possible to create files containing graphic and alphanumerical information on the real estate urban unit to be registered or changed in the cadastre; it enables the automatic registration of the identifying elements of the real estate urban units in the databank.



BUILDING CADASTRE UPDATING
DOCFA SW PROCEDURE

The procedure's innovative breakthrough is dramatic as it features functions enabling it to assign typology, class and size (and consequently also cadastral income) to the registered real estate urban units thanks to an algorithm referenced on the (declared) characteristics affecting income.

In the case in which, on the basis of the specific peculiarities of a real estate urban unit, the software-determined cadastral income were to result wrong, professionals are given the option to propose a different cadastral income for the real estate urban unit instead of the one automatically provided by the procedure.

Said cadastral income is registered in the cadastral database as "proposed" until the cadastral Office carries out suitability control through a computerized, conventional or sample-based assessment thereof within 12 months after submission (the term is regulative and not peremptory).

The change options that can be processed with this application software concern:

- a change of size (the extension of the real estate urban unit, the grouping of several units, parcelling out prior to the transfer of property rights, etc.);
- variations in the graphic representation (different distribution of interior spaces);
- variations in cadastral income (especially permanent changes consequent to, for example, natural catastrophic events);
- variations in intended use.

The procedure also enables the processing of graphic representations (acquisition of the planimetric representation of every single real estate urban unit, computation of the size of the real estate urban units by defining homogeneous polygons representing the intended use of spaces, acquisition of specific graphic representations showing the eventual subdivision of the building into the different real estate urban units that comprise it).

4.2.4 The VOLTURA procedure

This software programme is destined to be used both by single individuals holding title to the real-estate property and by professionals.

CADASTRAL OWNERSHIP UPDATING
VOLTURA SW PROCEDURE

The software procedure makes it possible to draft digital cadastral registration change applications normally consequent to real estate rights transfers due to the death of the title-holder (successions, consolidation of usufruct, etc.) so as to facilitate the immediate registration of the change in ownership and thus achieve the direct and immediate updating of the databank.

This procedure completes the overview of the automatic procedures whereby to submit and enter cadastral registration changes. It supplements other procedures already in use aimed at updating the names of registered holders through the automatic collection of data relative to the transfer of rights, as listed in the Real Estate Rights & Mortgage Registration Office (automatic cadastral registration change from transcription notation – "*Nota*" procedure – and from a unified electronic form – "*Unidoc*" procedure).

At present, the use of the Voltura procedure, although it was conceived within the framework of the technological development of the Agency's information systems, is not mandatory but only supplements the traditional application procedures based on paper forms.

5 THE PROVIDED SERVICES

In relation to the different types of users interested in cadastral information, the services provided by *Agenzia del Territorio* may be classified as follows:

- services for individual users;
- services for professionals, public officials and companies;
- services for Municipal Authorities and Institutions.

5.1 Services for individual users

A ONLINE SERVICES

- **Online cadastral data query report**: there are different online searching/downloading options allowing users to obtain information on the real estate properties listed in the cadastral databank:
  - search/download of the cadastral income on the basis of the cadastral identification code of the land parcel or real estate urban unit – allows users to obtain information on

the cadastral income free of charge. It is sufficient to indicate the user's tax code number, the cadastral identification code and the Province in which the property concerned is located;

- search/download of cadastral data through the owner's tax code number – unlike requests based on cadastral identification code, this request procedure requires prior accreditation but nonetheless allows users to obtain, always free of charge, in addition to cadastral income and identification code, also other registered features and data relative to the ownership and the percentage of rights held therein by the registered owner;
- Certitel – cadastral documents – is a service provided by *Agenzia del Territorio* in collaboration with *Poste Italiane S.p.A.*, which allows users to receive, upon payment, via email or ordinary mail, all the cadastral documents requested.

- **Contact center**: this service targets users who find inconsistencies in their property's cadastral status and allows them to submit an online request to correct cadastral data. In order to access the service, it is sufficient to fill in a form with the user's name and surname, email address, the error detected and the correction requested. The sent emails are processed by the Contact Center, which automatically sends the user notice of the processing status of the request, including a reference number, for eventual further communications. The request may be directly processed by the Contact Center or forwarded to the competent Provincial Office. In either case, the user receives the answer on the outcome of the query via email. If the problem is not among the issues dealt with by the Contact Center, the user is notified by email that the problem cannot be solved via webmail. The issues handled are: correcting errors relative to the registered owner of the property, correcting errors on building data, requesting the registration of a deed issued by the Building Cadastre, the assignment of the final cadastral identification code, requesting the digitalization of plans, the registration of a deed issued by the Land Cadastre, the registration of a crop culture variation, the correction of parcel duplicates, notifying errors in the reports of "cadastral survey permanent reference points";
- **Consulting crop variations**: it is possible to access an online service in order to consult the lists of land parcels updated *ex officio* on the basis of declarations submitted to AGEA (*Agenzia per le Erogazioni in Agricoltura* – Agency for Agricultural Subsidies) by the subjects concerned, with the aim of applying for agricultural subsidies. On entering the cadastral identification code for a parcel (Province, Municipality, Section, Sheet and Parcel) information is displayed on its cadastral variety of crop, class, area and landlord and agrarian incomes;
- **Building not declared and ex rural**: it is possible to view online the parcels on which *Agenzia del Territorio*, through photographic identification operations from images of the territory conducted in collaboration with AGEA, and through the subsequent automatic cross-referencing

thereof with the Cadastre's databanks, has ascertained the presence of buildings or extension of buildings that are not registered in the Cadastre. The same type of search can be performed for buildings that, having lost the specific requirements characterizing them as rural, must be registered by owners in the Building Cadastre Database.

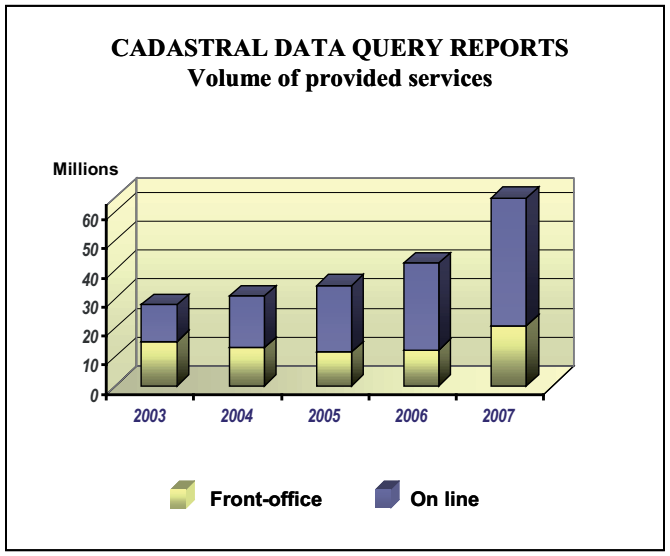
B FRONT-OFFICE SERVICES

- **Cadastral certificates**: the expression "cadastral certificate" refers to the certified representation of the contents of cadastral database and of the additional documentation conserved in the records. Cadastral certificates may include abstracts, containing map representations and cadastral data, as well as the authenticated plans and other documents filed in the register. More specifically, certificates are the official way of acquiring identification and cadastral income relative to real estate property (land and buildings) and of verifying if a given person (natural or legal) holds a title thereto. Certificates are issued at the front-office desks of the Provincial Offices of *Agenzia del Territorio*, upon payment of the established special fees and of the tax stamp;
- **Cadastral data query report**: the data search in the cadastral database is generally followed by the issue, in the form of an unstamped paper copy, of the databank output. Its contents are the same as in a certificate but it does not have the legal validity thereof. It is issued free of charge.

5.2 Services for professionals, public officials and companies

Online booking service: it is addressed to all professionals, enabling them to book an appointment with the Agenzia del Territorio's offices, in which to submit the Docfa and Pregeo files. To access the service, it is sufficient to fill in the booking form in all its parts, writing in one's name, surname, tax code number, professional register/association of membership and relative registration number, email address and telephone number. Moreover, users shall have to indicate the service they intend to book and choose a date and time from the agenda displayed. Once the booking is completed, an email shall be sent to the user containing a summary of the data entered. At this point, the professional shall have to go to the office booked and bring along the print-out of the summary or simply the booking number issued.

Cadastral and Real Estate Rights & Mortgage online services: SISTer. Access to the *Sistema d'Interscambio Territorio* is given by undersigning a specific three-year covenant and enables professionals to consult both the databanks of the Cadaste and of the Real Estate Rights & Mortgage, as well as to transmit updating files online. On signing the covenant, which is necessary to receive the password to access the system, it is necessary to pay a lump-sum amount (to cover the administrative expenses arising from the convention). Once the covenant is signed and the password is assigned, professionals may consult the cadastral databank free of charge while access to the Real Estate Rights & Mortgage databank envisages the payment of the fees, as required by current legislation, for every query perfomed.



Access to this system is given through a link present on the website: www.agenziaterritorio.it.

The services that can be accessed are the following:

- **Cadastral data query reports**: it comprises advanced searching functions (diversified query keys, present-day and time-linked consultations, etc.) for the principal data contained in the Land and Building Cadastre databanks (with subsequent data printout). The system also includes a query function for "cadastral survey permanent reference points". The real-time consultation result is identical to the information provided at the front-office desk of the Provincial Cadastral Office, both in contents and in format;

- **Request and download of abstract of cadastral digital map** (for professionals);
- **On line submission of updating documents**: thanks to the application software (PREGEO, DOCFA, etc.) developed by *Agenzia del Territorio*, it enables users to submit documents online for the purpose of updating cadastral databases[15], monitor their processing status and receive the answer from the Office directly on their computers. It also gives online access to the competent offices of the Finance Administration (Real Estate Rights & Mortgage Offices, Fiscal Registry Offices, Cadastre Offices);
- **Support services**: these functions enable users to check data relative to the operations and cadastral data query performed as well as the relative debit memo, and to change the entry password used to access the system;
- **Cadastral services**: this function enables authorized users to perform sub-parcel number booking operations, request map abstract for updating purposes, etc.

Table of current "cadastral survey permanent reference points", Reciprocal Distances and Monographies: this service is available online and at front-office desks and enables users to obtain files containing the reciprocal distances between "cadastral survey permanent reference points" as well as the current list with relative monographic datasheets.
Software: it is possible to perform an online download of all the software packages necessary to update the Land and Building Cadastre databases.
Forms: it is possible to perform an online download of all the forms used by the Cadastre (cadastral registration change application form; notification and complaint form, etc.).

5.3 Services for Municipal Authorities and Institutions

In addition to the online searching/downloading services (SISTer) described above, *Agenzia del Territorio* has activated new online services (Portal for Municipal Authorities) with the aim of making cadastral data available to Local Authorities upon their request and with a view to facilitating the performance of their institutional activities. The system envisages two types of online services providing the Local Authorities concerned with data relative to their own territorial and institutional jurisdiction.
These are:

- "upon request" of all the Local Authorities concerned, the data published concerns all cadastral data – contained in both the Land and Building Cadastre databases and in the geo-database – updated at the date specified by the Local Authority and/or with the updates

[15] The same system is also used by public notaries in submitting documents online, for the purpose of updating the Real Estate Rights & Mortgage databank (Unidoc procedure, which also allows for the simultaneous updating of the cadastral databank in relation to the ownership , the registration of deeds with other revenue offices and the payment of taxes).

registered during a given time interval;

- "specific" for single Municipalities, namely the files containing the registration data relative to new real estate urban units or to changes in pre-existing units, the data resulting from the *Unidoc* procedure to be submitted for the application of the *Imposta Comunale sugli Immobili* (Municipal property tax), the retrieval or updating of all the metric data from the Building Cadastre Database (updated to the day of issue) for the application of the urban solid waste disposal tax, and the resulting cadastral income of single real estate urban units after having registered changes thereto.

Still remaining within the framework of the "Operational Cooperation and Digital Administration", *Agenzia del Territorio* has outlined technical and economic rules that apply to the use made of its data by other Administrations. The data is provided through the "Sistema di Interscambio" (**Automated Data Exchange System**) developed by the *Agenzia del Territorio* in compliance with the provisions regulating the *Sistema Pubblico di Connettività* (SPC – Public Connectivity System). The Data Exchange System meets the needs of those Local Authorities that, endowed with advanced information systems, are interested in an automated data exchange process that is unmanned, unlike the system established for the Portal for Municipal Authorities.

Local Authorities (Municipalities and other entitled Public Administrations) can also request cadastral data relative to their territory of competence, with the aim of retrieving information that might be useful in applying taxes, tax exemptions and local taxes.
Data on the situation existing at a given date can be requested from the competent Provincial Office of *Agenzia del Territorio* and time-linked, but limitedly to:

- objects contained in the Land and/or Building Cadastre Databases;
- subjects and ownership data contained in the Land and/or Building Cadastre Databases.

After processing the request and performing data-mining operations, the data are released in ASCII format on a magnetic support and encoded according to standard file record layout. Agenzia del Territorio also makes available the software used to read the information retrieved subsequent to data mining.

6 THE RELATIONSHIP BETWEEN THE CADASTRE AND THE REAL ESTATE RIGHTS & MORTGAGE REGISTRATION OFFICE

In Italy, information on the valid title to real estate property, and on the mortgages or easements and other encumbrances thereon, is provided through two different types of real estate rights registration systems: the transcription/inscription system, also called Latin, and the land book system, also called Germanic. The transcription/inscription system that is applied in most of the Italian territory is inspired to the "principle of the exceptionability", whereby deeds transferring title to property may produce effects on third parties only if they are transcribed. Thus the transcription of a deed in the Register fulfils a declaratory function in respect of the "exceptionability", aimed at making public (knowable) the transfer of rights that was performed pursuant to the manifest consent of the parties, in the ways and forms provided for by law.

The principle of the "exceptionability" represents a sort of limitation to the principle of mutuality of assent underlying the transfer of rights as considered in Art. 1376 of the Italian Civil Code, to the extent that transcriptions end up by also having a discriminatory function between conflicting interests by giving prevalence to the title that was transcribed first. However, the simple transcription of the deed, which does not remedy any flaw contained therein, is not sufficient to make the transfer of rights held therein "safe" insofar as "*in the case in which a deed of purchase is subjected to transcription, the subsequent variations thereto … by the purchaser do not produce effects unless the preceding deed of purchase was transcribed*". On the basis of this principle (continuity of transcriptions), the purchaser of a property is kept safe against possible exceptions by third parties only if the Register keeps continuous record of transcriptions that start with the purchase at hand and go backwards in time to track the original purchase of the property.

Unlike what applies to the transfer of valid title to real estate property, a mortgage is raised through its inscription in the Register. Therefore, differently from the process of transcription, in this circumstance the process of inscription constitutes the right, to the point that the mortgage does not exist unless the relative title is registered in the Register. The public registration of real estate rights through the transcription/inscription system is based on subject (single individual) insofar as Register does not refer to single properties but to the subjects who hold ownership rights thereto. Transcriptions (as well as inscriptions) are performed by the seller and in favour of the purchaser.
The transcription/inscription of a deed occurs when an attesting official (generally a Notary Public) files with the Real Estate Rights & Mortgage Registration Office the so-called transcription (or inscription, in the case of mortgages) "notation", which constitutes a sort of summary of the deed, drafted according to a standard form, and whose contents are established by norm (including the cadastral identification

code of the real estate property).
This obligation to include the cadastral identification code of the real-estate property in the transcription (or inscription) notations, introduced with Law n.52 of 27 February 1985, has created a close inter-connection and the base for the integration between entries in both the Cadastre and in the Real Estate Rights & Mortgage database: the former are established to describe the geometry and the technico-physical characteristics of the real estate property (in addition to its economic characteristics, for tax purposes) while the latter are due to indicate the holders of title, and the mortgages or easements thereon.

Indeed, despite the fact that the founding law of the Italian Cadastre (Law 3682/1886) intended to establish a "probative" system, cadastral entries have never acquired such an effect. It proved impossible to achieve the required correspondence between the matter of fact and of law, which in practice entailed the overly challenging process of bounds[16] marking, which meant that cadastral entries were and have remained non-probative.

As was already mentioned, with Law n.358/1991, which reformed the Ministry of Finance, Cadastral and Real Estate Rights & Mortgage registration functions were placed back under the competence of a single Administration[17]. This circumstance has favoured the introduction of procedural innovations aimed at fully integrating the two databases that, once completed, will constitute the *Anagrafe Immobiliare Integrata* (a databank containing the technico-physical, legal and economic characteristics of real estate property).

The integration of the cadastral and real estate rights & mortgage databases is now also facilitated by the complete computerization of updating procedures. The introduction of computerized procedures managing the real estate rights & mortgage registration system (*Unidoc, Nota*), which now also makes it possible to automatically update data relative to the owners present in cadastral database through the information contained in the transcription notations (using, to this end, the cadastral identification code of the objects being transacted as the common key), guarantees a perfect correspondence between the two database outputs.

As already noted, the transcription/inscription system is not the only real estate rights registration system applied in Italy. Some territories in Northern Italy (approximately 5% of the whole national territory) rely on the land book system derived from the Austro-Hungarian legal tradition.
The law of land books can be seen as a set of rules configured as special legal provisions that prevail over common civil law, in case of incompatibility between the two.

[16] The marking of bounds was started with the intention of giving legal (probative) effect to cadastral subdivisions and consisted in the Cadastral Administration positioning boundary stones along the boundary lines described by neighbouring land-owners. Up to 1897, the year in which all attempts to give a probative effect to the Cadastre were relinquished, the minutes of the boundary demarcation operation were written by an official of the Cadastre in the presence of the bordering parties.
[17] Formerly *Dipartimento del Territorio* (of the Ministry of Finance) and now *Agenzia del Territorio*.

Differently from the transcription/inscription system, the land book system is an object-based system which refers not to the holder of title to a real estate property but rather to the property that forms the object of the rights; this means to say that the land book (the equivalent of the Real Estate Rights & Mortgage registration database) contains a list of real estate assets along with the description of all the rights enjoyed by single parties.
The land book system, in which the act of inscription has a right-constituting effect, is essentially based on three concepts: the principle of "inscription", of "lawfulness" and of "public faith". In the first case, property rights and any other valid title to real-estate property are not acquired through a deed between living persons but through the inscription thereof in the Land Book. This means that registering real estate property on a land book, on the grounds of a legally valid title thereto, constitutes the property right (unlike the principal of mutuality of assent characterizing the transcription system pursuant to art. 1376 of the Italian Civil Code).

In the second case ("lawfulness"), no inscription can occur without the issue of an order by the Land Book Court, after having controlled the validity of the title underlying the request of inscription. As for the third principle (public faith), the inscription is a valid title in favour of third parties relying on it, meaning thereby that anything that is not listed in the Land Book is taken to be non-existent, even if it does exist and vice versa, anything listed in the Land Book is taken to be existent, even if it actually does not exist.

In the territories in which the Land Book system is still in force, the Cadastre reports the Land Book inscriptions on its deeds and performs the controls required for the topographic representation of land and buildings (maps) that in turn serve as grounds for identifying in the Land Book the object of the inscribed rights thereto.

7 RELATIONSHIP BETWEEN CADASTRE, VALUATION SYSTEM AND REAL-ESTATE TAXATION

As already illustrated in the foreword (see Paragraph 1.1 – Background Information) the Italian cadastral system was established with a dual aim:

- to ascertain the existing real property and highlight the changes therein;
- **to equalize property taxe**.

This is the reason why economic data on income are included to supplement the other cadastral data relative to each single rural parcel (Land Cadastre) or real estate urban unit (Building Cadastre).
The only exception to this rule is represented by rural parcels or real estate urban units that do not produce, by nature, an income: in the Land Cadastre, the exception applies to parcels constituted by cemeteries, parks, river beds, public lakes, roads, etc., while in the Building Cadastre, the real estate urban units exempted are common urban properties shared by a number of real estate urban units such as condominium patios, staircase wells, or the real estate urban units registered under the F group of typologies (see Annex B).

Land Cadastre

In the Land Cadastre, each rural parcel is attributed a dual source of income: "landlord" and "agrarian", which respectively constitute the income from lands and buildings that is applicable to the parcel owner and the income that is applicable to the farmer. The mass valuation of both the landlord and the agrarian income for every single rural parcel was concretized through a comparative method, defined by "classes and tariffs".
Said method envisages the performance of the following activities:

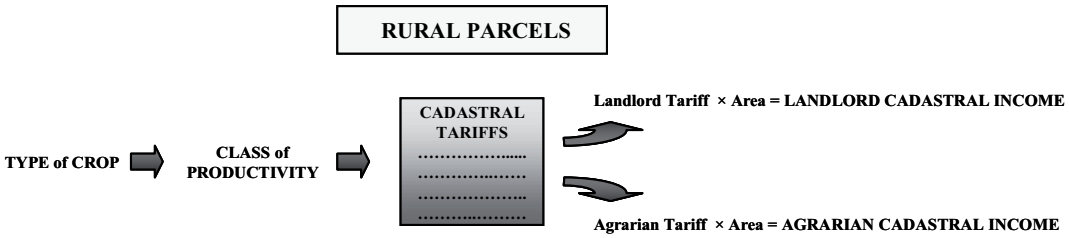
- qualification;
- classification;
- determination of the cadastral tariffs;
- rating;
- computation of the landlord income and of the agrarian income.

The qualification procedure consists in defining a list of the types of crops grown throughout the territory of each Municipality[18] by cross-referencing it to a pre-established table of types of crops (see Annex A).
The subsequent procedure is classification, which consists in subdividing every type of cultivation into one or more classes corresponding to different levels of productivity, on the basis of agronomic, topographic and economic factors. The income variation between one class and the following class amounts to approximately 20%.
The finalization of the two aforesaid phases results in the compilation of the qualification and classification tables for each Municipality, containing the list of types and classes of crops (cultivations) present in the territory of reference.
The following phase is the definition of the table of cadastral tariffs on the basis of the determined cadastral tariffs. This operation consists in determining, through a specific economic assessment performed on the

[18] The territory of some Municipalities may be subdivided into portions (defined as census sections) for each of which is defined a different qualification and classification table.

basis of sample farms labelled "reference farms", the landlord cadastral tariff (the income from each unit of area attributable to the landowner) and the agrarian cadastral tariff (income from each unit of area attributable to the farmer) for each type and class listed in the qualification and classification table.

The operations aimed at determining the landlord and agrarian cadastral income for each rural parcel registered in the Land Cadastre are subsequently completed with the "rating" procedure, which consists in correlating, by synthetic comparative criteria, each parcel with the most pertinent type and class of cultivation listed on the qualification and classification table of the Municipality (or census zone) in which the parcel is located and then multiplying the corresponding cadastral tariffs (landlord and agrarian) by its area.



Note should be taken of the fact that while rating is a frequent operation in the maintenance of the Land Cadastre database (updating in the crop culture practiced, creating new parcels – and related cadastral incomes - after land parcelling out operations, etc.), the other operations leading to the definition (or updating) of the classification tables and of the relative cadastral tariffs are only performed rarely and pursuant to new legal provisions or Ministerial decrees.
The Land Cadastre's cadastral tariffs currently in force were determined on the basis of economic period 1978/79[19].

Building Cadastre

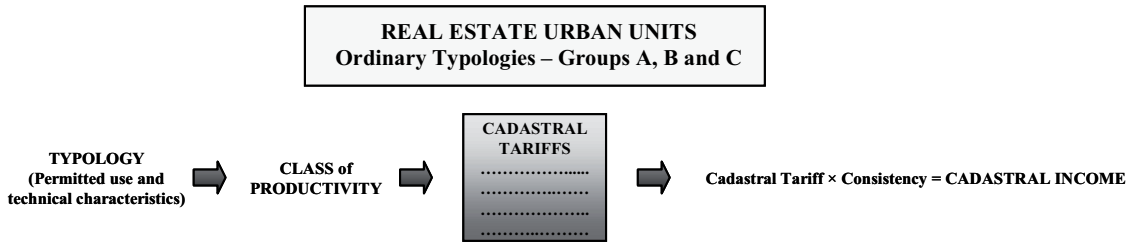
Instead, in respect of the mass valuation of the cadastral income of real estate urban units registered in the Building Cadastre, the founding law provides for different approaches to be taken according to the functional use of the units (cadastral typologies). More specifically, for units registered under the ordinary typologies of groups A, B and C (see Annex B), the law provides for the application of a comparative method (by classes and tariffs) that is analogous to the one illustrated above for rural parcels registered in the Land Cadastre, while for real estate urban units registered under the typologies of groups D and E (see Annex B), in consideration of the peculiar and unique features of said real estate assets, the law provides for the direct valuation thereof, on a unit-by-unit basis.

[19] Since 1997, the landlord income and the agrarian income have been re-valued by 80% and 70% respectively.
[20] The territorial area of some Municipalities may be subdivided into several portions (defined as census zones) that are homogeneous from the point of view of their environmental and construction characteristics, each of which corresponds to a different qualification and classification table.

Therefore, for real estate urban units registered under the typologies of groups A, B and C, reference must first be made to the list of typologies provided for each Municipality[20] - constituting the qualification procedure – from a comprehensive list of pre-established typologies (see Annex B). Secondly, reference must be made to one or more income classes (classification procedure) established for each cadastral typology listed, on the basis of factors connected, in particular, to the location of the units within the Municipal territory (centre, suburbs, with the relative provision of public services and utilities). The income variation between one class and the following one amounts to approximately 20%.

Once this operation is concluded, each Municipality will be provided with a qualification and classification table containing the list of cadastral typologies and classes available in the territory of reference.
The subsequent phase envisages the determination of the cadastral tariffs (cadastral income per unit of size[21]) to be referred to each typology and class listed on the table. This procedure consists in determining the ordinary average gross income that might be (potentially) produced by each unit of size, on the basis of specific economic assessments performed on sample real estate urban units called "reference units", after the deduction of maintenance costs and of any other expense and eventual loss attributable thereto, excluding taxes.

Lastly, the method used to determine the cadastral income for each real estate urban unit registered in the Building Cadastre is completed with the determination of its "rating", which consists in cross-referencing it with the most pertinent typology and class present in the qualification and classification table of the Municipality in which it is located, on the basis of its positional and typological construction characteristics, with the aim of determining its size (in terms of rooms, m^2 or m^3, according to the typology under which it is registered) and subsequently of multiplying the cadastral tariff found for that real estate urban unit by its size. The Building Cadastre's cadastral tariffs currently in force were determined on the basis of the economic period 1988/89[23].



[21] For the purpose of determining the cadastral income, the size of real estate urban units is expressed in terms of main rooms for real estate units registered under the cadastral categories of group A, of m3 for units registered under the cadastral categories of group B, and of m2 for units registered under the cadastral categories of group C (see Paragraph 2.3 – size). In addition to the size parameter originally provided for in the founding law, for all the real estate urban units registered under the categories of groups A, B and C, the size must also be expressed in terms of m2 of gross floor area, which shall be used in revising the valuations contained in the Building Cadastre, as already provided for by legal provisions adopted ten years ago.
[23] Source: Computations and Estimates of the Department of Finance (Ministry of Finance) amounting to roughly 10% of over-all revenues.

The cadastral income of real estate urban units registered under the typologies of group D and E is calculated on a case-by-case basis, through conventional urban valuation techniques.

For some time now, the need to constantly provide economically updated cadastral information, which might also be consistent with the ongoing trends of the real estate market, has spurred the Agenzia del Territorio to develop a wide range of projects and tests on the basis of which to define a new mass valuation methodological model capable of reforming the existing system and of keeping it updated in a dynamic way.

The model tested is grounded on the territorial segmentation and functional typification of the real estate market and relies on mathematical-statistical mass valuation methods.

Real-Estate Taxation System

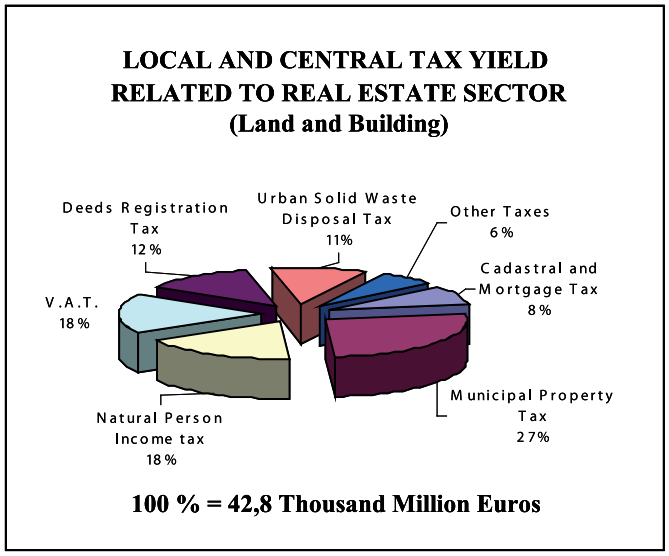
In relation to the taxation system applied in the real estate sector, revenue from real estate urban units is revealed to be considerably higher than from agricultural lands.
The figure shows the total revenue (of both the State and of Local Authorities) for 2006 from real estate assets and its breakdown into main tax types[23].

Many of said taxes normally rely on the cadastral income (or, for rural parcels, landlord income or agrarian income) as the economic data of reference in determining the relative tax base. These include both direct and indirect taxes, levied either by the State or by Local Authorities.

Special notice should be taken of the municipal property tax (I.C.I. – *Imposta Comunale sugli Immobili*), the personal income tax (I.R.P.E.F. – *Imposta sul Reddito delle Persone Fisiche*) and, in some cases, the registration tax applied to the transfer of real estate rights.

The I.C.I. tax is a local tax levied by Municipal Authorities that is charged to the owner of the real estate urban unit or of the rural parcel. The tax base is determined by multiplying the cadastral income (landlord income in the case of rural parcels), which might be revalued in compliance with specific provisions (see notes 18 and 21), by appropriate coefficients that are uniformly applied throughout the national territory and that depend on the functional use of the real estate asset (100 for real estate urban units registered under the typologies of group A – excluding A/10 – and of group C – excluding C/1 –, 140 for units listed in the typologies of group B, 34 for those listed under typology C/1, 50 for those listed in the typologies of group D and in category A/10, 75 for rural parcels[24]).

[22] Since 1997, cadastral incomes have been revalued by 5%.



The tax rates are independently set by each Municipal Authority within a range established by State regulation (between 4‰ and 7‰). It is only possible to derogate from said range in particular cases (and the maximum limit can in no case exceed 9‰). Pursuant to recent legal provisions, exempted from this tax are the residential real estate urban units used as the owner's habitual residence (the so-called "principal residence").

For unlet real estate property (buildings or lands), the cadastral income, the landlord income and the agrarian income concur in forming the over-all income of the owners (or usufructuaries), to whom State taxes are charged according to progressive personal income tax (I.R.P.E.F.) brackets.
Note should be taken of the fact that residential real estate urban units used as the owner's habitual residence (the so-called "principal residence") are exempted from paying this tax too.
Lastly, in relation to the taxation applied on the transfer of real estate rights, for which the tax base is usually constituted by the value of the property at the date of the sales deed, recent legislation has provided for a derogation there from for specific cases, whereby the registration tax is correlated directly to the cadastral income of the property. More specifically, in order to favour the representation of the actual sale price agreed upon in the deed, consequently enhancing transparency in the real estate market, Law n. 226 of 23 December /2005 provides that in case the object of a sale is a real estate property and its annexes intended for residential use, and involves natural persons that do not conduct commercial, artistic or professional activities, the registration tax may be determined on the basis of the cadastral income of the unit and not on the agreed sales price, thus derogating from the general norm.

[24] The real estate urban units registered under the categories of group E are exempted from the Municipal property tax.

extract from the
COMPREHENSIVE LIST OF CROP VARIETIES

Annex "A"

n.	DESCRIPTION
1	Sowable
2	Well-watered sowable
3	Tree-covered sowable
4	Tree-covered and well-watered sowable
5	Meadows
6	Well-watered meadows
7	Tree-covered meadows
8	Permanent rice paddy
9	Vegetable garden
10	Well-watered vegetable garden
11	Gardens
12	Vineyard
13	Olive grove
14	Orchard
15	Citrus grove
16	Cane field
17	Chestnut grove
18	Mulberry grove
19	Pasture
20	Tree-covered pasture
21	Bushy pasture
22	Coppice
23	Mixed woodland
24	High-trunk woodland
...	... ...

COMPREHENSIVE LIST OF TYPOLOGIES

Annex "B"

I) REAL ESTATE URBAN UNITS FOR ORDINARY USE

GROUP A

A/1 Luxury dwelling-houses
A/2 Well-finished dwelling-houses
A/3 Economic dwelling-houses
A/4 Cheap dwelling-houses
A/5 Ultra-cheap dwelling-houses
A/6 Rural dwelling-houses
A/7 Detached houses
A/8 Villas
A/9 Castles, palaces of great historical and artistic value
A/10 Private offices and practices
A/11 Traditional local dwelling-houses and accommodations

GROUP B

B/1 Schools and boarding schools, girls' boarding schools, shelters, orphanages, hospices, convents, seminaries and barracks
B/2 Nursing homes and hospitals (non profit making)
B/3 Prisons and reformatories
B/4 Public offices
B/5 Schools, scientific laboratories (non profit making)
B/6 Libraries, picture galleries, museums, art galleries, academies
B/7 Chapels and oratories not used as public places of cult
B/8 Underground food storage

GROUP C

C/1 Shops and workshops
C/2 Warehouses and storage facilities
C/3 Crafts and trades workshops
C/4 Sports facilities (non profit making)
C/5 Beach facilities and spas
C/6 Stables, sheds, storehouses and garages
C/7 Closed and open canopies

II) REAL ESTATE URBAN UNITS FOR SPECIAL USE

GROUP D

D/1 Factories
D/2 Hotels and pensions
D/3 Theatres, cinema theatres, concert and performance halls
D/4 Nursing homes and hospitals
D/5 Credit, exchange and insurance premises
D/6 Sports facilities
D/7 Buildings constructed for or adjusted to meet special industrial needs and not liable to be destined for a different use without radical transformation
D/8 Buildings constructed for or adjusted to meet special commercial needs and not liable to be destined for a different use without radical transformation
D/9 Floating or pile dwellings, tethered to fixed points on the ground; private toll bridges
D/10 Buildings for productive functions connected to agricultural activities

III) REAL ESTATE URBAN UNITS FOR SPECIFIC USE

GROUP E

E/1 Land, sea and air transport service stations
E/2 Municipal and provincial toll bridges
E/3 Constructions and buildings for special public use
E/4 Fenced enclosures for special public use
E/5 Buildings enclosed within fortifications and outhouses
E/6 Lighthouses, traffic lights, public towers, municipal clock tower
E/7 Buildings used as public places of cult
E/8 Buildings and constructions in cemeteries, excluding burial niches, tombs and family graves
E/9 Special-use buildings not included in the foregoing Group E.

IV) FICTITIOUS TYPOLOGIES

GRUPPO F

F/1 Unbuilt urban areas
F/2 Units in a state of collapse
F/3 Units under construction
F/4 Units transitorily without a well-defined use
F/5 Sun terraces

THE CADASTRAL SYSTEM IN SLOVAKIA

GEODESY CARTOGRAPHY AND CADASTRE AUTHORITY OF THE SLOVAK REPUBLIC

www.geodesy.gov.sk

December 2008

TABLE OF CONTENTS

1 BACKGROUND INFORMATION

1.1 History, legacy and aims of the Slovak cadastral system - Evolution of the institutional and organisational structure of the Cadastre

Real Estate Cadastre has a common history with other analogical cadastres in former Austrian monarchy or former Austrian-Hungarian monarchy till to the end of 1st World War, because Slovakia was a part of this state formation. The speed of Real Estate Cadastre development in former Austrian part of monarchy and in former Hungarian part of monarchy was very different because of different internal political conditions. Real estate Cadastre in Slovakia in time period 1918 – 1992 has a common history with Real Estate Cadastre in Czechia as a result of common state formation also. Since the year 1993 Real Estate Cadastre in Slovakia is developing on the base of own tradition with using best own practices and with tendency to take over best development trends of European Union countries.

The history of modern Real Estate Cadastre began in year 1785 by Imperator Joseph II´ Patent, which obliged to execute measurement, projection and reviewing the heavy revenue from all fertile land parcels, later from all real estates. The principal and permanent function of Real Estate Cadastre was to serve as a state instrument for fairly-minded calculation of land parcel taxation, later real estate taxation. This fact determined the organisational arrangement of working cadastre administration units also. They were till the year 1950 a component of Ministry of finance. The Real Estate Cadastre development was not rectilinear. It was influenced by many internal political tendencies, which often affected against the execution of contemporary cadastral function.

It was very important step in history of Real Estate Cadastre the year 1927, when the new Act about Land Parcel Cadastre and its Administration was accepted in Parliament. This act was elaborated on highest streamlined level with most fashionable technical and organisational aspects.

The Act about Real Estate Evidence from the year 1964 was very important also. This act integrated meantime information system of land books and meantime real estate information system into one common unit – system. This unified system had a function to distribute information about technical parameters of recorded real estates (localisation information) and about ownership relations also. This system affected only real estates in build up territories. It worked only on base of recording competence and not on own decision competence.

Land books were administered from origin in working units of land books independently from Real Estate Cadastre administration. Land book was the state instrument with capital function of guarantee

of ownership rights and other tenures to real estates. The start of modern land book creation was in year 1855. Organisational units of land books worked in the network of Ministry of justice till the year 1951.

Both independently working institutes, namely Real Estate Cadastre and Land Book, were in 1993 integrated into one system with the name Real Estate Cadastre. Cadastral authorities undertaken since that time the competence to decide about origin, change and extinction of ownership rights and other tenures to real estates based on contracts also.

Nowadays Real Estate Cadastre in Slovakia is regulated by the Act No. 162/1995 of the Slovak National Council of June 27th 1995 on the Real Estate Cadastre and the Entries of Ownership and Other Rights to the Real Estates (The Cadastral Act) as amended by later acts. The Real Estate Cadastre serves for an information system, particularly for the protection of the rights to the real estates, for tax purposes, for charge purposes, for the evaluation of the real estates, particularly of the lots, for the protection of agricultural land and woodland funds, for the creation and protection of the environment, for the protection of the mineral wealth, for the protection of the national cultural monuments and other cultural monuments, for the protection of the preserved areas and nature formed phenomena and for building up other information systems on the real estates.

1.2 Organizational and financial aspects of the cadastral Administration

The administration of the Real Estate Cadastre in Slovakia is currently entrusted to the Úrad geodézie, kartografie a katastra Slovenskej republiky – Geodesy Cartography and Cadastre Authority of Slovak Republic (GCCA SR). The Authority, a budgetary state administration entity, is operating under the control of the Government of Slovak Republic (and as its integral part). Authority´s competencies in regulatory, administrative, asset-management, organizational, accounting and financial regions are the same as of other administration state entities are.

The organizational structure of the GCCA SR is configured around Geodetic and Cartographic Institute in Bratislava, around Research Institute of Geodesy and Cartography in Bratislava and around 8 Cadastral Offices and their 72 subordinated Cadastral (District) Registries, with essentially operational tasks, thus guaranteeing a capillary institutional presence throughout the national territory.

The relations with the Ministry of Finance are regulated mainly through a State Budget Law (which is undertaken in Parliament on a yearly basis), that defines the annual state budget chapter for GCCA SR also.

Structure and organization:

- Entitled managing institution: Geodesy Cartography and Cadastre Authority of Slovak Republic (GCCA SR).

Role and position of the GCCA SR:

- Complete administration of the Real Estate Cadastre (including legal relations to real estate property);
- Maintenance and modernisation of horizontal, vertical and gravity control in the Slovak Republic;
- Large-scale mapping (cadastral maps, derived 1:5000 State map);
- Medium-scale mapping (Base map of the Slovak Republic 1:10 000, 1:25 000, 1:50 000, 1:100 000, 1:200 000);
- Small-scale mapping of the Slovak Republic (1:500 000, 1:1 000 000);
- Operation of the Fundamental Database of Geographic Data (ZB GIS);
- Geodetic surveys of state boundaries;
- Development and maintenance of the Information System of Geodesy, Cartography and Cadastre in the Slovak Republic;
- Standardisation of geographical names;
- Coordination of research and international cooperation in geodesy, cartography and real estate cadastre.

Administration of Cadastre of Real Estate is performed by cadastral offices in regions and subordinated cadastral district registries and represents 80% of all activities in the sector of the GCCA SR.

- **Ministry of reference**: Geodesy Cartography and Cadastre Authority of Slovak Republic has a status of central body of state administration (it is similar to a ministry). GCCA SR is not subordinated to any ministry, but it reports directly to government.

- **Managing structure**:
  GCCA SR
  1. Cadastral (Regional) Office in Bratislava
     - 4 Cadastral (District) Registries

2. Cadastral (Regional) Office in Trnava
   - 7Cadastral (District) Registries

3. Cadastral (Regional) Office in Trenčín
   - 9 Cadastral (District) Registries

4. Cadastral (Regional) Office in Nitra
   - 7 Cadastral (District) Registries

5. Cadastral (Regional) Office in Žilina
   - 11 Cadastral (District) Registries

6. Cadastral (Regional) Office in Banská Bystrica
   - 13 Cadastral (District) Registries

7. Cadastral (Regional) Office in Prešov
   - 13 Cadastral (District) Registries

8. Cadastral (Regional) Office in Košice
   - 8 Cadastral (District) Registries

9. Geodetic and Cartographic Institute Bratislava

10. Research Institute of Geodesy and Cartography in Bratislava

Maintenance and modernisation of fundamental geodetic control, medium- and small-scale official mapping, creation of the Fundamental Base of Geographic Data (ZB GIS) and geodetic surveys of state boundaries are mostly carried out by the Geodetic and Cartographic Institute Bratislava.

- Decentralization: Real Estate Cadastre including registration of rights is decentralized into a district (county) level. An average district has an area of 621 km2 and 69 000 inhabitants;

- Financing: Real Estate Cadastre administering in Slovakia is financed from the state budget. Administrative taxes, tariffs and payments about decision making from contribution of right into cadastre of real estate and from cadastral data provision are also directed into the state

budget. Payments for activities executed by private land surveyors and connected with real estate cadastre (division planes/ survey sketches, ...) are part of private land surveyors' own budgets.

2 CONTENTS OF THE REAL ESTATE CADASTRE INFORMATION SYSTEM

The minimum inventory item comprising the core of the real estate information system is represented by the land parcel. The Land Cadastre database contains technical and legal information on each single parcel. The cartographic database, with its cadastral maps, defines the parcel's shape and location on the territory:

- Rural cadastre and Urban cadastre: There is not difference between rural cadastre and urban cadastre. In Slovakia does exist one unique cadastre only;
- Contents of real estate cadastre information system: Cadastral districts data, real estate data, real estate rights data, owners and other entitled persons data, data about facts connected with real estate rights, announced changes data, data about changes determined by searching of cadastral data changes, data about changes determined by revision of cadastral data, data about changes determined by renewal of cadastral documentation, settlement geographical names, non-settlement geographical names and subsidiary records data.

2.1 Geodetic data file (cartographic database)

The Slovak cadastral cartography was mostly formed through direct detailed field measurements based on field mapping methods (orthogonal method, survey by radiation, tacheometry, graphical method etc.). The photogrammetric mapping method was used only in small amount.

Contents:

a) points of basic control and of minor control (except the points of gravity control);

b) planimetry (boundaries of cadastral districts, boundaries of ownership right - land parcel boundaries, territorial boundaries of Municipalities, Districts, Regions and of the State, map signs - land use designation, buildings of permanent nature connected with the ground through a solid foundation, transport networks and facilities, selected overhead and underground pipelines and electrical lines, water courses and water management facilities, public green and other

planimetric elements);

c) lettering (residential and non-residential geographical names, numbers of the points of detailed minor control, numbers of the landmarks of the state border, lot designation with parcel identifiers and marginal lettering information).

Cadastral data geo-referred support

The whole area of the state is covered by cadastral maps. Cadastral maps used in the present are a result of 20 mapping campaigns (both source mapping and derived maps) with very diverse technological specifications (the ellipsoid used, the configuration of fundamental trigonometric network, the geodetic coordinate datum, the method of adjustment of a trigonometric network, cartographic projection, detailed mapping accuracy, map scale, ...). Today all work in the set of the geodetic information of cadastre is done in the national geodetic coordinate system, which was defined in the year 1927 (S-JTSK). The system is characterized by local distortions up to 1,3 m.

Data format

70% of the territory has digital support (vector cadastral map).

Map scale

Cadastral maps normally refer to a cadastral district and in their classical (analogue) form are subdivided into sheets. The territory of Slovakia is covered by 51 262 map sheets of different map scales. Cadastral cartography may be defined as a "large scale" representation. Cadastral maps are normally in following different scales, mostly 1 : 1000, 1 : 1440, 1 : 2000, 1 : 2500, 1 : 2880, 1 : 4000, 1 : 5000.

Copyright

Owner of Copyright is GCCA SR.

Supply medium

CD ROM or DVD or direct copy to customer´s hard disk.

Supply formats

Data from Cadastre real estates information system are standardly provided in so called exchange format. Raster maps are in format CIT (Intergraph) for disposal. Vector data can be converted into common CAD, GIS or raster formats. Descriptive data are in textual exchange format called FUVI.

Sortiment of cadastral maps

Today, the Slovak cartographic database, which covers the whole national territory (roughly 49.000 km2), comprises 51 262 map sheets, of which:

- 0,5 % map sheets are part of original national map series "Gellerthegy non-projection geodetic coordinate datum" 1856 – 1864;
- 32,7 % map sheets are part of original national map series "Stereographic geodetic coordinate datum" 1866 - 1913;
- 0,7 % map sheets are part of original national map series "Cylindric (Fasching´s) geodetic coordinate datum" 1908 - 1924;
- 12,1 % map sheets are part of original national map series "Land cadastre map" elaborated in national geodetic coordinate datum after 1927 (S-JTSK);
- 1,2 % map sheets are part of national map series "Technical-economical map" 1962 – 1968 originally made in Gauss-Krueger projection system;
- 9,1 % map sheets are part of national map series "Technical-economical map" 1969 – 1970;
- 6,3 % map sheets are part of national map series "Technical-economical map" 1971 – 1980 with calculation of coordinates of detail points;
- 10,0 % map sheets are part of national map series "Technical-economical map" with exploitation of forest-technical mapping results and with calculation of coordinates of detail points;
- 4,2 % map sheets are part of national map series "Technical-economical map" with exploitation of forest-technical mapping results and without calculation of coordinates of detail points;
- 0,4 % map sheets are part of original national map series "Land cadastre map" elaborated in stereographic geodetic coordinate datum;
- 17,8 % map sheets are part of national map series "Basic map of the Slovak Republic" 1981 – 1993
- 4,8 % map sheets are part of national map series "Basic map of the Slovak Republic" after 1994.

To date, out of the 51 262 map sheets in Slovakia that comprise the national cadastral cartography (all in digital format), around 70% is in vector graphics while the remaining 30% is in a mixed raster format with some elements on vector layers. The complete vectorization of the whole national cadastral cartography database is envisaged to be finalized by the end of the first decade of this century.

Cadastral cartography, which was originally mainly developed for taxation purposes, is today assuming a vital role in a wide range of general land administration activities.
In addition to being a relevant information sub-system also if used on its own, cadastral cartography constitutes the backbone of all the other administrative information database systems, thus characterizing the cadastral database as a system that is not only time-linked (historical) but also geographically referenced.
The possibility offered of georeferencing territorial information on a support that:

- targets an issue that is unique on the scenario of territorial data: shares of ownership;
- provides a large-scale representation of the territory;
- is homogeneous and available throughout the national territory;
- is updated in real-time and on a daily basis thanks to the documentation submitted by professionals;
- is available in vector format.

has led to considering cadastral cartography as the core element of territorial information databases of both central and local public administrations.

Reference system by coordinates
S-JTSK is the plane geodetic grid coordinate system called "The System of the Unified Czecho-Slovak Trigonometric Cadastral Net". The origin of the S- JTSK coordinate system is located in Finnish Basin, X-axis normally coincides with the meridian 42º 30' from Ferro with increasing to the South. Y-axis is perpendicular to the X-axis and increasing to the West. It is Gaussian equi-angular conic projection in the skew position. The Bessel ellipsoid is projected into the plain using the reference sphere. In former Czecho-Slovakia, the Krovak mapping was established in 1922 for cadastral maps; later it was used for definitive military mapping. Since 1927, the sheets of all mapping cadastral campaigns in Slovakia are built in this projection (with small exclusion in years 1962 – 1968 when cadastral mapping was originally made in Gauss-Krueger projection system and in its geodetic coordinate system and only in 1969 transformed into S-JTSK).

2.2 Descriptive data file

Descriptive data file is the part of cadastral documentation which contains data on the cadastral districts, on real estates, on rights to the real estates, on the owners and other entitled persons namely, in case of a natural person their name, surname, surname at birth, date of birth, personal identity number and

legal residence, in case of a legal person their name, seat and identification number, if it is assigned, or other identification data, on the facts connected with the rights to the real estates, on the announced changes as well as on the changes found out by examining the changes, by revision of the cadastral data and by renewal of the cadastral documentation.

2.3 Set of documents

Set of documents is the part of cadastral documentation which contains namely written forms of contracts, agreements and declarations made in writing by the entering entity of the entry of real estates owned by legal entities, written forms of the decisions of the state authorities and notarial certificates (public deed) as well as other deeds authenticating under the law rights to real estate and the documentation of settlement and non-settlement geographical names. Very important part of set of documents are survey sketches - subdivision plans and land parcel identifications as supplements of contracts also.

3 TECHNOLOGICAL INFRASTRUCTURE

In Slovakia, there is one centralized register of real estates: Cadastre of real estates that represents modern information system of state administration and contains the data on real estates from the whole territory of the state – Information System on Real Estate Cadastre (ISKN). Real Estate Cadastre includes both former Land Register (legal rights) and cadastre (technical part) information. The central database is located in Bratislava and all digital information is stored there. The paper documents based on which the owner´s right was registered are stored in particular cadastral district registries in question.

Data architectural framework

Real estate data from the territorial sphere of authority of every cadastral district registry are stored locally at each of 72 Cadastral Districts Registries. Data are stored separately in an independent system for legal data, for the descriptive information file and for the file of geodetic information. In addition, descriptive data are stored for the whole of Slovakia also in one central database with the functions of control, safeguarding and providing data from the Real Estate Cadastre. At present all data (graphics, legal part and register of proceedings) at every Cadastral District Registry are transformed into 1 database (Oracle). The central database will remain saved. A new, modified structure will make it possible to introduce electronic services both inside and outside the system, and, moreover, it will increase the safety of the system.

Automation
The Database at Cadastral District Registries is operated on SQL servers and the central database on DB2. Graphics is administered using program KOKEŠ with SQL server. Software is created in VISUAL FOX PRO (version 9).

4 UPDATING PROCEDURES

4.1 Updating procedures and the subjects involved

Whereas it was the State that established the Real Estate Cadastre, its updating processes are essentially delegated to real-estate (land parcel) owners.
The State, in addition to managing the Real Estate Cadastre including cadastral maps, still has full competence over the following activities:

- developing and performing new cadastral mapping;
- checking and validating updates of cadastral maps contents presented by the parties.

In order to present almost all the documents required for the updating procedures, owners (planed future owners or past owners – interested parties) must avail themselves of certified professionals (certified land surveyors) who have a competence for authorized verification of selected geodetic and cartographic activities (including verification of change survey sketch/ subdivision plane – notification of change).
Changes to the objects, especially with respect to cartographic updates, are assessed by the administrator of cadastre of real estate during its five-yearly periodic revisions or during extraordinary revisions but mainly during its official verification of selected geodetic and cartographic activities (including change survey sketch/ subdivision plane – notification of change).

Existing types of updating procedures
Origin, change and extinction of right to real estate is entered to the Real Estate Cadastre as follows:

- by the entry of the contribution of the right with genuine and valid effect;
- by the record of the right with registration effect;
- by the entry of a note to the right effective preliminarily.

Data on other relations to real estate, which do not change the rights to real estate (change of the owner's address, change of the owner's surname, change of the nature of land use,...) are updated through a special record or through the procedure of the correction of errors in Real Estate Cadastre. Updating of the contents of cadastral map is carried out by means of:

a) survey sketch; if the contents of cadastral map is legally changed, a survey sketch is a required component of a deed;
b) renewal of cadastral documentation by new mapping;
c) land consolidation;
d) register of renewed land inventory.

Involved subjects:

a) owners and other entitled persons (duty to report each data change regarding the real estate to the administrator of cadastral documentation, duty to submit documents for recording data into the Real Estate Cadastre at the call of the administrator, duty to participate in cadastral proceeding or send its representative to the proceeding, duty to provide permanent marking of the break points of lot boundaries on one's own expense);

b) municipalities (duty to send to the administrator of the cadastral documentation own decisions on real estate and on rights to real estate and deeds regarding real estate and rights to real estate, at the cadastral documentation administrator's instance, duty to correct errors in writing and calculation and other obvious inaccuracies in these decisions and deeds, duty to announce the commencement of cadastral proceeding on their territories on the basis of administrator's notification, duty to provide information about owners and other authorised persons, duty to participate, through their representatives, in cadastral proceeding, duty to notify the cadastral documentation administrator of the change of cadastral data, which they themselves found out, duty to maintain the permanent marking of the break points of territorial boundaries of a municipality in the way determined by the administrator of cadastral documentation);

c) public authorities (duty to send to the cadastral documentation administrator the public and other documents on real estate and on rights to real estate, which they executed, duty to correct errors in writing and calculation as well as other evident incorrectness in own public and other documents, at the cadastral documentation administrator's instance);

d) notaries (duty to send to the cadastral documentation administrator the public and other documents on real estate and on rights to real estate, which they executed, duty to correct errors in writing and calculation as well as other evident incorrectness in these public and other documents, at the cadastral documentation administrator's instance, client-paid voluntary activities connected with the transfer of rights to real estate, in case of selected notaries, court-paid activities connected with the administrative solutions of non-dispute inheritances);

e) private surveyors (client-paid activities connected with the creation of survey sketches, participation in the creation of the renewal of cadastral documentation by new mapping, in the creation of the registries of renewed land inventory financed from the state budget);

f) private real estate agencies (client-paid voluntary activities connected with the transfer of rights to real estate);

g) attorneys' offices (client-paid voluntary activities connected with the transfer of the rights to real estate and with settlement of disputes regarding real estate).

5 SERVICES PROVIDED BY CADASTRAL AUTHORITY

There is no difference in relation to the different types of users interested in cadastral information; the services provided by the cadastral administration are equal.

Public character of cadastral information system data

In Slovakia, one of the main principles of a present legal regulation of the cadastre of real estate is the public character of its documentation. The public character of information system means a general principle of unlimited access to single (or to most of) components in the information system of the database administered (e.g. in case of the information system of the cadastre of real estate it is the access to the cadastral documentation) and rights of every person to consult it and make from it copies, extracts or sketches or require the execution of these (in manual, photomechanical, electronic form, ...). The public character of the cadastral documentation in conditions of Slovakia is restricted only in a special section of personal data protection in the information system (collection of a set of documents) and in case of information on real estate that is important in respect of national defence, order and security.

On line access
Since the year 2005 the on-line portal service has been available, making it possible to access the Real Estate Cadastre to the Slovakia-wide database; data are accessed to the public via Cadastral portal (100% legal data, 100% data of set of descriptive information and 70% of the territories covered by the vector cadastral map).

Distribution of information from Real Estate Cadastre Information System
Each client can get all information he/she need for a fee, limited choice is free of charge. Those, who do not have the on-line access, can get the information and verified "Extract from the Real Estate Cadastre data" at the desk in every cadastral district registry.

Institutional services
Real Estate Cadastre data are provided to owners, those interested in purchase, sale and lease of real estate, to the courts, to law enforcement authorities, to state authorities (environmental agencies,...), banks, executors, notaries, attorneys' offices, real estate administrator and others. Real estate cadastre data are provided upon request either separately or en bloc, in either electronic or analogous form.

Further (commercial) services:

a) Portal service facilitating free access to Real Estate Cadastre is at present extended with electronic forms, via which it will be possible to send to the cadastre notice of intended draft contribution to the cadastre, or notify the draft recording based on the inheritance decision;

b) Cadastral Portal service is extended with the register of real estate cadastre participants;

c) Cadastral Portal is converted to a new data model, as well as the map part of the cadastral portal is converted to the Intergraph technology. Hence more efficiency in providing information is expected in view of the data model change and the change of the map application technology at District Cadastral Registries;

d) Cadastral Portal service is being extended for commercial organizations and public administration.

6 RELATIONSHIP BETWEEN THE CADASTRE AND THE REAL ESTATE RIGHTS REGISTRATION OFFICE

Recording system of the right of ownership in Slovakia (decision making about origin, change and extinction of ownership and other right to real estate) is an integral part of Real Estate Cadastre. Real Estate Cadastre in Slovakia includes also the registration of rights. There is only one unified real estate cadastral information system, which includes technical part of cadastre, real estates rights and right holders as well.

In Slovakia, information on the valid title to real estate property, and on the mortgages or easements and other encumbrances thereon, is based through one type of real estate rights registration systems: the land book system, also called Austrian ore Germanic, as it is usual in every country in middle Europe. In past time also in Slovakia there were two different offices with their competencies and two different information systems (one for technical part of cadastre and second for real estate rights registration). Unification of both offices and both systems was executed to January 1st, 1993.
Technical part of cadastre of real estates and legal rights in Slovakia are administered together in one information system.

7 RELATIONSHIP BETWEEN CADASTRE, VALUATION SYSTEM AND REAL-ESTATE TAXATION

7.1 Relationship to real estate valuation system

Cadastral database in Slovakia nowadays does not content data about value of real estates. In present time discussions are held about incorporation such data into cadastral database. There are following questions discussed: a) what kind of real estate value has to be included into cadastral database ? (market value, contract value, value regulated by municipality, by state, ...), b) what kind of updating system has to be used for real estate value data updating in cadastral system? And how such updating system should be financed?

7.2 Relationship to real estate taxation system

Administration of real estate taxation system is a competence of municipalities. Municipalities are obliged (based on law) by their administration activities of taxation competence fully respect following

data of real estate distributed from cadastral real estate information system: data on the right in real estate, land parcel identification number, area of land parcel, nature of land use, land (lot) positioning and building positioning in build-up area or in non-build-up area of cadastral district.
Basicly the binding character of the cadastral data is related also to the tax and fee administration.

THE CADASTRAL SYSTEM IN SPAIN

DIRECCIÓN GENERAL DEL CATASTRO

www.catastro.minhac.es

December 2008

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1 INTRODUCTION

1.1 History

In 1750, under the guidance of the then Secretary of the Treasury, the Marquis of Ensenada, a cadastre of the Crown of Castile was commenced. It carne by way of preparing for a profound fiscal reform aimed at improving the pitiful state of the Castilian treasury, simplifying the system of contributions and making it fairer. The idea was to replace income from the provinces by a single tax, which replaced the multitude of rights, fees and rents which, pertaining to various fiscal domains – the Crown, the Church, the nobility, royal leaseholders and which was intended to be universal and proportional to the wealth of the taxpayers. It was thus necessary to investigate the wealth of the subjects.

The single tax was not introduced and the cadastre was never used for the purpose for which it was designed for political problems , but it is a great example of well done work. It was soon completed and over time has become the largest known statistical operation in 18th century Europe.
Following this come the tax on harvests, real estate and cattle, that was based on amillaramientos a sort of declaration but manipulation whereby everybody who could, tricked the defenceless and perplexed tax collectors as much as they could.

The 19th century went through with much debate and little change. The 20th century brought the Law of the Parcellary Topographical Cadastre, in 1906, progressive but ingenuous the objectives of the LPTC focused on the creation of a geometric – or at least cartographical – cadastre. However, for various reasons this work stretched over decades, thus giving time for Spain to begin its process of urban development, to change its economic structure, for the land to lose its relative importance as a refuge for savings and the focus of investment, and for the tax system to turn, albeit late in the day, to a model of personal and progressive taxation on income in the context of the mentioned welfare state.

After the 1906 Law of the Parcellary Topographical Cadastre various other regulations merged, from the law of 26 september 1941 and laws 39/1988, 13/1996, 66/1997, 6/1998, 24/2001 and 53/2002 regulating isolated aspects of the cadastral works and cadastral use and adapting the procedures to the new scenaries and tecnologies.

Along this years the Spanish Cadastre was become a complete, reliable and technological data base describing real estates, with the main proupose of provide the values that are the basis of the local real estate tax, but also to ensure the real estate trade market system and to provide a huge reliable data base for many other purposes.

Finally, in 2004 the law of Real Estate Cadastre "Real Decreto legislativo 1/ 2004, de 5 de marzo, por el que se aprueba el Texto Refundido de la Ley del Catastro Inmobiliario" was ratificaded by the Parlament. This law represents an effort to cover all cadastral regulations with legal effect that are currently valid, providing a new systematic organisation and making the whole clearer and more harmonious.

Tow years later the reglamentary development of the law was approved "Real Decreto 417/2006 , de 7 de abril, por el que se desarrolla el texto refundido de la Ley del Catastro Inmobiliario, aprobado por el Real Decreto Legislativo 1/2004, de 5 de marzo".

1.2 Definition and Purposes of the cadastre

The Spanish Directorate General for Cadastre, depending upon the Ministry of Economy and Finance, is the Spanish Public Administration responsible for Cadastre, and therefor, is responsible for describing the real-estate properties of the country, being in charge of providing and keeping updated the Real-estate Cadastre as well as of taking care of the correct diffusion of Cadastral data for 95% of the Spanish surface (500.000 km2) with exception to Basque country provinces (7.261 km2) and Navarra (10.421 km2).

The Spanish law establishes that the Cadastre is a register describing rural and urban real estates. This description includes physical, legal and economic characteristics, featuring location, cadastral reference, surface, usages, class of crop, buildings, graphic representation, cadastral value and title holders. The Cadastral Database contains alphanumerical information of 23, 5 Million holders, 32,5 Million urban real estates and 41,7 Million rustic parcels, as well as graphically digitalised cadastral information for all of them.

The Spanish Cadastre is principally a fiscal cadastre, whose databases of cadastral values of rural and urban real estate 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 Cadastral Information System is a dynamic, open system with numerous flows of interchange of information with multiple external agents who interact with the Cadastre's databases both as suppliers of information and as users and clients.

In Spain the registration of real estate in the cadastre, and of any alterations in the characteristics of the real estate is obligatory and may be extended to the modification of whatever data are necessary to achieve a realistic cadastral description of the real estate.

The Functions

The cadastral general directorate is in charge of planning, managing, coordinating and controlling and, sometimes of executing the following competencies:

- Elaboration and management of the cadastral cartography, renewal of rural cadastre and approximation of cadastral values;
- Cadastral inspection;
- Management of declaration, communication, and error checking system;
- Collaboration and information sharing with other institutions and public administrations;
- Cadastral data diffusion;
- Management of the cadastral registration tax;
- Management of cadastral ratifying processes;
- Suggestion of laws related to cadastral processes, real estate values, cadastre renewal processes;
- Provision of electronic services and customer care, preservation of the cadastral database;
- Development of activities aimed at continuously improving the quality of services (data codification, processes simplification...);
- Elaboration and analysis of statistical data;
- Development of electronic tools to make the internal processes more efficient;
- Coordination and stimulus for the development of regional and territorial agencies;
- Official relations with other institutional organisations or business organisations.

The Mision and The Vision

The mission of the Spanish general Directorate for Cadastre consists in managing real estate cadastre, developing its maintenance, improving its functionalities and spreading cadastral information in order to let the services it provides become useful tools to achieve national fiscal, urban and social objectives the Directorate general for Cadastre mission is divided into four strategic objectives, each of them integrated by different implementation processes.

Directorate general for Cadastre mission

Strategic objectives	Processes
Identification of needs and improvements in customer satisfaction	- Citizen satisfaction surveys and personal care - Analysis of institutional clients satisfaction
Development of agreements	- Improvement of communication agreements with municipalities and public notaries - Improvement in the institutions agreements results and in the relationship management with notaries and land registers and other administrations
Development of cadastral production processes	- Individualized real estate maintenance process - Updating of the cadastral data in line with urban plan - Overall value improvement
Improvement of the cadastral service multi-channel access	- Web access - Direct line or SMS access - Front office visits

In this context, the Spanish Directorate of cadastre aims at becoming an institutional organisation that:

- Is recognised by its provided services quality;
- Will not be satisfied until the customer satisfaction is accomplished;
- Obtains its results with the least possible resources;
- Is always consistent with recent laws and regulations.

The Spanish Directorate of cadastre vision can be summarized in the following table, where strategic objectives have been integrated with more specific processes.

Table 1: Cadastral General Directorate vision

Strategic objectives	Processes
Planning and checking system by objectives	- Objectives' participative planning - Objectives' control system
Quality policy	- Services' chart - Suggestion and question service - Auto evaluation "EFQM" - Internal activity for the continuous improvement of the Spanish Cadastral General Directorate activity
Communication improvement	- Internal communication - External communication - Benchmarking between the Spanish Cadastral General Directorate and other administrations
Innovation, development and research analysis	- Management and implementation of new technologies - Improvement of an innovation culture
Work force management	- Continuous training - Work force integration in multi-tasking or functional teams - Creativity and participation improvement - Personal career planning - Work environment care
Processes sustainability	- Improvement in the management of the annual budget - Improvement in IT tools and information system management - Improvement in cadastral archive management - Improvement in building management - Improvement in work environment management

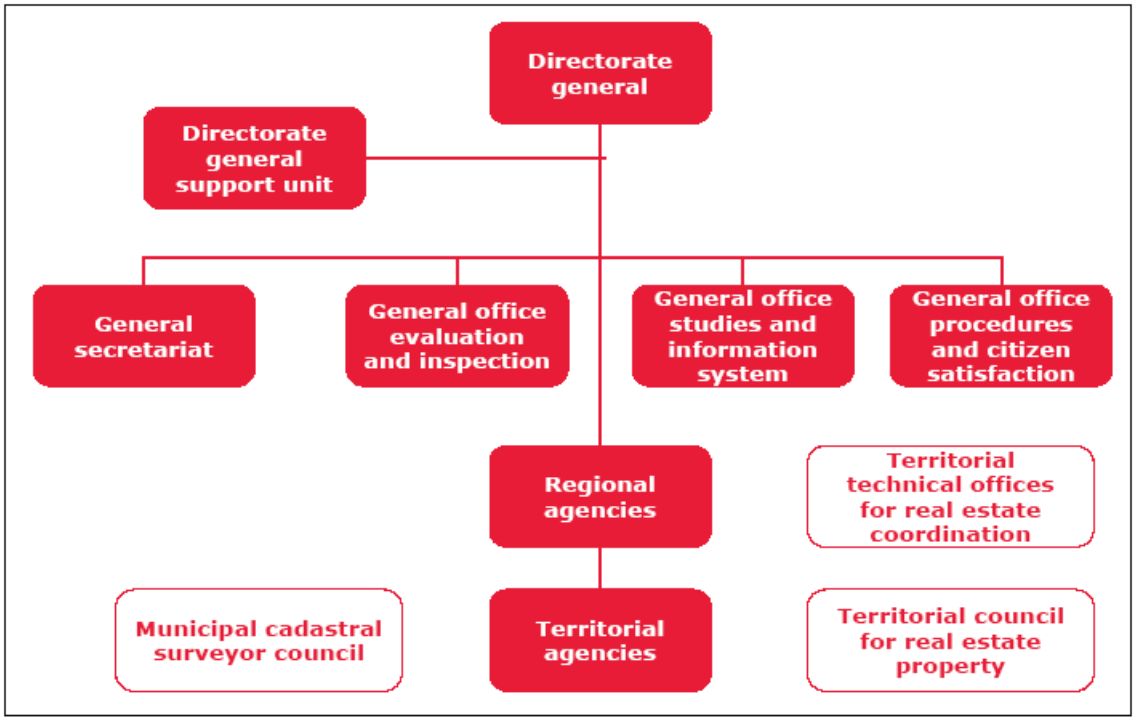
1.3 Development of the institutional and organisational structure

The irruption of new requirements in an environment of unprecedented technological acceleration made the cadastre hereafter a public supplier of territorial information, and a highly qualified one, in multiple areas of public and private activity. As such public supplier, it must organise itself and act in accordance with the demands of this general function

Organisational structure

In order to provide services and manage information, the Main directorate of the Cadastre is structured in Central Services, located in Madrid Paseo de la Castellana 272, and Regional and Territorial Managements, in charge of directly providing services to the citizens, are located in all the Spanish province, the Independent cities of Ceuta and Melilla, Cartagena, Gijón, Jerez de la Frontera and Vigo included.

The number of employees of the Spanish Directorate General for Cadastre is 3. 230.



General directorate of cadastre organisation chart
The general secretariat is responsible for:

- Diffusion of cadastral information;
- Suggestion of laws related to cadastral processes, real estate value, cadastre renewal process;
- Coordination and stimulus for the development of regional and territorial agencies;
- Management of internal services;
- Formal relationship with other institutions of the national general administration.

The general office of evaluation and inspection is in charge of:

- Elaborating and managing the cadastral cartography, the renewal of rural cadastre, the value coordination and the cadastral market observatory;
- Cadastral inspections;
- Managing cadastral ratifying processes.

The general office for studies and information system is responsible for:

- Elaboration and analysis of statistical data and studies;
- Development of electronic tools to make the internal processes more efficient.

The general office for procedures and citizen satisfaction is in charge of:

- Managing of declaration, communication, and error checking system;
- Maintaining official relations and collaborating with other institutional organisations or business organisation;
- Management of the cadastral registration tax;
- Provision of customer care services, preservation of cadastral databases;
- Development of electronic tools to make the internal processes more efficient;
- Management of cadastral ratifying processes.

The regional offices are responsible for:

- Managing, coordinating and stimulating the development and the day-by-day activity of the territorial agencies;
- Coordinating, within the limits of their spatial competencies, the development and the normal functioning of the local agencies;
- Elaborating regional strategic plans;
- Participating in the updating workshop;
- Coordinating the information strategy;
- Collaborating with other institutional levels.

Collaboration Policy

The law establishes that Cadastral operations, activity, revision and diffusion are the competency of the General Directorate of Cadastre, either directly or in collaboration with Local authorities, other public entities, and that the Cadastre should organise itself as a database available to citizens and public administrations.
The Law stipulates too the duty of the cadastral titleholder and any other person to collaborate with the cadastre in furnishing whatever data, reports or information may be necessary for good cadastral management; establishes, the obligation to declare of the individuals subject to become cadastral titleholders as owners of any of the rights that originate registration.

Therefore the Spanish General Directorate for cadastre has established alliances and shared service agreements with Pubic Administrations and Institutions, public notaries, and property registrars, as intermediaries in the relationship between the Cadastre and the citizen.
The cadastral law point out the obligation of notaries, property registrars, local authorities and other public institutions that act over the territory to communicate all change in the characteristics of the real estates to the cadastre.

Numerous Public Administrations with territorial functions, at the national, regional and local levels, access to alpha-numeric and graphic cadastral data to perform their work, in matters varying from tax administration, application of environmental and urban planning policies, territorial regulation, infrastructures, subsidies and aids, etc.
For the entities collaborating in cadastral maintenance, mainly 4 700 local authorities, 2900 notaries and 900 property registrars; as well as on-line maintenance, the Cadastral system now provide them

with all the products and services they need to support their policies and competencies.
The public notaries and property registrars force to the use of the cadastral reference in all the real-estate traffic, and there have been modified the laws that regulate these institutions, making obligatory the utilization of the cadastral certificates.

The National Tax Administration Agency (AEAT) that manages the income tax, the principal tax to national level, forces from the year 2004 to record the cadastral reference of the real estates
The Economy and Finance Ministry has started numerous measurements orientated to avoiding the taxation fraud and many of them are based in the identification of the real estate with the cadastral reference (for example the light invoice).

The Spanish cadastre is the main data provider of the IDEE (Spanish Data Infrastructure), championed by the Spanish Geographic Institute, which has united under a single portal all the geo-referenced data distributed over different GIS, by different administrations, now accessible and interoperable on Internet and with the cadastral information as principal layer.

Development of the Spanish Cadastre Information System.

1. 1990- 1998 Design of the Data Model, Data collection and Uploading.

The design of today's Cadastral Information System began in the early 90s. Important decisions were made at this time, such as the incorporation of graphic, as well as literal, information into the cadastral databases. The principal cadastral entities and associated attributes were identified, and graphic and alpha-numeric data models were designed.

With regard to available cadastral cartography, the principal entities to be administered and their attributes were identified, a topological vectorial information storage model was developed, and an ASCII format designed for the exchange of computerised cadastral cartography (FICC format, standard file for interchange of Cadastral Cartography) for the exchange of graphic materials. Also during this period, the literal information from all the local branch databases was uploaded.

The data model was oriented to the appraisal of real estate as a taxable base of Real Estate Tax. It is therefore a taxation model and computerisation of all procedures of cadastral administration was initiated.

In parallel, the digitalisation of cadastral cartography was initiated by external companies and uploaded onto the first graphic information libraries.

The system was heavily distributed and presented the following weaknesses:

- Consolidation of information between different local branches does not exist, and on occasion a single owner is identified differently on different local branch databases;
- Linkage problems between graphic and literal entities on different databases;
- A continuous map does not exist, generating continuity problems between neighbouring towns with information in different libraries.

2. 1998-2001 Data Consolidation, Graphic and Literal Information Accessible to whole organisation.

Towards the end of the 90s a new Geographic Cadastral Information System was developed, a client-server system allowing access from any PC to all graphic information stored on Oracle tables.

A single departmental server and a single database per local branch stores all graphic information.

This new scenario offers the following advantages:

- Cadastral cartography becomes accessible to all local branch users, who access both graphic and literal information from the same terminal;
- All local branch cartography is located on a single table, allowing administration as if it were a continuous map, for both urban and rural land in a single town and between neighbouring towns;
- It allows direct linkage between graphic and literal entities stored on tables on the same database using the cadastral reference.

The National Cadastral Database was also developed at this time, with basic data on title holders and real estate allowing access to consolidated national data through the Cadastre's corporate network. The model presented still the following weaknesses:

- Although accessible to all internal users, it is not directly accessible to external users and

agents collaborating in cadastral administration;
- Users have access to information on their own province, and only to basic literal information, since BDNC has not yet centralised all the graphic information;
- Local authorities and public administrations accessing cadastral databases directly do so via router, with the problems of security and administration that this causes;
- The massive exchange of information with external agents is done on exchange formats such as diskettes and magnetic tape.

3. 2003- 2008 The Cadastral Virtual Office (CVO)and The Cadastral Virtual Points.

In 2003 the GDC decided to make all the Cadastral information available on Internet in the form of the virtual office of Cadastre, or e-Cadastre (CVO) ovc.catastro.minhac.es.

And at the same time create a single database for all the Spanish territory to ensure the integrity and consistency between:

- Graphic and alpha-numeric information;
- Owners in all local branches;
- Continuous mapping for all towns, between neighbouring towns, and between rural and urban land.

With the creation of the Cadastral Virtual Office, the Spanish General Directorate for Cadastre:

- Increased information in Internet, not just basic information on real estate and title holders, but also building and urban unit information;
- Incorporation of all graphic information onto Internet;
- Consolidation of the current data model. Have a single, stable and consistent data model for all application environments (literal SIGECA, graphic SIGCA, BDNC of title holders, CVO in internet);
- Progressive centralisation of local branch databases;
- Optimisation of updating actions and processes between local branch databases and the National Database;
- All applications and services, internal and well as external, should operate via Internet/

Intranet environments;
- Three-tiered applications with lightweight clients, versatile application environments and robust and stable data servers;
- Interoperability through standards with regard to application environments, exchange formats, etc.

In its initial phase, the public service allowed consultation and certification of alpha-numeric and graphic data, and where previously citizens had to apply to their provincial Cadastral office for a cadastral certificate to present it to another public administration, the public entity can now access this data directly through the CVO. In response to user demand, additional services have since been made available.

Data exchange services were implemented, both with Collaborating Entities (local authorities, notaries, and property registrars, all of which cooperate in database maintenance) and with other administrations with territorial functions, for which the CVO has represented significant improvement in efficiency and effectivity.

Evolution of the CVO has included implementation of webservices to integrate systems applications used by Collaborating Entities, permitting, as we said before, on-line maintenance of the database, improving the exchange of information and incorporating an external geographical system to overlay Cadastral information onto their own cartographies. This is a fine example of interoperability.
The project has been a phenomenal success, with over 30 million visits and more than 5.5 million certificates issued.

However, the model excluded citizens who did not have access to Internet. To solve this issue, 3.000 Cadastral Information Points (PICs) has been created since 2006, managed by Collaborating Entities and forming a network that allows all citizens to make consultations and issue certificates of updated graphic and alpha-numeric cadastral data, free of charge.
We are working hard on Systems Interoperability, not only to give information but also to have a common open space for territorial information which is the aim of INSPIRE Philosophy, and so, CVO has become the main component of the Spanish Spatial Data Infrastructure (IDEE) www.idee.es
We have passed from a corporate System of Cadastral Information, to having a platform of cadastral information to the service of all the entities that collaborate in the Cadastral Management or request information.

CVO has improved the two key indicators that evaluate the cadastral system - maintenance and dissemination – by providing interoperability with the public entities responsible for territorial administration and by giving all citizens, without exception, access to cadastral data.
It has given society free, easy, rapid, 24-hour access to a highly valuable database that is updated daily. It is a secure service that guarantees data privacy and at the same time fully supports transparency in public services
.
The CVO has signified a re-organisation of services and processes to make cadastral administration more efficient and effective, increase collaboration between administrations, and reduce the administrative burden.
On the basis of the above, the CVO not only is fully adapted to the principles established in the INSPIRE Directive and It also fulfils the objectives to achieve the best use of ICT by citizens, governments and businesses.

The Cadastral information now is not asked "is directly used" by administration and citizens.

1.4 Financial and organisational issues

The Spanish General Directorate budget for 2008 amount to 130 million euros, of which 2,300 were assigned to OVC. This budget is part of the National General Budget. It is important to keep this in mind, because it means that the General Directorate of Cadastre must fully comply with the criteria defined in Spain's general economic policy which, like in other European countries, can be summarised into a single concept: budgetary stability. In other words, a freeze in public spending, requiring administrators to be more efficient and to optimise the use of the economic resources available.

The Cadastral Virtual Office gives cost-free, easy, rapid,24-hour, 7 days a week access to all cadastral data and permit down load cadastral information, literal and graphic via internet totally free of charge. (wms, wfs, dxf...etc).
The SGDC provides products and services by other ways too, then the cadastral law distinguish:

The information is cost-free for the public administrations for their own competences and use and with the criteria of proportionality and suitability
Private companies, individuals and even to administrations when they do not fulfil the previous requirements are charged, but the incomes obtained by this trade is not kept by the Cadastre and go directly to the treasure of the central government.

1.5 Decentralisation

To achive the best service The Spanish Directorate General for Cadastre has 52 Territorial Offices, 16 of the also Regional ones, that are located in all the Spanish Provinces , the Independent cities of Ceuta and Melilla, Cartagena, Gijón, Jeréz de la Frontera and Vigo included.
The 52 territorial offices are responsible for:

- Formulating, renewing, correcting and preserving cadastral data;
- Undertaking cadastral inspections;
- Managing the collaboration with other institutions;
- Defining individual cadastral values;
- Managing cadastral electronic tools;
- Producing and maintaining cadastral cartography;
- Managing of cadastral registration tax;
- Helping the competent institution in managing all the processes related to cadastral references or procedures;
- Starting the process of collaboration and information exchange with other public administrations.

As we have already explain The Spanish General Directorate for Cadastre has established collaboration agreements with 4.700 municipalities by themselves or with their associations, to update the database and collaborate in the dissemination of the cadastral information.
We have correctly performed the task of dissemination and advice to national, regional and local administrations, largely thanks to the staff in our provincial offices, who have been instrumental to arrive even the smallest of Spain's 7.575 local authorities
We have been specially successful in solving the issue of the Digital Gap, or how to provide access to citizens without electronic certification or without Internet access (62% of the Spanish population, mainly in rural areas). The solution was to create, 3000 Cadastral Information Points, a network of collaborators which, with minimal technology (a PC with internet access and a printer), has allowed us to carry CVO to all citizens without exception. Our goal is for every citizen to be able to access cadastral data no more than 20km from his/her home.
This system, based on confidence in our Collaborating Entities and principally in our Local Authorities, is a clear example of efficient innovative administration which, through the optimisation of existing resources, allows service re-organisation and process simplification.

1. 6 Involvement of the private sector

The Spanish cadastre is elaborated on topographic digital maps, in case of the urban cadastre, and digital ortophotographies, in case of the rural cadastre, that has been done before to the cadastral works. (The Cadastral Cartography is considered legally as thematic cartography elaborated on a basic cartography that has been obtained by direct processes of observation and measurement of the terrestrial surface (Law 7/1986 of Ordination of the Cartography)
The topographic digital cartography (apparent parcelary) and the digital ortophotographies are elaborated principally by other regional and local administrations and put at the disposal of the cadastre by means of agreement.
In the exceptional case of which this basic cartography does not exist to a suitable scale, the Spanish cadastre can contract his elaboration to companies specializing in digital cartography. And the technical engineers in topography of the cadastre are the civil servants who control the topographic quality of the works done by these companies.

On this basic cartography, the Spanish Directorate General for Cadastre contracts later the elaboration of the cadastre to companies that have multidisciplinary teams with: Technical Engineer in Topography, superiors engineers, computer science technicians, and personnel of support.
Likewise, the work of these companies are directed and controlled by the technical staff of the cadastre, all Civil Servants from every speciality: Agricultural and Forest Engineers and Architects, lawyers, Computer science technicians and, off course, Technical Engineer in Topography.
On the other hand, the Article 3. of the LAW OF THE REAL-ESTATE CADASTRE RDL 1/2004, specifies that the information contained in the Real-estate Cadastre is presumed as certain, except proof in opposite, and without prejudice of the records of the Property Land, which juridical pronouncements will prevail.

So, only if as result of all these works, that we have described above, a citizen thinks that the graphical and alphanumeric description and the surface of his Real Estate has been incorrectly reflected, he can contract the services of a collegiate Technical Engineer in Topography to make the topographic planes to reaching as proof to the cadastre, that will confront it with other proofs with the aim of reflect the reality properly.

2 CONTENT OF THE CADASTRE

7,575 local authorities fall within the competency of the G.D. of Cadastre, which stores and updates the following entities:

- Urban Cadastre
  - 12,5 million urban parcels.
  - 52,9 million of construction elements
  - 32,5 million urban units.
  - 1.200.0000 Has mapped to scales 1/1.000 y 1/500

- Rural Cadastre
  - 41,7 million rural parcels
  - 52,9 million sub-parcels
  - 46,500,000 Has mapped to scale 1:5.000

Data of 23, 5 Million titleholders.

The parcel is defined as the portion of land delimited by a closed line, owned by a single individual or by several. Urban units are different properties owned by a single individual and registered individually in the Property Register, and in the case of the rural cadastre, sub-parcels are portions of land with different crops, usage or yield. The Spanish Cadastral organization has been working since more than 15 years ago, to have the cadastral parcels in urban and rural areas in a complete and homogeneous digital data model for all the Spanish Territory.
Cadastral description of real estate shall include its physical, economic and legal characteristics, including location and cadastral reference, cadastral cartography representation, surface area, use, type of crop or harvest, construction quality, cadastral value and cadastral titleholder, with his fiscal national identification number, address, right type, and participation percentage in the right.

In any case this would be the absolute minimum requirement of any cadastral registration, allowing the addition of other information as necessary for the correct fulfillment of the duties of the institution that cadastral cartography "shall define – among other characteristics considered relevant – the shape, measurements, and location of the different estates subject to registration in the Real Estate Cadastre". To this effect it will include, as well as cadastral polygons, "the parcels or portions of land that delimitate the real estate, the buildings located in same and, in the event, any subparcels or portions dedicated to different crops or uses.

The Spanish Cadastre distinguishes between two basic types of properties, based on the type of land on which they are located and the applicable assessment model: these are urban real estate and rural real estate. A third residual category exists for special real estates, whose characteristics require different treatment, especially with regard to assessment (motorways, airports, nuclear plants, etc.).
Three types of description are applied to both urban and rural real estate: a graphic description on cadastral maps, and a literal or alpha-numerical description.

2.1 Parcel Identification

The identifying is called cadastral reference and has 20 digits.
In case of Urban Real estate: the seven first ones identify the estate or parcel, the seven following ones indicate the sheet of the plane where it is located, the four following ones identify the flat or other unit inside the estate and finally, the last two are characters of control.

For the rustic Real estate: the two first digits identify the province, the three following ones the municipality, the following one the sector, the three following ones identify the polygon, the five following ones identify every parcel inside the corresponding polygon, the following ones four are the constructions (if the parcel has some).

2.2 Cadastral maps

Although the cadastral cartography is generated at the municipal level, the Spanish Cadastral System have a continuous map with urban and rustic cartography, and with all the municipalities aggregated in an unique data base.

In origin digital urban cartography was generated at the municipal level from the digitalisation of existing cadastral cartography following verification of its quality, or using new cartography generated by a process of analytical restitution of apparent parcellary entities obtained in stereographical flights upon which the cadastral parcellary data is placed, identified and updated.

Digital cartography of rural land was generated municipally by municipally too in the process of cadastral renovation, from orthophotography, upon which rural parcel and sub-parcel boundaries was projected. Orthophotographs were at the beginning on paper and since last ninety's also availables in digital format. The link between alpha-numerical information and graphic data is achieved using the cadastral reference.

In the case of rural real estate, the municipality is divided in polygons(zones) depending on the homogeneity of the cultures, existence of geographical accidents, etc, inside each polygon there are several parcels. The unit of property is the parcel. Each parcel has its cadastral reference.
The rural parcel containing one or more sub-parcels depending on use or crops and intensity and quality of these crops. A rustic parcel can contain constructions too.

In the case of urban land, the parcels are grouped in blocks "apples". The parcels contain buildings and urban units (flats, individualiced parkings, other units inside the real estate.....). Each unit inside the parcel has his own cadastral reference, but all the urban units of a parcel have the same first part of the cadastral reference and all the parcels of a block have in common the first 7 digits of the reference.

In the third residual category, "the special real estates", (motorways, airports, nuclear plants, etc.), there are only one cadastral reference for each "special real estate" and it can be composed by several parcels even in different municipalities.
The cadastral parcellary entity is reflected as recincts (polygons) corresponding to blocks, parcels, buildings and rural sub-parcels.
The Spanish Cadastre has also information of administrative boundaries, streets (road axes), hydrograph and communications networks, sheets and ortophotos partition.

Vectorial

1. Both urban and rural cartography are available in vectorial formats:

    - FICC (File for Interchange of Cadastral Cartography), an ASCII format over 10 years old, which reflects the geometry and features of the entities of cadastral cartography in vectorial format;
    - Shapefiles;
    - Dxf;
    - SVG (Standard Vectorial Graphics);
    - WMS;
    - WFS;
    - Rural cadastral cartography is available on scales 1:2000 and 1:50000 and isdeveloped from a photogrammetric flight at a scale of 1/8,000, from whichorthphotographs are made on a scale of 1/5,000;
    - Urban cadastral cartography is vailable on scales 1:500, 1:1000 and is developed by means of numeric restitution from a photogrammetric flight, by digitalizing graphicdocument existing at the Cadastre or are based on the digital cartography held by other public administrations over which the cadastral lots are super-imposed.

The cadastral parcellary entity is reflected as recincts corresponding to blocks, parcels, buildings and rural sub-parcels.
These are stored as closed polygonal boundaries formed by chains of vertices stored in metres in the form of X-Y co-ordinates using the UTM (Universal Transverse Mercator) projection system. Other information is only lineal: municipality boundary, urban boundary, streets (road axes), hydrograph and communications networks, sheets and ortophotos partition etc.

Raster

2- As well as the vectorial format, in recent years the system has incorporated digital orthophotography to scale 1:5000 and 1:2000 for rural land and in some cities 1:1.000. in digital formats:
Orthophotography's resolution varies between 0,25 and 1 metre, although the current trend is to use 0,50m resolution.
Internally, orthophotographic information is stored on files acquired with Mr-SID, and the exchange format is geo-referenced (TIFF+ Twg).
We provide raster parcellary information via WMS too.

Georeferencement
DB Parcellary data are georeferenced:

- In vector data, by coordinates of parcels and cadastral divisions;
  - Each parcel has a point inside the parcel where the cadastral reference is located and it is also georeferenced. This point is automatically created;
  - In raster data, the image files are supplied with georeferencement files convenient for the most common GIS.

Our coordinate reference system is ED50 and our system of projection is Universal Transverse Mercator (UTM). Nowadays we are trying with the first transformation between ED50 and ETRS89, but it will not be until that the Spanish NGI will provide the final expressions that we will not assume a definitive model of transformation. The model will base on that of minimal curvature.
Cadastral topographic work uses suitable techniques to ensure linkage of the cadastral topographic network with the national geodesic grid" which is the competency of the National Geographic Institute, in whose Central Map Register the basic cartography prepared by the General Directorate of Cadastre must be registered.

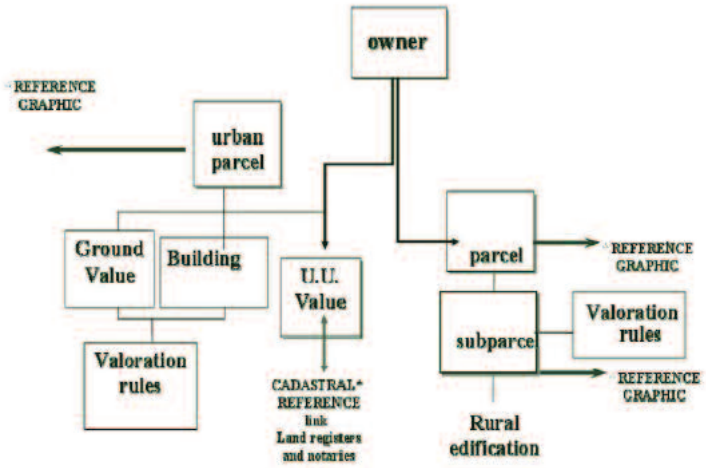
Auxiliary resources of cadastral cartography – the project includes another group of cartographical tools that are equally necessary to perform the functions of the Cadastre, such as orthophotography, aerial photography, maps of municipal boundaries and maps of buildings, parcels and evaluation polygons, as well as "any other aspects subject to graphic representation necessary to correctly fulfill procedures" of cadastral evaluation.

2.3 Cadastral register

The alpha-numerical information necessary for cadastral management is stored on ORACLE tables.
This system stores information on title holders who may possess one or several rural or urban properties. In the case of urban land, urban units are grouped into parcels located on precincts of land with different assessments, containing buildings and urban units.
In the case of rural real estate, the unit of property is the parcel, containing one or more sub-parcels assessed depending on crop, use or yield.
The assessment of urban units is performed based on the value of the land and the value of the building. In the case of rural parcels, the value of the parcel is the sum of the values of the sub-parcels it contains.

The following figure illustrates the entities described:

Cadastral register



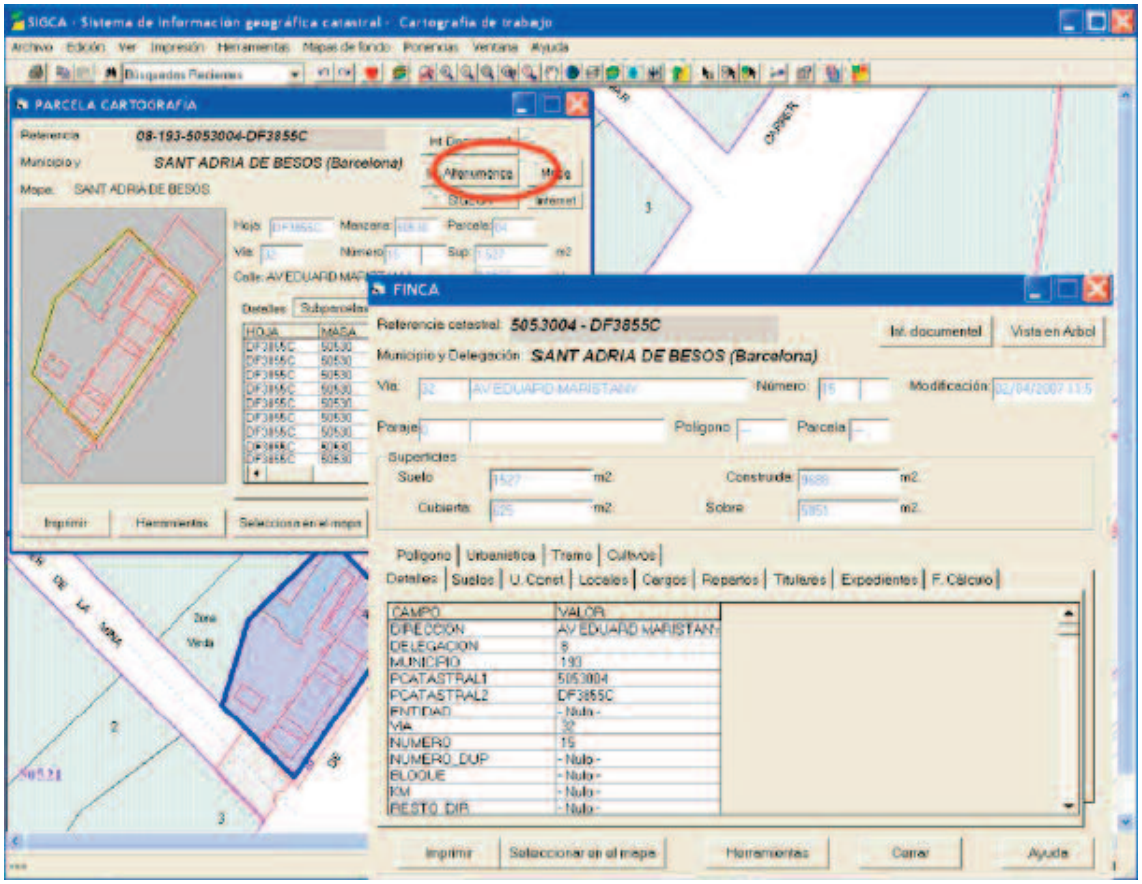
The contain of the alpha-numerical information system is:

- Administrative file data;
- Real Estate Identification data: cadastral reference, province municipality, addresses or location;
- Juridical data of the real estates: Title holders name and national identity number, addresses of titleholders and the notification address, date of acquisition and property land data;
- Physical data of the real estate: land area, buildings area, class of crops;
- Economic data of the real estates, use (legal and current one), value of land, value of construction and cadastral value, criteria and valuating module, real estate taxable value, exemptions and beneficiations.

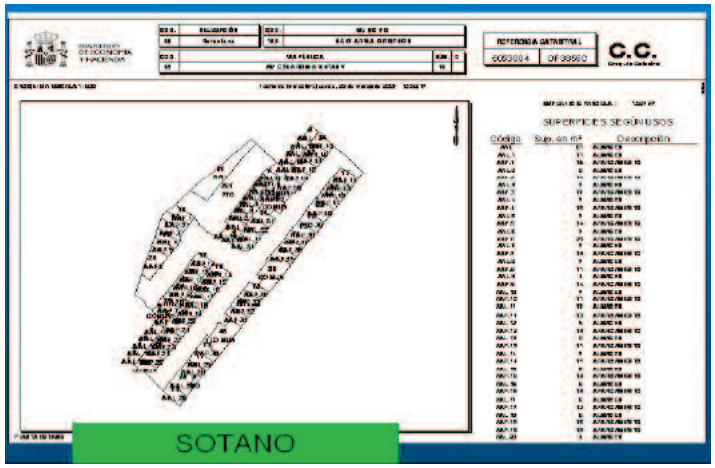
2.4 Plans of the urban units (flats, houses, apartments)

For every building the data base has sketches by floor in digital form the digital , the FXCC.
The FXCC document is a scaled graphic representation of the properties forming an urban estate. Cadastral cartography only represents cadastral parcels or urban estates, while the different floors and interior spaces is represented on FXCC. The FXCC contains a photo of the building too.
FXCC documents are available now for towns and only part of them are now in digital format and they are now available on the CVO.
These documents are stored in the system as documental information and link up to parcel data by means of the cadastral reference.

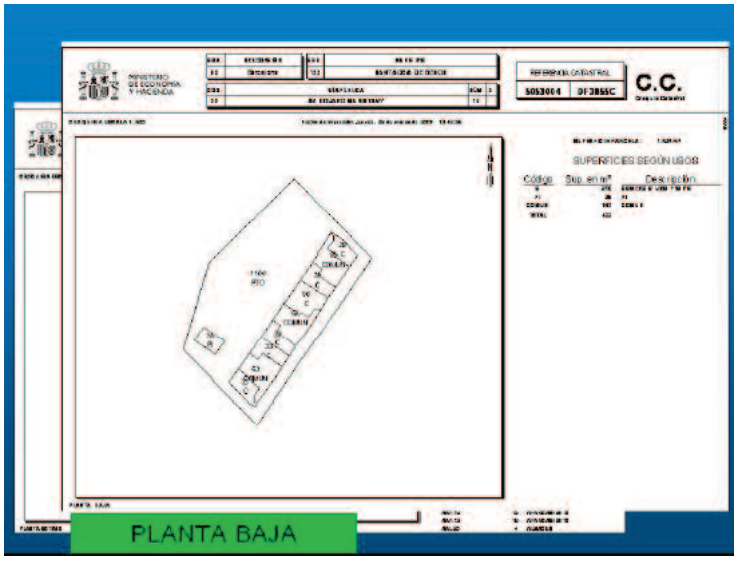
The description of the Building in the GIS



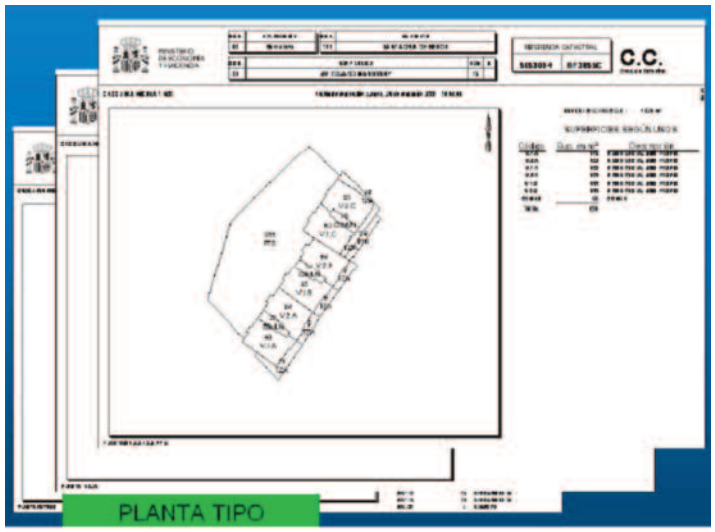
Underground



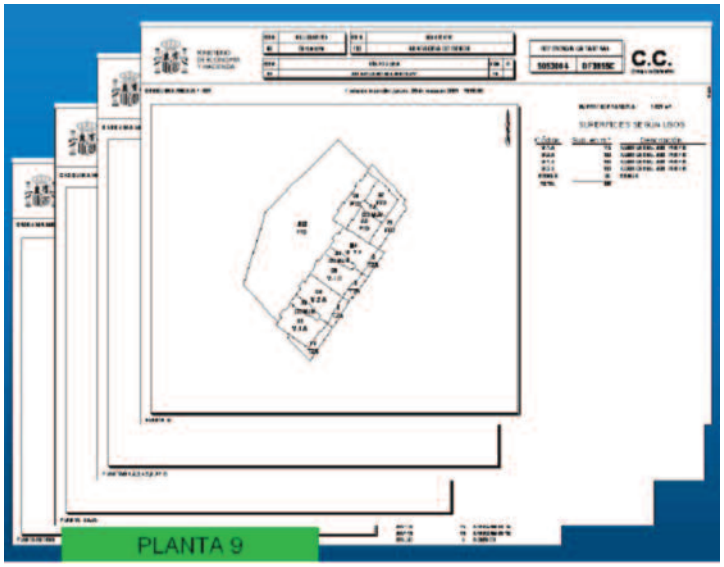
Basement



Type Floor

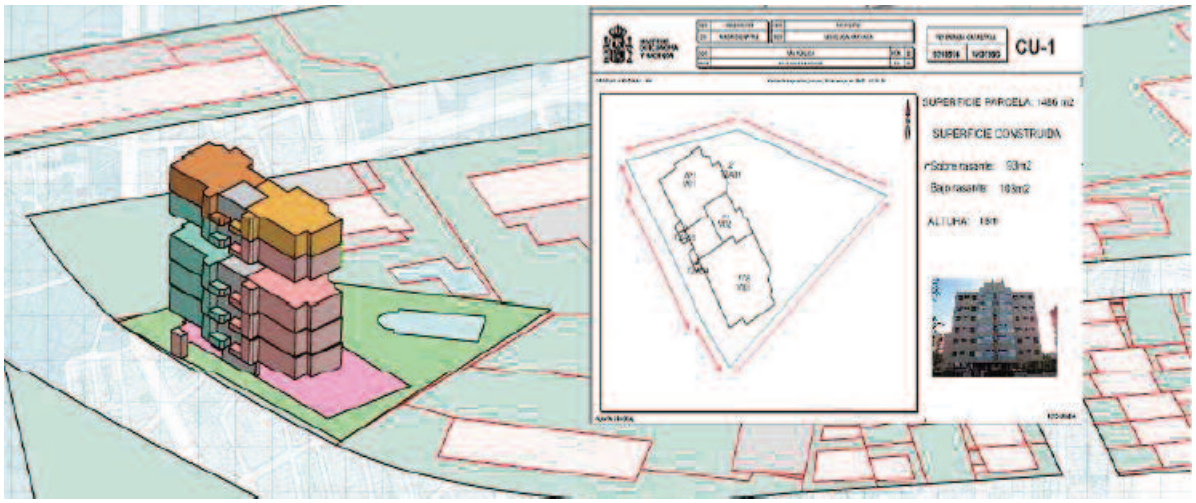


9th Floor



General Representation

3D representation



3 TECHNOLOGICAL INFRASTRUCTURE

There is no legal Cadastre GIS definition in Spain. It is called SIGCA (Sistema de Información Geográfica Catastral). SIGCA is used to manage the cadastral digital cartography in conjunction with SIGECA, used for managing alpha-numeric information.

S.I.C The Spanish Cadastral Information System is composed by four different subsystems:

1 SIGCA: used to manage digital cartography;
2 SIGECA: used to manage alpha-numerical information;
3 BDN: national integrated database;
4 OVC: Cadastral Virtual office.

3.1 Cadastral Management System (SIGECA)

Operational in the 52 local branches of the Cadastre, this system automates all cadastral processes and transactions, from the initial registration of a document, query or application presented at the local branch, to the issue of cadastral certificates and documents.

It facilitates the updating and assessment of real estate, the issue of census lists with amounts payable in Real Estate Tax, mass assessment, etc. The databases that sustain this system are housed on UNIX departmental servers stored on ORACLE tables.

3.2 Cadastral geographic information system (SIGCA)

A Geographic Information System (GIS) that allows loading, filtering, visualisation, administration and updating of rural and urban cadastral cartography. It allows the location, identification, assignment of the cadastral reference and surface calculation of rural parcels and sub-parcels and of urban parcels and buildings. It also allows the plotting of thematic maps and cadastral maps and includes tools for updating cadastral cartography. SIGCA is operational in the 52 local branches and stored on the same departmental servers and ORACLE databases as SIGECA

3.3 National Cadastral Database (BDNC)

A nation-wide system containing basic data on real estate and cadastral title holders, consolidated for the entire country. The system allows aggregate consultation and statistical analysis and offers information on the properties of an individual all over the country, and the exchange of national-level

information with external agents. Cadastral information supplied on Internet is based on a replica of this database. BDNC is stored on a UNIX-ORACLE server, in cluster, located at the Cadastre's headquarters.

The systems described above are dedicated to the computerisation of all the Cadastre's administration and procedures. The main users are the Cadastre's own employees. Local authorities and other public administrations that collaborate or require information from the G.D. of Cadastre connect via modem or router to the Cadastral Management System (SIGECA).

3.4 Virtual Office of the Cadastre (OVC)

Cadastral services on Internet, destined to Supply information to the public and to exchange information with cadastral title holders and other external agents who share competencies of cadastral administration (notaries and property registrars, local authorities and other public entities).
The telematic Window, the Cadastral Virtual Office, developed by itself a software to manage a massive quantity of information. This software was build to be interoperable with other common softwares and to be perfectly shaped around the OVC needs.

Hw platform:

- External area (DMZ);
  - 2 IIS servers with Windows 2000 Advanced Server , NLB (Network Load Balanced);
  - 2 Exchange Front-end servers to access to Exchange DB with NLB. (W2K AS.).
- Internal area;
  - 2 Exchange DB servers in cluster to manage files repository.(W2K AS).
- 2 Domain Controller servers (DNS) with active directory to control registered users;
- 2 SQL server servers (W2K AS) in cluster;
- 2 Unix servers in cluster with ORACLE for Cadastral db;
- An S.A.N for data storage.

Sw Platform:

- Multilevel architecture;
- Presentation level;
- Thin client using Web browsers to interpret HTML code given by the Web serve;
- Presentation logical level;

- ASP pages including VB scrip, JavaScript and HTML code, with COM+ (Visula Basic) components;
- Application logical level;
- SW components to conform the logical of - Data access level;
- Components to data access, to insert, modify or data erase;
- Data level;
- Services related with the DDBB, cadastral data in Oracle, application data in SQL Server;
- Veritas Sw as back up manager;
- Hp-OpenView to manage and control hw and services.

4 UPDATING PROCEDURES

4.1 Organisations and persons

As we have said In Spain the registration of real estate in the real estate cadastre, and of any alterations in the characteristics of the real estate is obligatory and may be extended to the modification of whatever data are necessary to achieve a realistic cadastral description of the given real estate.
The Law stipulates too the duty of the cadastral titleholder and any other person to collaborate with the cadastre in furnishing whatever data, reports or information may be necessary for good cadastral management; establishes, the obligation to declare of the individuals subject to become cadastral titleholders as owners of any of the rights that originate registration.

The cadastral law point out the obligation of notaries, property registrars, local authorities and other public institutions that act over the territory to communicate all change in the characteristics of the real estates to the cadastre.
For the Maintenance of the information 4 different procedures has been defined:

- General works, with the assistance of private firms, under technical specifications;
- Compulsory declarations from titleholders (more than 2000000 last year);
  - Directly update in our offices;
  - Update by the collaborating administrations.
- Communication of collaborating in cadastral maintenance, mainly 4500 local authorities, 2900 notaries and 900 property registrars;
- Inspection Works.

4.2 Daily update

To can maintain update the cadastral data base, the SDGC not only work with the 3.200 employers, but has establish agreements with Pubic Administrations and Institutions, municipalities, public notaries, property registrars, etc... as intermediaries in the relationship between the Cadastre and the citizen.
All these collaborators help the cadastral maintenance mainly via internet using the Cadastral Virtual Office that permit on-line maintenance and that is interoperate with other informatic systems. There exist protocols defined by law for every modification of the database, owner change, division, aggregation, segregation, union of parcels, change of use, new construction, division of a building etc..
All the data that is proportioned by the collaborating administration must be validated by the technicians of the cadastre to can be incorporated to the data base.

4.3 Massive update

Parallel to the daily update, there are massive processes of update that are done generally joined with processes of revaluation. The new information obtained is in general of major quality, more current and complete and the new real estate data are notified individually to every owner.

4.4 Procedures of cadastral maintenance

Procedures are defined by law and have their proper documents and procedings:

- Declarations;
  - New parcel;
  - New building;
  - Real Estate modification;
  - Change of cadastral titel holder;

  Etc..
- Comunications of pubic administrations, Notaries and Propiesty registers, etc.;
- Requests;
- Discrepancies corrections;
- Appeals;
- Colective Valuation, General or Parcial;
- Simplification Procider of Colective valuation;
- Valuation Procider for Special Real Estates;
- Rural Cadastral Renovation.

4.5 Processes automation

To maintainig of the data base and to validate and incorporate the information that have proporcioned the collaborating administrations the technicians of cadastre use the tools that are provider by SIGCA and SIGECA by their own developments. For the entities collaborating in cadastral maintenance, mainly 4 700 local authorities, 2900 notaries and 900 property registrars; as well as on-line maintenance via Cadastral Virtual Ofice, they can provide as the information using our standard files.
These files defined for the exchange of cadastral information are mainly XML archive and are available for the public in the Cadastral web side **www.catastr.meh.es** in this link.
http://www.catastro.meh.es/esp/colaboradores1.asp#menu3

The cadastral system stored all the map modifications in digital form from 2002, so we can query the evolution of a map. In the literal form it has the information computerized since 1990 and in papers from the origin (1930). The system not only keep the last change but all of them.
The data base keeps several time data: where the physic or juridical change occurred in the reality, when the map is change, when de literal data is change, when the citizen declarated it.....

4.6 Results of the cadastral update

In the last year 2007 the results of the most important updating procedures were:

Number of changes of titleholder in our own offices	608.230
Number of changes of titleholder by collaborating administration	768.103
Number of changes of titleholder by Notaries and Property Registers	655.902
Number of Urban units updated in our offices	323.828
Number Urban units updated by collaborating administration	738.226

5 PROVIDED SERVICES

5.1 Our services

The GDC, as part of its policy of "Getting closer" to the citizen, collaborating entities and user entities, has established different channels for the communication and dissemination of information.
Customer-facing services are offered daily in the 52 provincial Cadastral offices, where several

improvements have been made: staff have been trained, opening hours have been modified to better serve citizens' needs, queueing times have been reduced, and clients with queries requiring the assistance of specalised personnel are received by appointment. Additional channels for communication are telephone consultations attended by the Cadastral offices, and since 1997, by "Cadastre Direct Line" (LDC), a call centre service; service provided through the offices of Collaborating Entities; the feedback system, etc.
The LDC offers a one-call solution to citizens, informing them of the process and documents they will need for a Cadastral procedure, giving them advice of how to fill in forms, help related to different services, and information on the status of cases in process. LDC service hours are from Monday to Friday, from 0900H to 1900H. The LDC is a service that facilitates access to cadastral information, brings the Cadastre closer to citizens and frequently prevents unnecessary visits to our offices. Linked to this information service is the possibility to make an appointment at the provincial office.

In this context of multiple traditional channels, the introduction of CVO has represented the incorporation of a new and extremely powerful channel, INTERNET, bringing the Cadastre into the home of the citizen free of charge, 24 hours a day, seven days a week and converting his/her PC into the nearest cadastral office. The Cadastral Information distribution is based on different inter-related channels that complement each other. For example, the provincial Cadastral offices each offer a telephone number that connects the client to a toll-free LDC number and to CVO terminals, for use by citizens needing this service. Citizens may also express their complaints and suggestions through LDC, or obtain information on the contents of the Cadastral webpage (www.catastro.meh.es) and the CVO.

5.2 Cadastral Information Points

Initially, access was restricted to citizens with access to Internet (48% of the population) but now, thanks to the creation of 3000 Cadastral Information Points throughout all Spain, access is guaranteed to all in a closer distance than 20 km. In order to achieve it, a net of collaborating agents has been established and has been consolidated, that allows the citizens, in case they have no telematic means, to have access through the OVC to the updated cadastral information. This collaborators' net is based on agreements with the local administrations that are nearer to the citizen, thereby achieving an example of institutional collaboration. In these local administrations Cadastral Information Points has been installed. Managed by a civil servant belonging to the local administration, which allow the citizens to have access to different cadastral services without the need to go to the cadastral provincial offices.
The simplicity and comfort of the new procedure of access to the cadastral information through the PIC brings the Virtual Office of the Cadastre close to all the citizens without exclusion.

5.3 New channels

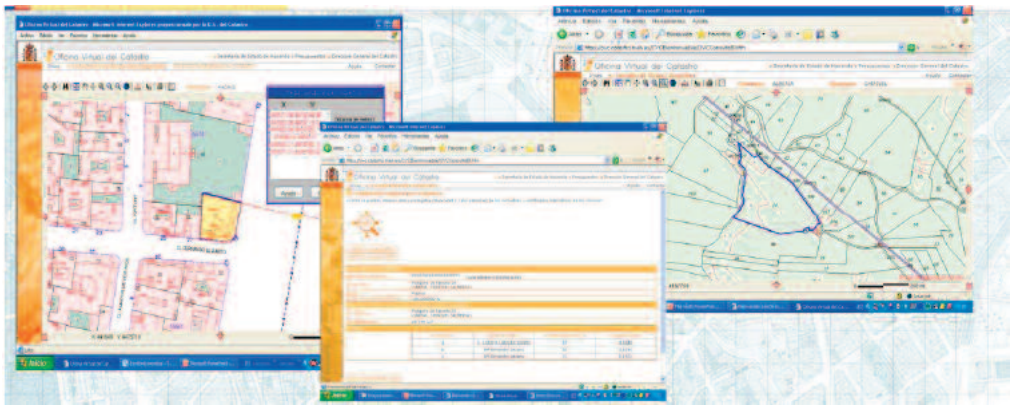
A channel Broadly used to communicate with the citizens is the mail that has experienced an important technological development in the last years. In this context the latest innovation, now under development, is a text message – unquestionably today's most widely used channel - to the citizen's mobile phone informing him/her of the completion of a cadastral process.
In 2006 a novel project was presented to provide cadastral information through land-based digitial T.V. (TDT). This allows access to our services in a way that overcomes the psychological barrier that a keyboard and computer represent for many users.

5.4 The Services of the Cadastral Virtual Office

The Virtual Office of Cadastre provides the following services:

- Cadastral Information Query - both alphanumeric and graphic (maps).

CVO



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..

Cartography services

It allows to see the cadastral cartography of a municipality as a rural-urban continuum. Permits Interactive access for citizens and users from other administrations. Multiple ways of access by cadastral reference, street and number, or polygon and parcel and also by cadastral owner.

Web services

A web service-based interface has been defined to facilitate integration with the systems applications used by collaborating entities for on-line maintenance of the database. In this way, web services have allowed the transfer of solutions to other administrations and permit that we all together work with the cadastral parcels in a common space.

WMS

Specifically, the Web Map Service offering free download of cartography, has opened up the use of cadastral data to numerous Public Administration and private companies and this ability to obtain cadastral maps using standard web services has translated into the use of external geographical systems to overlay cadastral information onto their own cartographies, , orthophotographies, and even for Google Earth.

Cadastre and Google earth 3D

New services

In the last years the OVC has made a significant progress as a result of the demands of the citizens, of the public administrations and of the collaborating institutions that has made it more user-oriented, inclusive and interoperable. New utilities requested by users have been incorporated:

- multiple certificates;
- provision of DXF and XML with cartographical references, permit download a previously selected parcel sketch or cadastral map in DXF format;
- Download vectorial cartography for a box set by coordinates x,y. It is possible to select which layer (squares, parcels, subparcels;
- soap services;
    - SOAP services for consulting non-protected data by location or Cadastral Reference or Polygon and parcel; by consulting by addrees and for consulting by coordinates (UTM, GPS) and vice versa;

    - Converter of coordinates. Conversion X,Y to cadastral reference and Conversion CR to X,Y;
    - SOAP Services for registered users.
- Web Feature Services (WFS);
- time parameter, Permits to obtain all the information graphic and literal for a concrete data since 2002;
- cadastre in 3D;
- information on the status of cases in process, etc;
- And we go on working to further develops.

5.5 Privacy Issues

Citizens have open, free-of-charge access to all data except those subject to Data Protection law (personal data of the Titleholder and value data); administrations and other public entities, after registering, have access to all levels of data, including protected data, exclusively for the performance of their competencies; and cadastral titleholders, identified via digital signature, can also access their own protected data.
Now a day the number of registered users is 50.000.
Table below provides a synthetic list of the OVC online main services, taking into account the distinction among free and registered access.

OVC provided services

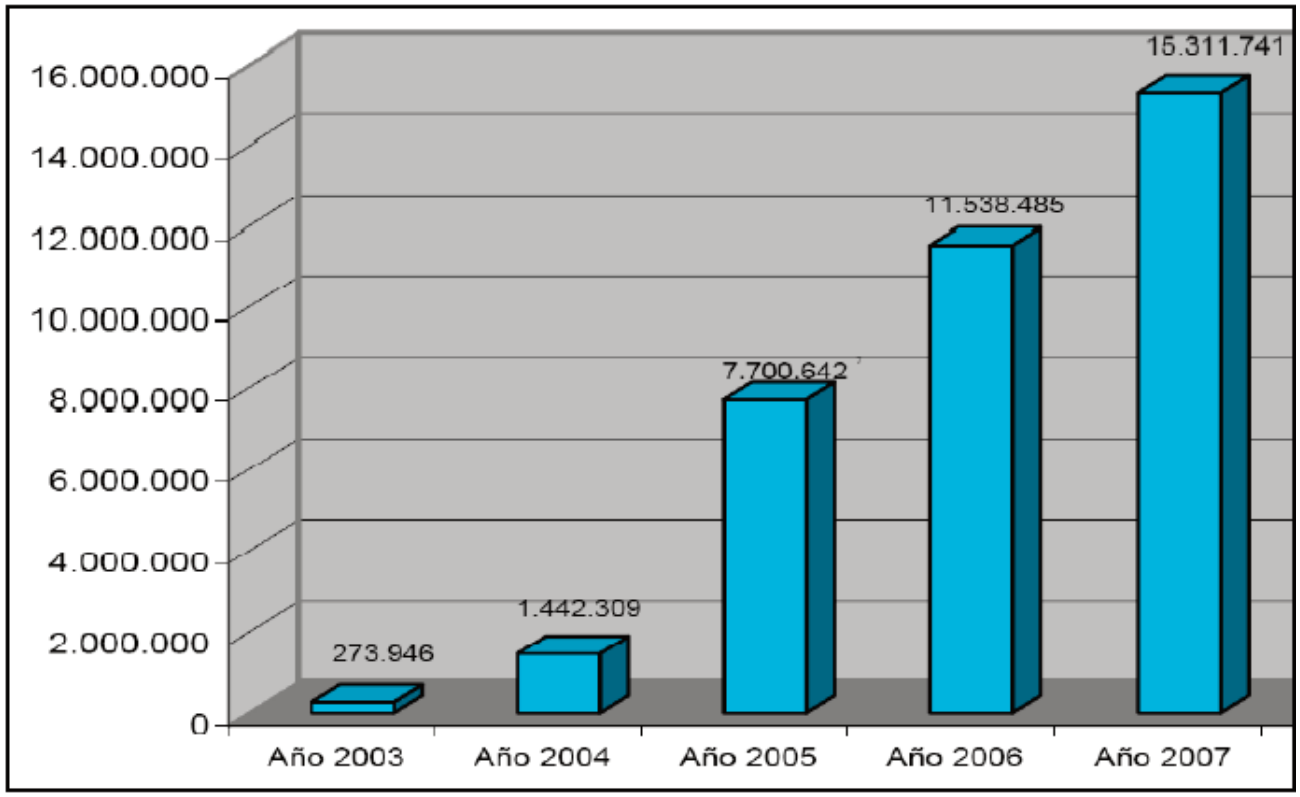
Free Access

- Download of program, data interchange format, query format;
- Free consultation of no-protected cadastral data;
- Verification of cadastral online certification authenticity;
- Consultation and print of web maps service of all Spain (except for Navarre and Basque);
- Access to no-protected cadastral data through "Cadastral Information Point"
- Access, for cadastral institutions and for their representative, to query and consultation of protected cadastral data electronic certification services for real estate;
- Registered Access;
- Real estate data consultation and certification;
- Cadastral references and information consultation and certification;
- Information on visualisation of its own real estate certification made by authorized agents;
- Change of cadastral data and references;
- Cadastral information exchange amongst public institutions;
- Download of cadastral document "FXCU1".

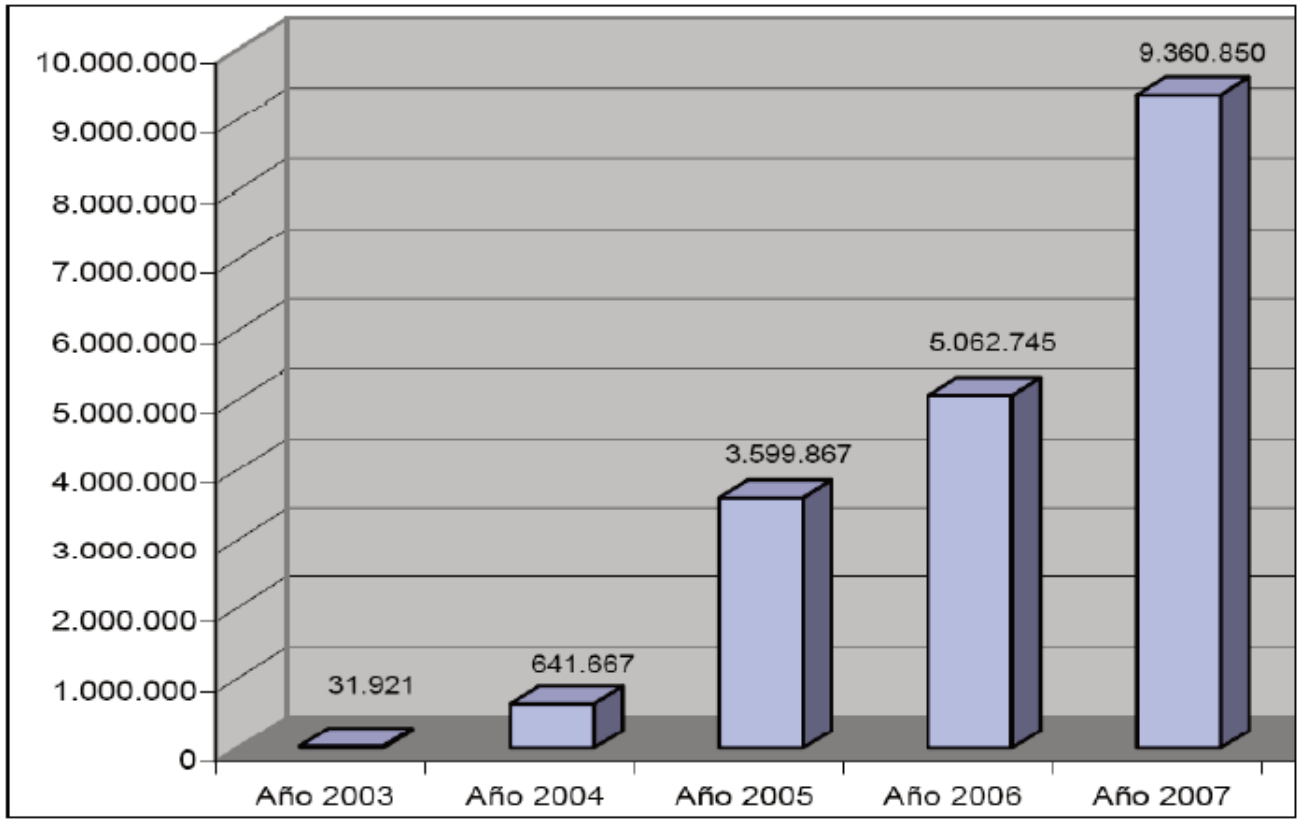
5.6 Results of CVO

The next five exhibits aim at highlighting the volume of data managed by the OVC per year. It is useful underlining that the exhibits mirror the main services provided by the agency: consultation of protected data, consultation of no protected data, cartography consultation and web hits.

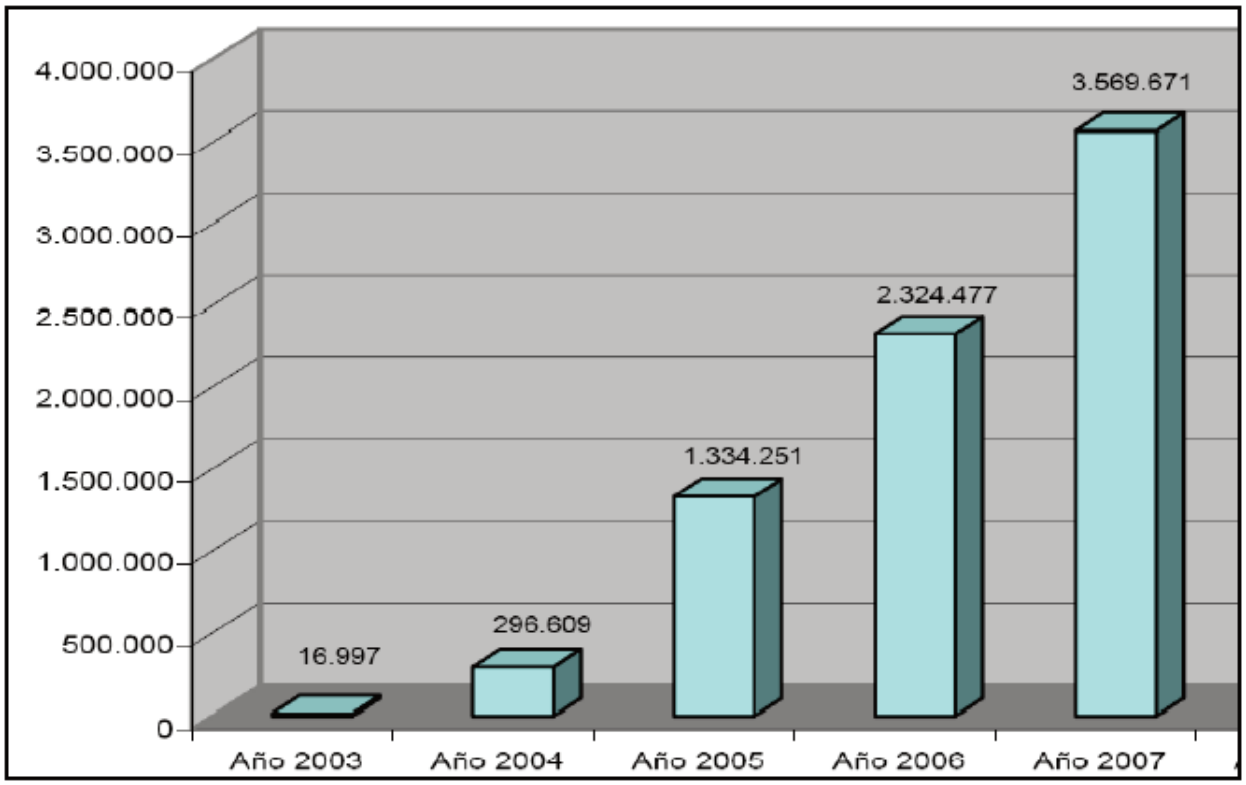
Web hits



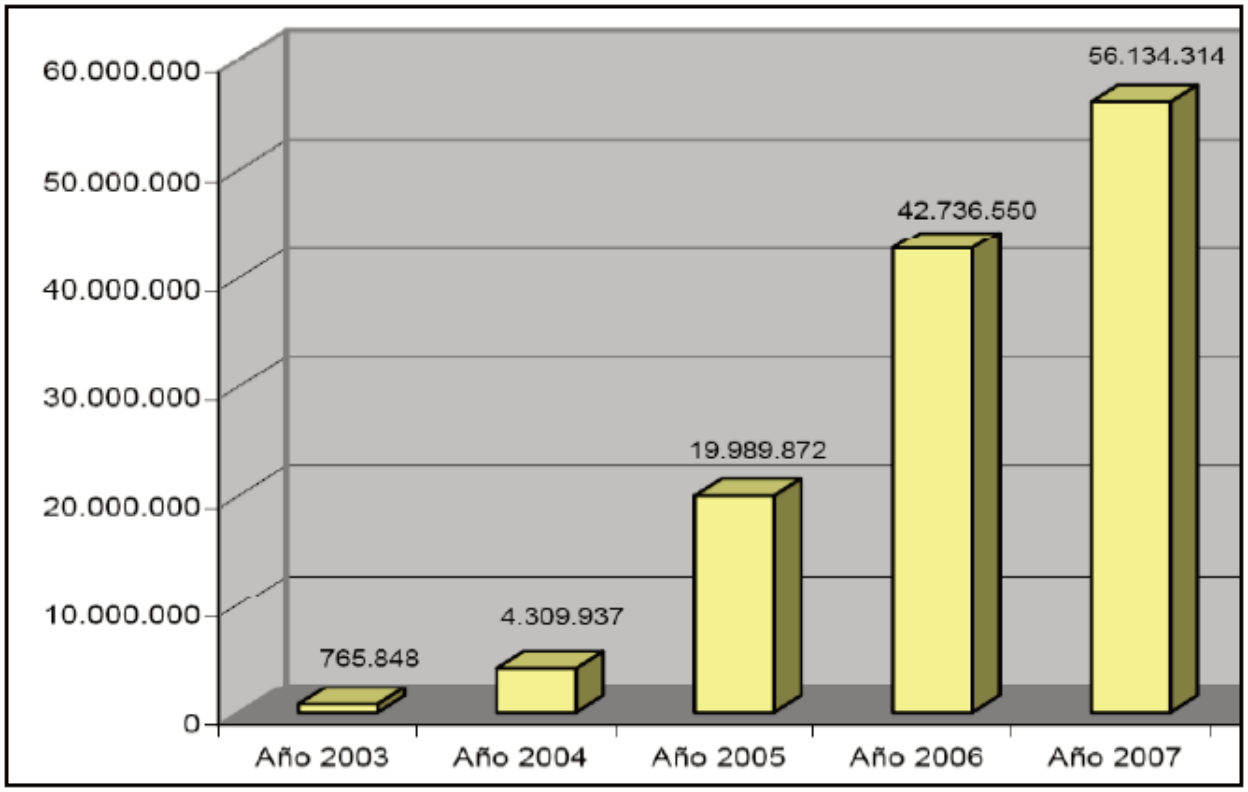
Consultation of protected data



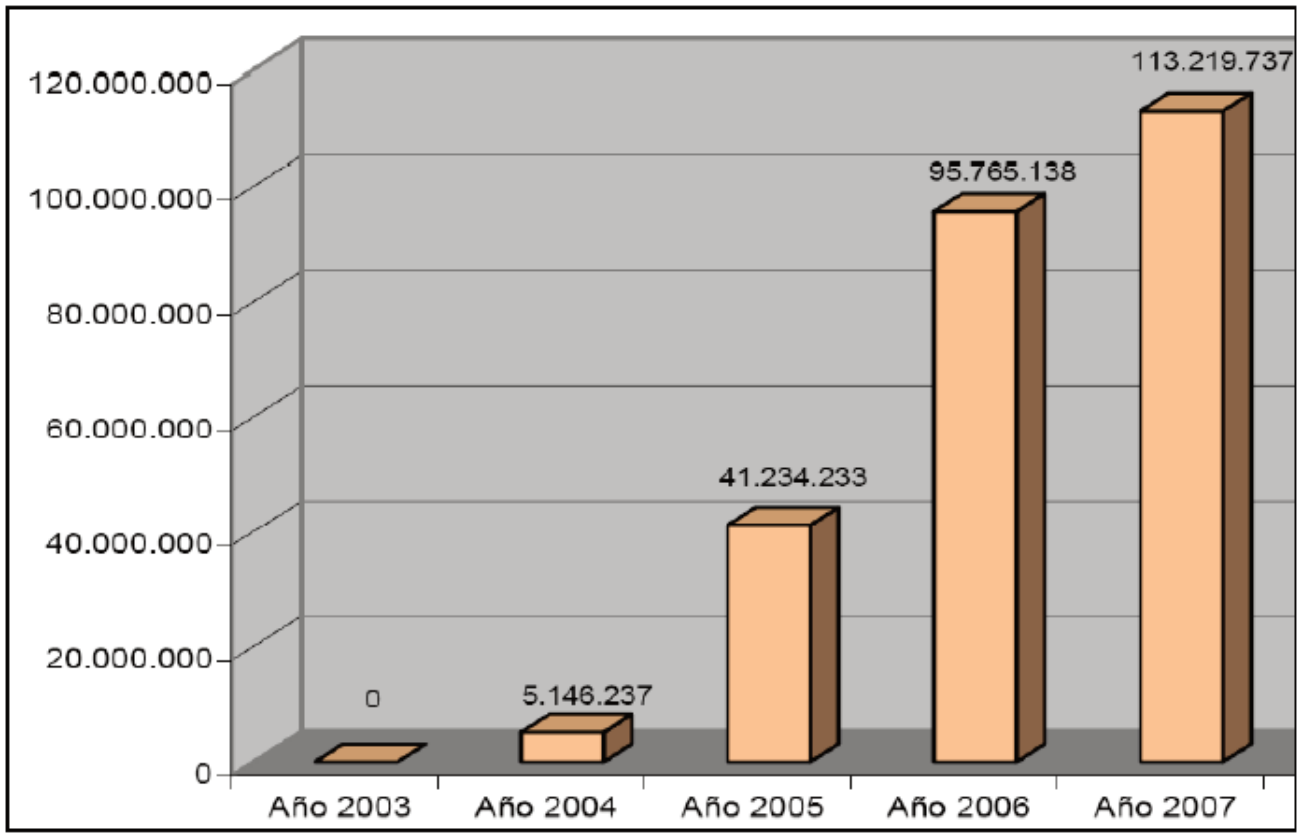
Certificates issued



Consultation of no protected data



Cartography consultation



As highlighted by the above figures, since the launch of the OVC, the take-up of online cadastral services has constantly increased.

5.7 Other Services

At last, the SDGC also provides, by internet or other mean information about
Cadastral Statistics for urban and rural real estate and property tax records. 5 datasets:

- Urban Cadastre (Basic statistics by municipalities);
- Property Tax for urban real estate;
- Rural Cadastre (Basic statistics by municipalities);
- Property Tax for rural real estate.

For Real estate studies and drafting and analysis of the statistical information contained in the real estate cadastres and property tax records directed to Cadastral research and investigations

6 LINKS BETWEEN CADASTRE AND LAND REGISTRY

In Spain, the Cadastre and the Land Register are two independent but closely related organisations.
The Directorate General for Cadastre, dependent on the Finance Ministry, possesses physical and economic data on real estate together with the identification of the cadastral title holder. It also features graphical databases allowing the location and identification of real estates and assignation of a cadastral reference.

The Land Register depends on the Department of Justice and constitutes a legal register of rights that ensures a high degree of legal security in real estate transactions and also acts as a freely accessible public information service.
While the Cadastre uses the cadastral parcel and urban unit as the basic entity, and cartography as the essential territorial support, the Register stores titles and deeds, registered using regulated systems of registration.

The Spanish Cadastre is compulsory by law, the Land Register is not.
Today, the Cadastre and the Register are related systems which use the same Cadastral reference as the key to identification of real estate.
The Cadastre provides to the Land Registry before the title inscription, information about the real estate properties. The Cadastre also supplies cartography and other needed information via CVO. The Land

Registry and the Cadastre are linked on daily basis trough the cadastral code. The notaries and Land Property Registrars are obliged to submit, via CVO, to the Cadastre all the information concerning the documents that they have authorised or registered.

Another important question is, if registration in the Property Register occurred later than cadastral registration, cadastral registration may not differ from the Property Register; on the other hand, if a property presented for registration in the cadastre has not been registered previously in the Property Register, the pursuit of material and legal truth (precision) obligates the cadastre to accept it, even if it is in contradiction to what is published in the Property Register, without prejudice to the evaluation of proof.

7 EVALUATION SYSTEM / REAL ESTATE TAXES

Cadastral value is one of the characteristics of real estate cadastral value is or forms part of the taxable base in several taxes.

There are seven different taxes (three nationals, two regional and two locals) set upon cadastral information. The importance of the Real Estate Property is highlighted here. Local tax collecting every year more than 5.000 millions Euros income, and it is the main income of the municipalities.

The gross base is determined applying to real estate values, assigned by the Directorate General for the Cadastre, the tax rate that the Town Hall approves.

Although the Real Estate Tax enjoys a high level of compliance by the taxpayer, it is permanently faced with strong opposition to any measure that might represent a truly significant change in the short term of its weight in overall local financial resources. The evolution of the real estate markets, as an exogenous factor, and the way the tax affects the principal residence and the family, as endogenous problems, are probably the principal causes of this perception.

We are involved now in a process to reform the system that do not necessarily involve a global increase in the tax, but rather a re-ordering of the tax burden both between subjects and territories or sectors, since more than an increase, what citizens are demanding is a fairer distribution of the tax in function of the changing market.

7.1 The cadastre value

The cadastral value is defined by law as an "objectively determined" value – blocking the way to any consideration of subjective values in its calculation – "based on the data in possession of the cadastre"

The cadastral value of rural real estate is based on the agrarian in come according to the qualification and classification of the subparcels.

The cadastral value of urban real estate is composed of the value of the land and the value of the buildings. It must be fair, objective, and directly related to the market. The market value referred to in the Law is not a price, but rather a theoretical value, obtained from the average market values resulting from the analysis of a given number of samples.
To calculate land value, all pertinent urbanistic circumstances will be taken into account and to estimate the value of a building, in addition to urbanistic and construction aspects, the calculation will take into account its historical and artistic characteristics, its use or dedication, its quality and age, and any other relevant factor

To establish cadastral value, the theoretical market value obtained, using the procedures described in the law, is multiplied by a market reference co-efficient, currently set at 0.50. Therefore, cadastral values obtained by application of established regulations and co-efficients are approximately 50% of the detected market values.

This 50% «padding» allows cadastral values a certain stability over time, but is is not advisable to maintain the same value for more than 10 years, even when during this period the values are adjusted to reflect inflation. Studies show that, independently of the economic situation, market changes produce modifications that make it necessary to establish new cadastral values to adjust them to the new situation of market values.

For this reason, the DGC every year actualised the value of a big number of urban units and now is working to improve the methodology of this massive appraisal process, basing it in the new tools that the technology facilities as the artificial intelligence, the internet real estate markets, agreements with notaries, properties registers and banks, and others.

The cadastral value is also used for taxation purposes but without forget that it is only an administrative value and that by law never can be higher than the market one and, as is established by law, must be proximate to 50% of the market value.

Spanish Data Protection law considers the cadastral value of the real estate a protected data and it is only accessible by the Titleholder, a represented of this one or someone with a legal right to access, as the public administrations exclusively for the performance of their competencies.

7.2 The valuation process

The Cadastral Value of the urban real estates is obteined from the market value that include the value of the land, the value of the construction, a coficient that evaluates the expenses and benefices of the promotion (generaly 1,4) and a localization factor:

$$VV = 1'4 \cdot [VR + VC] \cdot FL$$

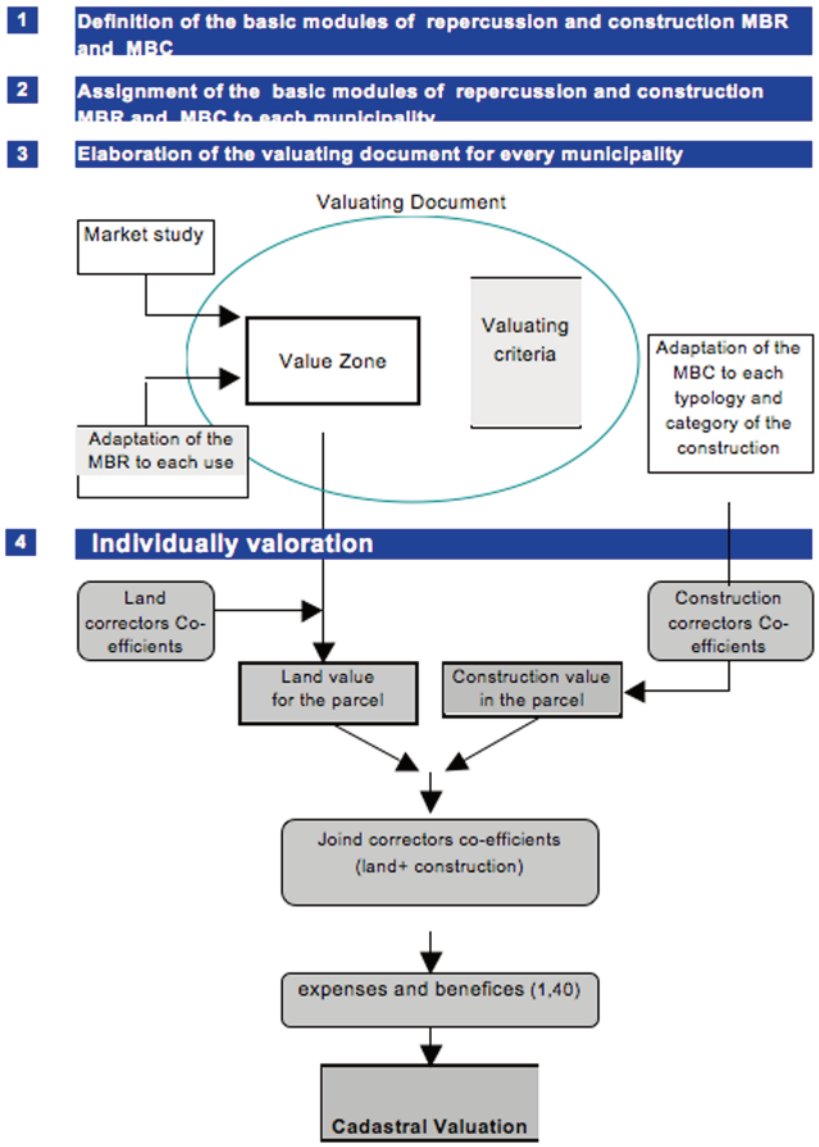
VV	=	market value ¤/m2 of construction
VR	=	repercution value of land ¤/m2 of construction
VC	=	construction value ¤/m2 of construction
FL	=	Localization factor

And as we said before the theoretical market value obtained, using the procedures described in the law, is multiplied by a market reference co-efficient (RM), currently set at 0.50.

$$VCadastral = 1'4\ [VR + VC] \cdot FL \cdot RM$$

The valuation process is described in the following squema and has several fases:

The process begins with the definition of a value module M that is the base for all the values of land and construction. This module is aproved by the economic and finance Ministry taking in acount the national market study.



More information can be found in The Spanish Cadastre's web page www.catastro.minhac.es and on the page of the Permanent Committee for Cadastre on the European Union www.eusrocadastre.org.

THE CADASTRAL SYSTEM IN SWEDEN

LANTMÄTERIET

www.lantmateriet.se

December 2008

TABLE OF CONTENTS

1 INTRODUCTION

1.1 History and purposes of the cadastre

In a wide sense, the Swedish cadastral system of today has roots as far back as the 16th century, when the King (Gustav Vasa) imposed tax on landholders around the country. However, that early land recording only covered textual information about possessor and liability to pay tax, documented in special land books, so it should not be mistaken for the type of parcel based fiscal cadastre that was later set up in some other countries around Europe. Quite the reverse, the land books developed into a register of ownership and other rights to land (the Land Register).

The mapping of the country started in 1628, when Anders Bure was given the mission to survey and draw small-scale geometric maps of the land. In the beginning, this task aimed at documenting the range of the kingdom, town by town and village by village, for the King and his economic interests (see Figure 1). In order to execute this work, Bure set up an organisation responsible for the national land survey – Lantmäteriet (which is still the name of the Swedish Mapping, Cadastre and Land Registration Authority). Some decades later, most of the original work was completed by Bure and his fellow officers. Around that time, the task of the land surveyor guild was widened to comprise also surveying, large-scale mapping and consultation in private land division procedures. Consequently, what may now be considered as ordinary cadastral work has always been a public matter in Sweden.

Figure 1
Geometric map from around 1630.

Back in those days, the rural villages were split up into many small parcels, causing difficulties in individual farming. And low income led, naturally, to low revenue from taxation. This ineffective land use slowly came to an end through extensive land consolidation and re-allotment projects initiated by the King. These so-called enclosure movements spread over the country during the 18th and 19th centuries, paving the way for the modern development of the rural areas. Many survey plans and other paper documents from that period of time are now digitalised. Besides being historical files of general interest to many people, they also play an important role for cadastral procedures of today, especially when agricultural or forest land is developed. Accordingly, some old legislation on property formation is still indirectly effective for boundary investigations etc.

Most towns and cities have had other, much later phases of development. Only some hundred years ago, the first legislation on town planning and urban real property formation was introduced. In those areas, the municipalities had great powers in the roles of local governments, not least considering land management.

The geometric maps by Anders Bure and the maps from the enclosure movements may be seen as the foundation of the Swedish cadastre. However, no proper parcel based register was established until two separate cadastres (called Real Property Registers) of rural and urban areas respectively were created in the early 20th century. In 1968, these two registers were put together and, moreover, integrated with the Land Register. At that time, such an extensive merge was a fairly unique approach in the European context. The result was a compound Real Property Register, with additional information about e.g. address and tax assessment value (see section 2 below).

This modern, holistic type of cadastre implies a much broader purpose than did the earliest days of fiscal land books, and its application is clearly of a multi-purpose character. One of the most important functions is to provide the property market – buyers, sellers and credit institutes – with a fully open and transparent register of all real properties and their attributes. Other major benefits serve basic national interests such as city planning, road and railway infrastructure, and environmental analysis.

1.2 Development of the institutional and organisational structure

As described above, Lantmäteriet has always been the central managing institution for the Swedish cadastre. This authority has been a governmental organisation from the start, although under different kings and ministries. During modern times, Lantmäteriet has belonged to the sphere of authorities headed by either the Ministry of the Environment or the Ministry of Housing. Today, Lantmäteriet is

given its formal instructions from the government through the Ministry of the Environment. Besides the cadastral issues, this ministry is responsible for various aspects of the environment we live in, such as sustainable land use, water protection, housing regulations and climate change.

Until recently, the registration of ownership and other rights to land was handled by another authority, the Land Registry. It used to be a part of the local courts under the Ministry of Justice. Since 1 June 2008, this authority is fully integrated in Lantmäteriet, as the organisational Division of Land Registration. Thereby, Lantmäteriet – as one public body – is now referred to as the Swedish Mapping, Cadastre and Land Registration Authority.

1.3 Organisational and financial issues

The fundamental mission of Lantmäteriet is to provide support for creating an efficient and sustainable use of Sweden's real properties, land and water. This task covers four main activities, which also form the organisational structure into four Divisions:

- Cadastral Services;
- Land and Geographic Information Services;
- Land Registration;
- Metria (commercial services).

In the context of this report, focus is mainly on the Division of Cadastral Services, with a number of staff of almost 1,000. On the national level, this Division has a clearly managing task: to give support to and supervise the cadastral authorities around the country. Such authorities, which are either State or municipal bodies, have the mission to carry out all practical and administrative work for subdividing land, solving boundary problems and similar actions (see section 4.2 below). The national responsibility for the Division is basically to enable these local offices to handle cadastral procedures smoothly and securely. More specifically, this task includes offering of advanced training and expert advice, development of methods and technical tools, and annual quality control.

Another important task for the Division of Cadastral Services is to promote revisions of land related laws. This work is done mainly by writing official reports with suggestions of new legislation and by keeping a good dialogue with the Ministry of Justice. Consequently, the assignment of this Division goes beyond the conventional 'top-down' managing role.

The Division of Land and Geographic Information Services is responsible for the generation, further development, management and distribution of Sweden's geographic and land information. Another task, of both national and international importance, is research and development in the fields of geodesy, cartography and GIS (geographical information systems). The staff counts over 500 people.

The Division of Land Registration is responsible for checking and recording title registration matters, such as information about ownership, site leaseholds, mortgages and some other rights to land. Along with these legal matters, the Division also handles the collection of stamp duty and fees related to conveyance of real property. Some 200 people work at this division.

Metria carries out a broad programme of commercial services including consultancy. The consultancy commissions mainly cover detailed field survey and mapping, remote sensing and geographic information techniques. One of Metria's specialist areas of competence is the development of customised GIS solutions. The number of staff is 400.

Accordingly, the services provided by Lantmäteriet's four Divisions extend over a wide span. With that fact taken into account, it is only natural that the organisational blocks are financed in different ways. The Division of Cadastral Services is financed by fees deriving from the various types of work done by the cadastral authorities. The cost of an ordinary subdivision is usually about 1,500-2,000 Euro, while a property definition matter due to a boundary dispute may exceed 4,000 Euro.

The Division of Land Registration is also mainly financed by fees, such as the money paid for registration of ownership and other rights. For example, the stamp duty for title registration of a residential property is 1.5% of the purchase price, and for new mortgages there is a stamp duty of 2% of the encumbrance sum. In addition, there are some small administrative fees.

The Division of Land and Geographic Information Services, which both stores and delivers data, is financed by grants from the Government (about 40%) and fees from users (about 60%). The fees derive from the provision of data from the Real Property Register, the SWEPOS network (see section 3.1 below) and a range of additional services.

Metria, the commercial Division within Lantmäteriet, operates in competition with other companies on the national and international market. The services are carried out on contract and are obviously fully financed by fees.

1.4 Management structure and decentralisation

The head of Lantmäteriet is the Surveyor General, who is also a member of the board. The other board members are representatives from various governmental and private organisations. Their main tasks are to decide on strategic plans and to follow up on the results. In the position as head, The Surveyor General has the over-arching responsibility for all four Divisions within Lantmäteriet. In order to handle this task, he is assisted by a number of corporate functions for finance, personnel etc. Altogether, this group of staff counts over 300 people.

Each Division at Lantmäteriet has its own Director, and under this management on the national level are one or more regional and local positions. Within the Division of Cadastral Services, these lower positions are Chief County Surveyors and office directors for the State cadastral authorities. Their responsibilities cover different parts of the operative management of the practical cadastral work (subdivisions etc.).
While all State cadastral authorities are thus part of Lantmäteriet, the municipal cadastral authorities are sovereign bodies within the local authority constituting each municipality. Consequently, these cadastral authorities are headed by municipal office directors. However, concerning some legal aspects of the handling of the cadastral work, they too are supervised by Lantmäteriet.

Regarding decentralisation, there is more than one aspect to consider. For example, the Surveyor General, as well as the Directors of the four Divisions, is based at Lantmäteriet's head office in Gävle, a city about 1.5 hours' journey by train northbound from the capital Stockholm. Now being the joint national agency for cadastre, mapping and land registration, the total number of staff at this office counts approximately 800 people.

The cadastral authorities are to be found in almost 120 cities and towns nationwide (80 State offices and 38 municipal offices). Since some parts of the country are sparsely populated, and an increasing amount of information exchange can be handled through e-administration, the number of such offices is likely to be reduced in the future.

The other Divisions within Lantmäteriet are also decentralised, with local offices all around the country. Division Metria is represented at some 40 locations, while the two remaining Divisions run less than ten offices each.

2 CONTENTS OF THE CADASTRE

2.1 General about basic cadastral elements

As mentioned above, the fundamental mission of Lantmäteriet is to give support for creating an efficient and sustainable use of Sweden's real property, land and water. In addition to these domestic aspects, the responsible Minister has emphasised the importance of Lantmäteriet and its European sister organisations for a range of international matters, both within Europe and in other parts of the world. Smooth and secure land administration in general, and effective systems for cadastre and land registration in particular, are considered fundamental bricks for building prosperous and sustainable societies. In order to provide public and private interests with this important basis, the information about land must be well defined and logically structured.

In the Swedish cadastre – called the Real Property Register – all data is linked to the basic element of the real property unit, constituting one or more parcels (land lots) under the same legal ownership. The real property unit, often just called 'real property', can either consist of only land or include one or more buildings. Every such unit is given a unique designation composed of four sections: name of municipality, name of district, block number and unit number. This identification is the fundamental and most common entry to the register. When a real property consists of more than one parcel, all parcels are given index numbers subordinate to the formal designation.

2.2 Cadastral register (the Real Property Register)

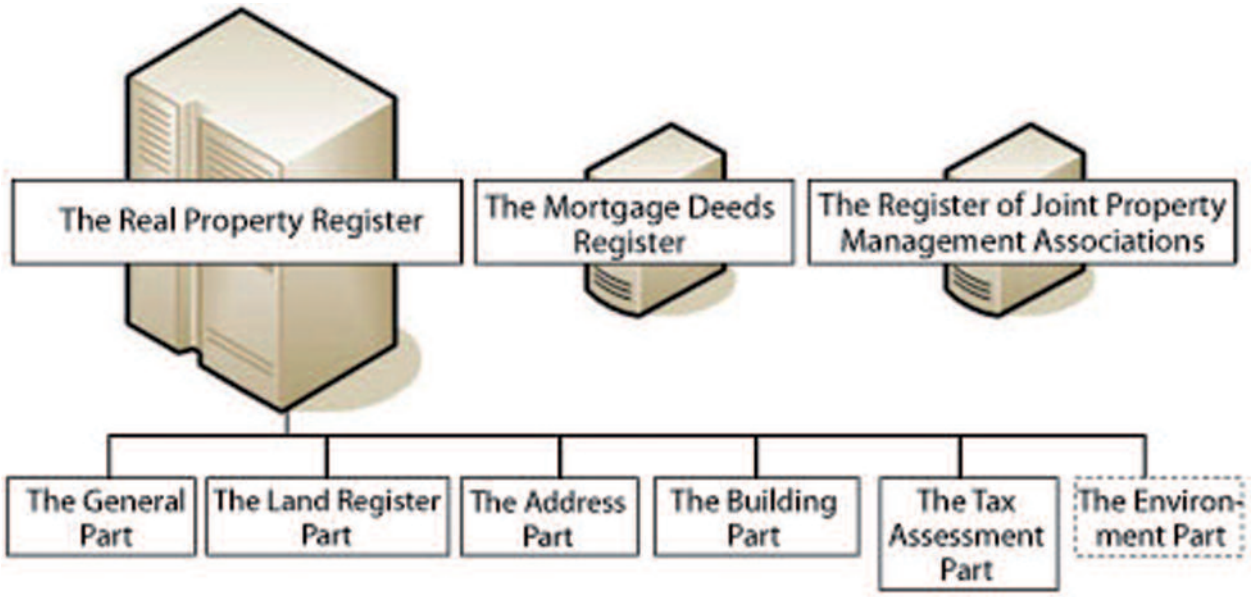
The Real Property Register is a comprehensive register that keeps record of most issues related to land. And by 'land' means, in this case, all land and most water areas in Sweden, covering about 450,000 square kilometres. The country's administrative division into real properties counts approximately 3.3 million units.

For each real property unit, an individual record of information is stored, listing a range of technical, legal, administrative and economic data. The contents is generated by and imported to the Real Property Register from different sources. In reality – although hidden for the user – the register consists of five separate sub-registers (see also Figure 2):

- The General Part (the Cadastre);

- The Land Register Part;
- The Address Part;
- The Building Part;
- The Property Tax Assessment Part.

Figure 2 - Structural outline of the Real Property Register



The General Part, which corresponds to what is often labelled the Cadastre, includes traditional cadastral information. For each real property unit, the register accordingly reveals the physical extent (acreage and number of parcels), location (centre co-ordinate of each parcel) and origin (all cadastral procedures carried out). Further, there is information about possible shares in joint facilities, plans and regulations, and separated land lots.

Much of this cadastral attribute data derives from what used to be the separate urban and rural cadastres. It also includes all changes and new properties created by the cadastral authorities since the merge of the two cadastres. The information reveals not only the current situation of each property but also much of its historical background. This way, one may follow the land development from the time of the enclosure movements up to now. As mentioned above, the current property boundaries in

many rural regions date back to these land consolidation actions, while urban property boundaries are generally much newer.

The Land Register Part contains registration of ownership and site leasehold information, such as purchase price, purchase date and owner. The part also contains mortgages, rights registrations, notes and information about older conditions.
The Address Part contains information about physical addresses and certain added information, such as popular name, postal code and town.

The Building Part contains some basic data concerning houses and other buildings on each property, for example what type of buildings they are (dwellings, non-residential premises, industries etc.). There is also information about the location, and sometimes a supplementary note of an alternative name of the place. Unlike some other European cadastres, there are neither plans (detailed graphical descriptions) nor photos of the buildings.

The Property Tax Assessment Part includes information about the tax assessment values of land and buildings respectively (see section 7 below).

In addition to these five parts of the Real Property Register, the outline in Figure 2 above indicates an Environment Part, which is not yet accomplished. It is intended to comprise information about various environmental aspects linked to land and buildings. Alongside the Real Property Register, there are also two related registers, holding mortgage deeds and details about joint property management associations.

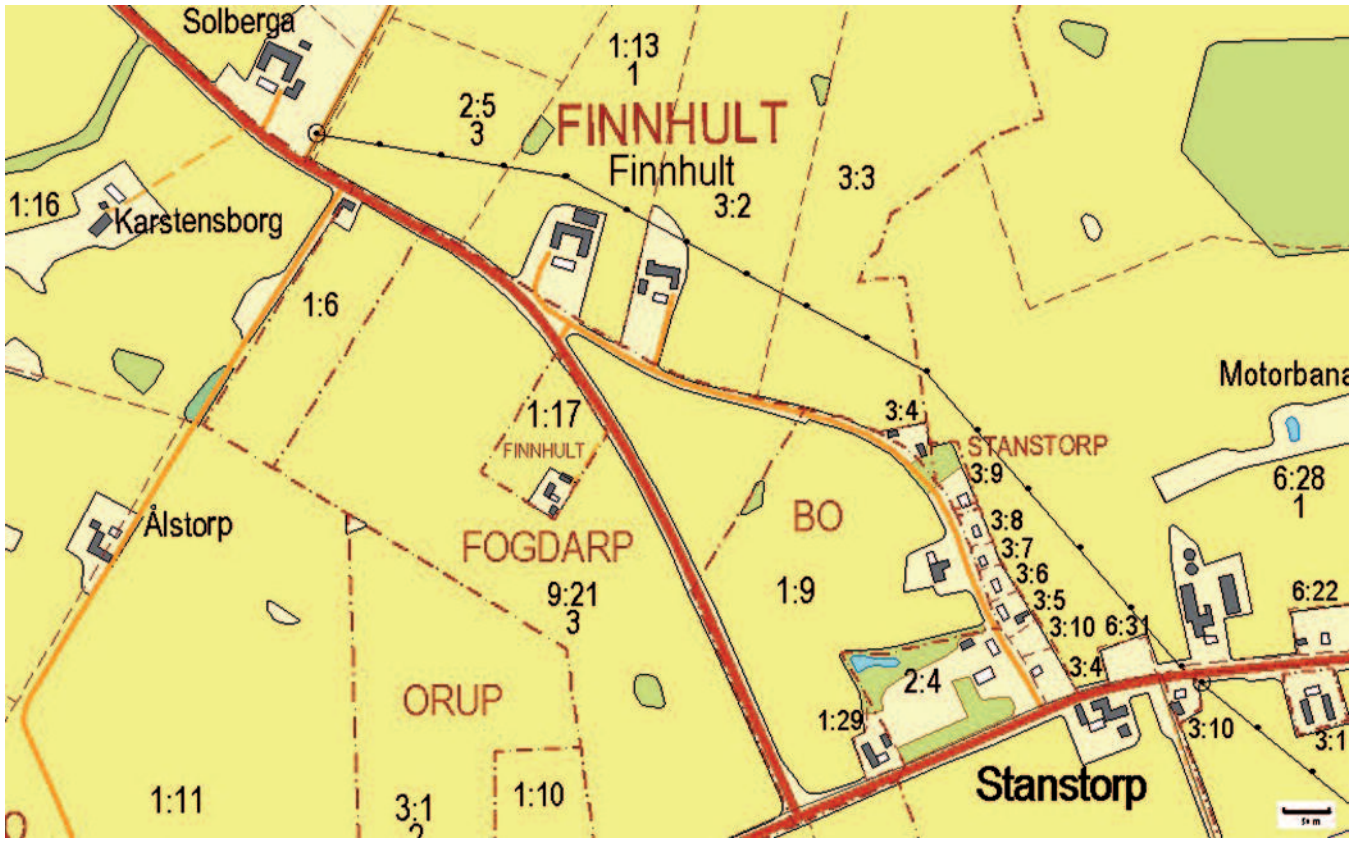
The legal effectiveness of the information in the Real Property Register varies to a great extent. While a registered title to land guarantees substantial protection of ownership, much of the registered cadastral data is only of mirroring character without any legal importance of its own. For such cadastral information, for example the acreage of a property, the legal effectiveness lies in the formal decision documented in the cadastral dossier(s) of the subdivision or other kind of property formation.

A similar situation concerns the cadastral origin of a property, which is only indirectly revealed in the register. One can read a chronological list identifying all cadastral procedures carried out, but the actual and legal contents of each of these procedures is only described in the cadastral dossiers. Consequently, the Real Property Register is just an index of the underlying legal sources of information regarding cadastral data.

2.3 Cadastral map

Along with the text information presented above, the Real Property Register comprises a digital cadastral map (see Figure 3). This continuous digital map covers the whole country except for a few mountain areas in the north. A few municipalities with own cadastral authorities are also yet to be included in this national map data base.

Figure 3 - View of a rural village, as shown in the digital cadastral map. © Lantmäteriet Gävle 2008.



Many of the old cadastral maps printed on paper, in the scale 1:10,000 or 1:2,000, were used (scanned) in order to build up of this digital version, but the current format also includes information from later, more detailed surveys and aerial photographs. Property boundaries and many other features are stored as vector data, which facilitates updates.

Although being part of the Real Property Register, this map is mainly of index character – implying no legal effectiveness of for example the boundary representation. Instead, and similar to much cadastral data in the text part of the register, the cadastral dossiers are the fundamental and true sources. (Regarding boundaries, the relevant such document is the cadastral survey plan, which often includes both a graphical description, i.e. a map picture, and a list of numerical data, i.e. coordinates of boundary points.)

The contents of the digital cadastral map cover a fairly wide range of information. Somewhat simplified, the information can be divided into the following main groups.

One large group of features is of topographic character, for example roads, buildings, power transmission lines and other physical objects on the ground of a certain size. These map objects are created either through interpretation of aerial photographs or from field surveys. Common for these objects are that they represent the visual reality, often with a fairly high accuracy.

Another comprehensive set of features is strictly administrative, such as property boundaries and property unit designations (names and numbers). These map lines, texts and figures – which constitute an important part of the cadastre – correspond to formal, abstract matters. (On the ground, many property boundaries are given a concrete form by a fence or a hedge, but such 'physical boundaries' do not always correspond to the legal boundaries mirrored in the cadastral map.) The property boundaries shown on the cadastral map are of very different origin. In urban areas, which have been exploited intensely or in modern times, the map is often based on detailed sources including measurement data. In agricultural areas and forests, on the other hand, the map boundaries often derive from the digitalisation of old, small scale paper maps. Consequently, the accuracy of the cadastral map varies from centimetre level at best to tens of metres at worst. An average level of accuracy for many regions in the countryside lies between these extremes, around 4.5 metres. Such a low quality of the boundary data can obviously cause problems, especially for users who are not aware of the potential discrepancy between the map and the legal boundaries. Due to such risks and general problems of low accuracies, Lantmäteriet is now considering ways to improve the boundary data.

A third type of common features in the cadastral map consists of areas of different land use, shown in typical colours. Examples are agricultural fields (green or yellow), forests (dark green), lakes (blue). Such areas are of informative character, showing the reality on the ground. Other kinds of area features presented on the map indicate zones of restriction, for example limitations to build houses close to the sea or lakes. Yet another type relates to the geographical extent of the current detailed development

plan decided by the municipality, showing permitted land use and planned types of exploitation.
Further, the map includes some purely descriptive texts, such as names of villages and lakes, for information only.
All these groups of features are stored in different layers in the register data base. On the computer screen, the cadastral map can show all or only some layers on top of each other for a complete or selected picture.

3 TECHNOLOGICAL INFRASTRUCTURE

3.1 New reference system

The property boundaries and other kinds of so-called geodata in the cadastral map are based on coordinates defined by a new national reference system called SWEREF99. This reference system is created on the basis of the global system WGS84, which facilitates the use of GPS supported measuring device in cadastral field surveys.

The increasing number of other – public and private – applications using modern GPS technique also gains from the new national reference system. For example, when planning or building roads and residential areas, a uniform and standardised foundation for geodata is an important prerequisite for both documentation and the actual work.

In order to make possible efficient and highly accurate measurements of boundary points and other details, a network of permanent reference stations for GPS has been established. So far, this network, called SWEPOS, consists of 27 main stations and an additional 125 simplified stations set up all around the country except for some mountainous regions in the north-west (see Figures 4 and 5).

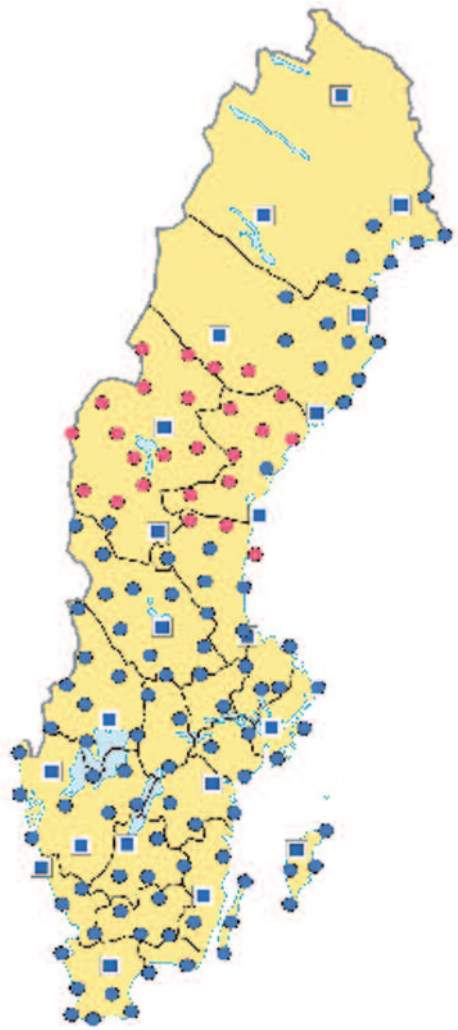


Figure 4 - The location of the SWEPOS network of reference stations for GPS.

Figure 5 - The SWEPOS main station in the town of Vänersborg

Thanks to these active reference points, with well-defined SWEREF99 positions, one can use special GPS techniques for efficient measuring with high accuracy. One such technique, called network-RTK, combines the information from satellites and the permanent SWEPOS stations in order to deliver exact positions (centimetre level) within a few seconds.

The responsibility of development and maintenance of SWEPOS rests with the Division of Land and Geographic Information Services within Lantmäteriet. This Division also provides access, in the form of either long term or short term licences, to external users.

The graphical pictures and coordinates included in the cadastral survey plans, on the other hand, are much less standardised than the cadastral map. Many different survey techniques and local reference systems have been used over the years, and the quality of the geo-referred support varies fairly much.

Although most local reference systems of today are compatible with SWEREF99 through mathematical formulas, it may be difficult to transform the information in older cadastral survey plans to the current, national system. At least, there is a risk of further quality loss. These circumstances need to be noticed when using and comparing maps from different sources.

3.2 Need of structural improvements

The technical structure of the Real Property Register is partly coloured by its character of a joint register. The external user looking at his or her computer screen cannot see the different sub-registers, but the data bases and links underneath the visualised record reveal a fairly complex architectural framework.

As listed above, there are five separate parts involved, run by different State or municipal bodies.
A substantial part of these sub-registers were created mainly in the 1980s, when the former paper registers were digitalised, so some hardware and software are partly old by present standards. Some efforts of modernisation and standardisation have however been made in recent years, in order to facilitate the data architecture of the joint register.

Despite necessary improvements of the basic technical structure, some issues of maintenance and data exchange (incoming data for updates and outgoing data for delivery) are still great challenges for Lantmäteriet's Division of Land and Geographic Information Services. With a growing demand for property information and other geodata from various public and private users, the task to deliver the recorded data in generally applicable formats has become increasingly important.

Recently, the need for smooth ways for such data handlings led to an initiative of a comprehensive modernisation of the technical structure of the Real Property Register. In the years to come, both the data bases and the channels for data exchange will be restructured. This work will follow the Inspire Directive, which aims at standardisation and better exchange of geodata between users within Europe.

Regarding tools for the actual cadastral work, Lantmäteriet has gradually developed a number of IT systems supporting the land administration procedures (see section 4.3 below). A comprehensive re-structuring of the entire IT solution will now be carried out in order to create a homogeneous handling of IT development and maintenance. This work is based on a common service oriented IT architecture.

4 UPDATING PROCEDURES

4.1 Existing types

The cadastral information in the Real Property Register – The General Part including the cadastral map – is normally updated only when a formal change or a clarification is done to the land's division into properties. This means that every cadastral procedure, for example subdivision or determination of a boundary, imposes an immediate update.

In rare cases, some cadastral data can also be updated as a result of adjustments to the reference system. Recently, every registered property was updated as to its coordinates due to the transition to SWEREF99 from the former system. This kind of adjustment is of solely technical character and does not imply any legal change.

Updates to the other four parts of the Real Property Register are made through separate procedures, either due to certain changes or at fixed intervals. Land registration matters are directly linked to new legal conditions, such as changes of ownership or new mortgages. Due to the importance and topicality value of this kind of information, the update procedures are always made on a daily basis.

A daily update policy is the aim also for the information about addresses and buildings, but the interval may be longer within some municipalities. The information about property tax assessment, however, is updated only once a year.

4.2 Organisations and persons involved

Since more than a decade, all cadastral work – from field surveys to registration – is a task for the cadastral authorities. As described above, these authorities are either State bodies (part of the Division of Cadastral Services within Lantmäteriet) or separate, municipal bodies. Unlike many other European countries, there are hence no private sector cadastral surveyors in Sweden.

At the cadastral authority offices, land surveyors and other cadastral officers handle the whole chain of activities within the formalised cadastral procedure. All subdivisions, re-allotments and other means of creating or changing property units are commonly labelled property formation (see Figure 6). This process comprises investigations, consultation with other authorities and technical work such as boundary surveying and mapping – but also making the actual legal and economic decisions.

For example, the cadastral officer is authorised to decide about compulsory purchase as well as economic compensation between property owners when land lots change hands.

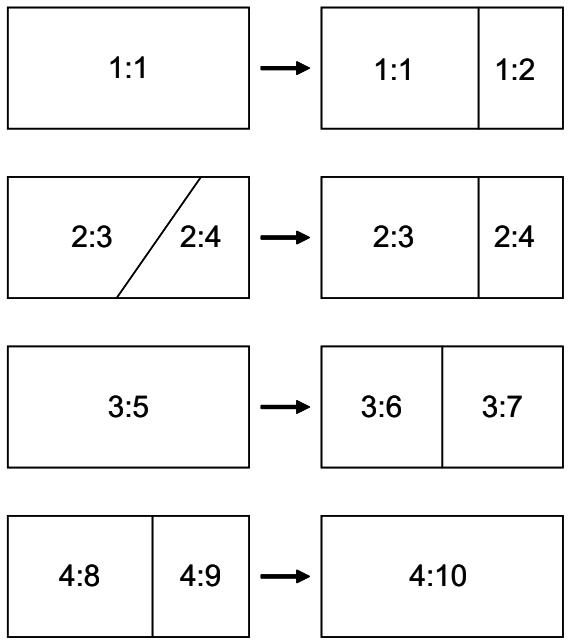
Figure 6 - The four kinds of property formation; the situation before and after. Designations refer to block number and unit number.

Subdivision creates one additional property unit at some expense of the acreage of the residual property.

Re-allotment mutates the original properties, e.g. by land transmissions (see figure). One of the properties may also be fully transmitted to the other, resulting in only one remaining unit.

Partition splits one co-owned property, resulting in two new properties owned by the respective persons.

Amalgamation consolidates two or more properties owned by the same person(s), resulting in one new property unit. The original properties cease to exist.



Furthermore, the cadastral officer is authorised to handle boundary disputes and other kinds of property definition matters. In such processes, for example in determining the course of an uncertain boundary, all historical documents of relevance must be taken into consideration. Consequently, in respect of both property formation and property definition, the cadastral authority has an extended function of that of a local land court (first instance). If a property owner appeals against the decision, it will be a case for such a court and, if required, for higher instances.

Despite a far-reaching responsibility of the cadastral authority to make thorough investigations in all cadastral procedures, the property owners are obliged to be active and provide certain information that is not recorded in public registers. A cadastral matter is thus to be discussed and solved in cooperation between the cadastral officer and the parties involved.

After settling all necessary issues of the property formation or property definition, the cadastral authority ends the process through a registration (addition or alteration) in the Real Property Register. By that formal ending, the cadastral procedure is completed, implying full legal effect to the new facts.
The organisational structure above implies that the cadastral officers (mostly land surveyors) handle the whole chain of activities related to the formalised cadastral procedure. In most cases, the same person does the complete job, including the registration. In order to keep a high level of legal security in this slimmed process, there are many checkpoints integrated in the handling system. Some of these steps simply function as reminders, but many steps automatically stop the process from continuing until certain corrections have been made. Before entering new or changed information into the register, there is also a final check of the result to be (text and cadastral map). This way, the cadastral officer can get the full picture of the update before effectuating the registration.
Concerning updates due to a reference system change, the main subject involved is the Division of Land and Geographic Information Services within Lantmäteriet.

Nowadays, Lantmäteriet is also the involved subject for the register updates due to changed ownership and other land registration matters. Such updates, based on applications from the property owners, are handled by the Division of Land Registration.

Concerning addresses and buildings, new data is recorded by the respective municipalities.

The property tax assessment data comes from the National Tax Board, which is the authority responsible for all property taxation. However, Lantmäteriet is partly involved in the preparatory work by providing some of the basis for the assessment, for example market analysis and mass valuation models. Property owners are also contributing in the initial phase of the taxation process, by handing in a compulsory specification of the standard of the building.

4.3 Processes' automation

The Real Property Register is kept by use of automatic data processing. The central computer of the register is situated at Lantmäteriet's head office, where it is heavily protected from attempts of both physical damage and hacking. The responsibility for data storage, technical applications for register maintenance etc. lies with the Division of Land and Geographic Information Services.

As regards the updating procedures, some different software is used. Since a decade, the main tool is a specially designed computer programme named Trossen. It was developed by Lantmäteriet in the

beginning of the 1990s and is now used at most cadastral offices around the country. Providing instruments for both textual documentation and advanced calculations, it makes possible a smooth handling the whole cadastral process – from the initial application from a landowner to the final registration in the Real Property Register. Its two-way communication to the text part of the register, as well as to the cadastral map, forms an efficient link in the complex handling process.

In addition, there are two main mapping software used within Lantmäteriet, both linked to Trossen. The most modern of these programmes, named ArcCadastre, is still under development. When reached its completion, it is aimed to make possible many kinds of mapping, calculations and GIS analysis. At that stage, it will fully replace the old software, which is fairly limited as to its applications.

5 PROVIDED SERVICES

The fundamental principle is that the full contents of the Real Property Register – the text part and the cadastral map – is public and, in that respect, available to everyone (at least on paper copies).
The fact that no groups of information are secret is a matter of transparency, which is very important for the effectiveness and security on the property market.
Credit institutes, potential buyers and other interested parties can hence trust the recorded data, knowing there is little need for additional investigations. Only in exceptional cases, when a property owner has a protected identity, is some personal data such as name and address hidden to the general public.

Concerning the availability via the Internet, there are some restrictions as to the contents shown. Depending on the receiver's professional position and intended use of the data, the register information can be accessed on-line either in full or in a reduced version.

The cadastral offices, land registry offices, municipalities and other public bodies involved in land administration have automatically full access to all data in the text parts. Some other users, such as banks and brokers, are also allowed full access to the data base, but as external users they need a special permit from Lantmäteriet. In order to get this access, all parts pay a user fee.

The reduced set of information is accessible for everyone through a service called PropertySearch on the English version of the official web site of Lantmäteriet (www.lantmateriet.se). The customer orders the information by filling in the real property designation or postal address of the property in a special web form, and the record is then sent to the customer via e-mail in the form of a pdf-file (see Appendix A).

The data excluded in this record is of personal character, such as the legal owner (name and personal identification number) and information about mortgages. At the moment, this on-line information is subject to a charge of 5 Euro, but the intention for the future is to provide it for free.

For those people who do not use the on-line facility, or who need the full record of a property, the cadastral authorities and some other public offices are obliged to provide a paper copy free of charge. The access to the cadastral map data base is more restricted. Only a small extract of this map, showing the local area around a specific property, is added to the PropertySearch record. In order to obtain larger parts of the cadastral map in digital format, all users need to sign a special agreement and pay a user fee.

6 RELATIONSHIP BETWEEN CADASTRE AND LAND REGISTRY

As mentioned above, Swedish land registration includes the recording of rights of ownership (land titles), mortgages etc. Such information not only becomes public through the registration – the rights even get guaranteed against potential claimers. Also, the willingness among credit institutes to lend money increases thanks to this rise in validity. The registration is, hence, of great importance for banks and other interested parties as well as for the land owner.

Before 1 June 2008, land registration was a task for a special authority within the local courts. Now, this function is integrated in Lantmäteriet, as the Division of Land Registration, directly parallel to the Division of Cadastral Services. With this new organisation, Lantmäteriet can offer a more rational process of handling land related issues.

7 RELATIONSHIP BETWEEN CADASTRE AND REAL ESTATE TAXATION

7.1 Taxes on real property

There are several types of taxes and fees related to real property. The three most important taxes are real property tax, transfer tax and capital gains tax. Until recently, these have all been levied by the state.

Real property tax is paid annually for most types of properties. Exceptions are agricultural properties and public buildings such as schools, hospitals, museums, embassies etc. Until 2008, the tax rate on residential houses has been 1% of the tax assessment value (described below). However, this national (state) tax is now changed into a municipal fee of a fixed amount. Other types of properties will remain in the previous system. This means a tax rate of, for example, 0.5% for industries and 1% for vacant lots. The tax is imposed on the owner of the property.

The basis of the real property tax is the tax assessment value. This kind of property value is established as a base value, corresponding to 75% of the market value. General tax assessment programmes take place every six years, with an annual indexation in between. Additional updates are also done if needed due to renovation or other significant changes to the building. In order for the National Tax Board to estimate the general tax assessment value for all properties, they use assessment models for mass valuation, including land value maps, provided by Lantmäteriet. Statistics of property sales, registered in the Real Property Register, form the basis for these models. Land and building(s) are handled separately, and the finally decided tax assessment value is presented both in total and divided in two parts.

Transfer tax, often referred to as stamp duty, is a national tax for conveyance of real property. The tax rate for private persons is 1.5 % of the purchase-sum, or of the tax assessment value should it be higher. For companies and other juridical persons the rate is 3%. The tax is to be paid by the applicant of registration of title, who must also pay a small administrative fee.

Capital gains tax is a national tax on profit on real property transactions. The tax rate is approximately 20% of the profit. In certain circumstances, the payment may be postponed until a subsequent sale. The tax is imposed on the person making the profit.

The actual collection of real property tax and capital gains tax is done by the National Tax Board as part of the ordinary income tax collection system. Transfer tax, on the other hand, is collected in connection with registration of title, which is managed by the Division of Land Registration at Lantmäteriet.

7.2 Access to the taxation information

The tax assessment value for the current year is stored under a special heading in the Real Property Register. The recorded information shows the total of this value and its division into land value and

building(s) value. There is also the name and address of the person who is liable to pay the tax.

This set of information is fully accessible to everybody. Besides being the basis for national taxation, the tax assessment value is used for other purposes. For example, banks and brokers estimate market values and make various economic analyses from this data. Cadastral surveyors sometimes also use the information, for deciding the amount of compensation for encroachments etc.

FastighetSök - *för alla*

Åkarp 17:9 i Burlöv, Villavägen 10

November 10, 2008

Acquisition

Köp	Köpeskilling
2002-08-01	2.180.000 SEK, avser hela fastigheten.
2002-08-01	2.180.000 SEK, avser hela fastigheten.

Tax assessment unit

Taxeringsenhet
Småhusenhet, helårsbostad för 1-2 familjer (220)
Omfattar hel registerfastighet

Uppgiftsår	Taxeringsår
2007	2006

Taxeringsvärde	därav byggnadsvärde	därav markvärde
1.466.000 SEK	882.000 SEK	584.000 SEK

Värderingsenhet småhusmark 027008257.

Taxeringsvärde	Riktvärdeområde	
584.000 SEK	1231008	
Tomtareal	**Strand**	**Vatten o avlopp**
1 005 kvm	Ej strand (eller strandnära mer än 250 m)	Kommunalt vatten Kommunalt avlopp

Fastighetsrättsliga förhållanden
Självständig

Värderingsenhet småhusbyggnad 027009257.

Taxeringsvärde		
882.000 SEK		
Bebyggelsetyp	**Total standardpoäng**	
Friliggande	37	
Bostadsyta	**Biutrymmesyta**	**Värdeyta**
95 kvm	42 kvm	103 kvm
Nybyggnadsår	**Tillbyggnadsår**	**Värdeår**
1937	1960	1940

Under Byggnad
Nej

Area

Område	Totalareal	Därav landareal	Därav vattenareal
Totalt	1 005 kvm	1 005 kvm	

Encumbraces
Fastigheten besväras ej av sökt eller beviljad inskrivning.

Rights and encumbraces
Redovisning av rättigheter kan vara ofullständig

Plans, regulations and ancient monuments

Planer	Datum
Stadsplan	1978-08-02

Share in joint facility
Samfällighetsutredning ej verkställd, redovisningen av fastighets andel i samfällighet kan vara ofullständig

Cadasteral procedure

Fastighetsrättsliga åtgärder	Datum
Avstyckning	1936-12-18