



## Business models in practice – Example from Spanish Cadastre

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- Introduction.
- History.
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# Catastro español: Spanish Cadastre:



***The Spanish cadastre was a pioneer public sector organisation in its facilitation of access and re-use of its data for free for both commercial and non-commercial purposes.***

***We began to offer our data free of charge by internet on 2003***

***[http:// sedecatastro.gob.es](http://sedecatastro.gob.es)***

***The Spanish Cadastral Service by internet gives cost-free, easy, rapid, 24-hour, 7 days a week access to cadastral data and to many services adapted to users***



The open approach has led progressively to a huge success in demand,

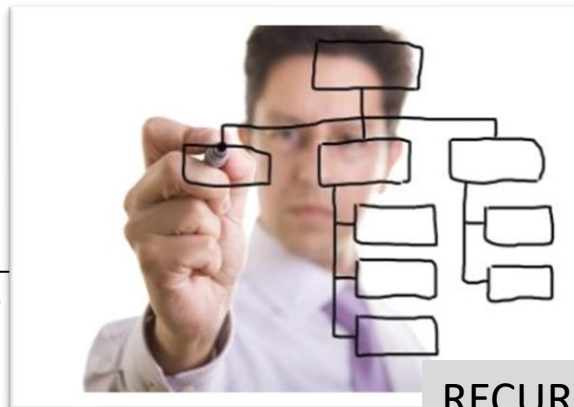
**daily 1.1 million consultations and almost 21.000 certificates**  
**Annual maps download: over 380 Millions**

The cadastral information is increasingly in demand by businesses and citizens to develop many new products associated with a large variety of activities: market analysis, site location, geo-postal services, infrastructure design and management, security, emergencies.....



Cadastre has evolved from being a government tax collection and a real estate security service  
↓  
to being a socially valuable tool and becoming one of the greatest transversal public services of the country



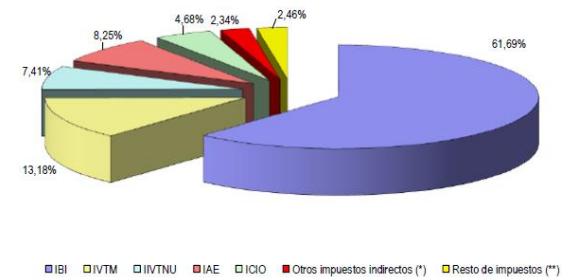


## *The cadastral philosophy was to maintain an open administration*

*At least three reasons influenced the cadastre in offering the data for free on 2003:*

- 1. The Spanish cadastre is financed principally by the national budget, (by taxes of citizens) because we are **necessary** in determining the values of real estate that are the basis of property taxes*
- 2. We found it a contradiction to seek economic compensation for access to cadastral information when our public task is to collect the data anyway for purposes of fiscal control.*
- 3. ....data is not our, is of all!! Spanish Government was implementing Re-Use directive*

RECURRENT real estate tax is the main income of the Spanish municipalities,



The government considers every euro spent on cadastre as a good investment because it has a direct impact on the municipalities and other institutions

We charged for special services but the download by internet, without human intervention, has been since 2003 free

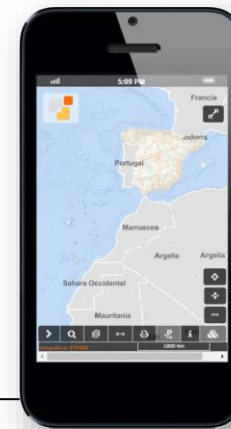




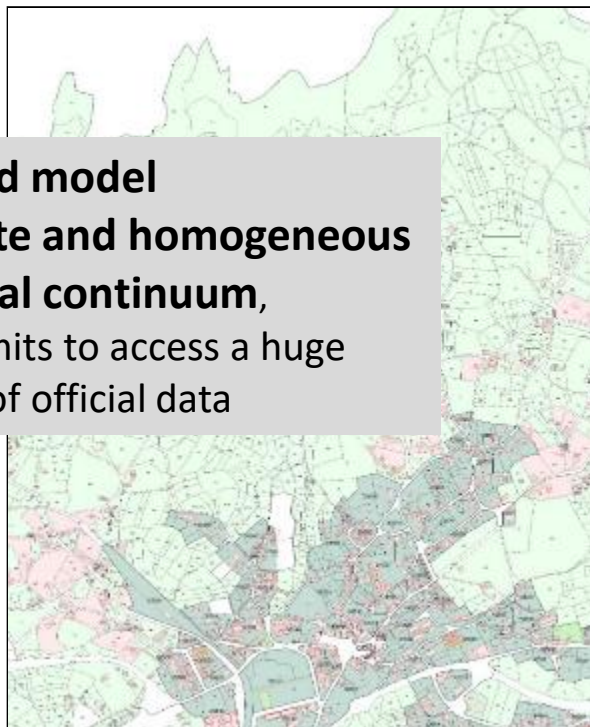
## Main task of the Spanish Cadastre is to describe each real estate object and to assign a value to it.

Descriptive data of each real estate object on continuous cartography

Manages information of 78 millions properties



**Standard model**  
**Complete and homogeneous**  
**territorial continuum,**  
that permits to access a huge  
amount of official data



– Real Estate Identification data:

» cadastral reference, province, municipality, addresses or location.

– Juridical data of real estate:

» Titleholders' name and national identity number, addresses of titleholders and the notification address, date of acquisition and rights data....

– Physical data of real estate:

» land area, representation of the Buildings (even with the description of every floor) buildings area, class of crops, conservation status of the constructions, use (legal and actual one), construction typology, year of construction.....

Economic data of the real estates:

value of land, value of construction and cadastral value, criteria and valuating module, real estate taxable value, exemptions and benefits.

The **cadastral value** of each property is determined objectively from the data in the Real Estate Cadastre. (Quality, completeness and good updating are of importance)



Vision: Collaboration is the basis of the management model  
 13.547 registered organizations in electronic office  
 68.715 registered users

- land surface,
- buildings surface,
- conservation status of the constructions,
- use (legal and actual one),
- typology,
- year of construction
- Urbanism classification
- Other characteristics.

**All these information available for free to everybody**

From all the characteristics that we include in the cadastral dataset, the values are the most valuable; economically and socially





Navigation, queries, view services. download services, download massive graphic and literal information (several standards, INSPIRE etc..) etc....

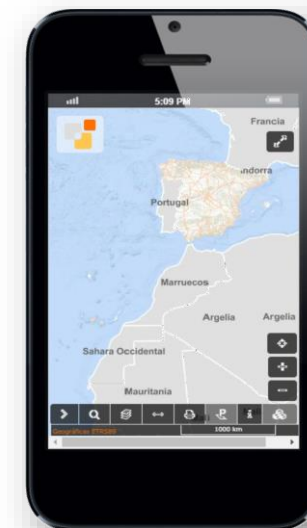
All these information available for free to everybody by many services

Combined with other information: orthophoto, protected áreas, planing, market value zones, etc.....

Many other services adapted to users .

Standard Interoperable

<http://www.sedecatastro.gob.es/>



<https://www1.sedecatastro.gob.es/Cartografia/mapa.aspx>

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# ***Evolution of Spanish cadastre***

***Since 2003, everyone has been able to consult literal information on the Internet and send files.***

***Since 2004, cadastral cartography has been online.***

***Since 2005, we have offered WMS services.***

***Since the end of 2006, we have offered WFS services.***

***In 2007 we implemented more Interactive access for citizens and users from other administrations***

***In 2008 we started providing New soap services***

***In 2009 the 4D as exchange format***

***Etc.....each year more and more services***

***We implemented what users demanded***

***The government, seeing the benefits, invested in cadastre.***

***We were more effective with open data***





*We started to open the data to the collaborators in the maintenance of cadastre.*

*But Geographic information, and especially cadastral information, was used to develop many new products associated with a large variety of activities.*

*The cadastral information was increasingly in demand by businesses and citizens for many other uses*

many public bodies got interested in our data ...

The Agriculture Department...

The Environmental Department...

The Land Registers...

The Urbanism Department...

The SIGPAC...

Irrigation Plans...

Demarcation of Public Property Boundaries.

Roads...

Train company

Police...

REE (Spanish Electrical Network)..





# 2011 One step further

*users demand more information. The private companies and the citizens wanted too to have the possibility to edit all cadastral information, re-use it and add value on it to provide many other services*

*A new download model was then introduced*

*Since April 5, 2011 the cadastre implemented a service which enables download mass literal non protected data and all cartography in **editable format**, under a simple and clear re-use license model provided for free to everybody with digital signature. (digital ID and other access)*



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***to protect personal data: it restricts access to the name of owner and the assessed value of the property***

- 1. Citizens have open, free-of-charge access to all data except those subject to Data Protection law (personal data of the owner and value data);***
- 2. administrations and other public entities, after registering, have access to protected data, but exclusively for the performance of their own competencies;***
- 3. and cadastral owners, identified via digital signature, can also access their own protected data.***

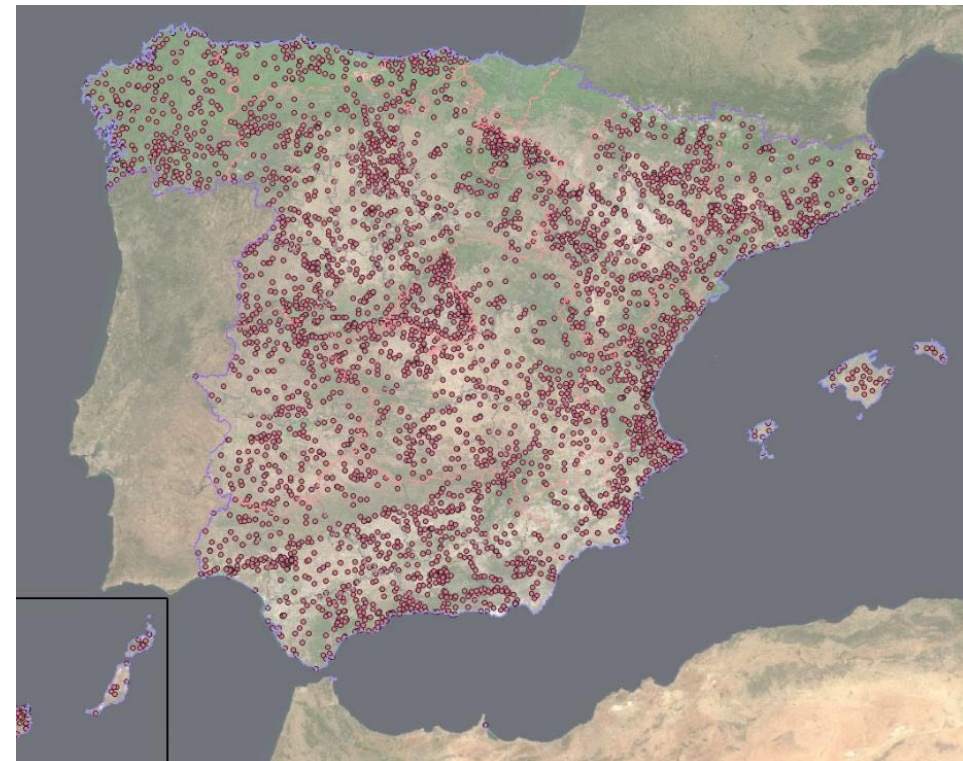
**cartography is not protected data**

***Secure service that guarantees data privacy and at the same time fully supports transparency in the public services and reuse all our information***



*Initially, access was restricted to citizens with access to Internet (60% of the population)*

*but, thanks to the creation of more than 4.200 **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 based on agreements with the local administrations and other organizations that are nearer to the citizen,*

*Everyone who accesses protected information leaves a footprint that can be followed by the owner and administration*



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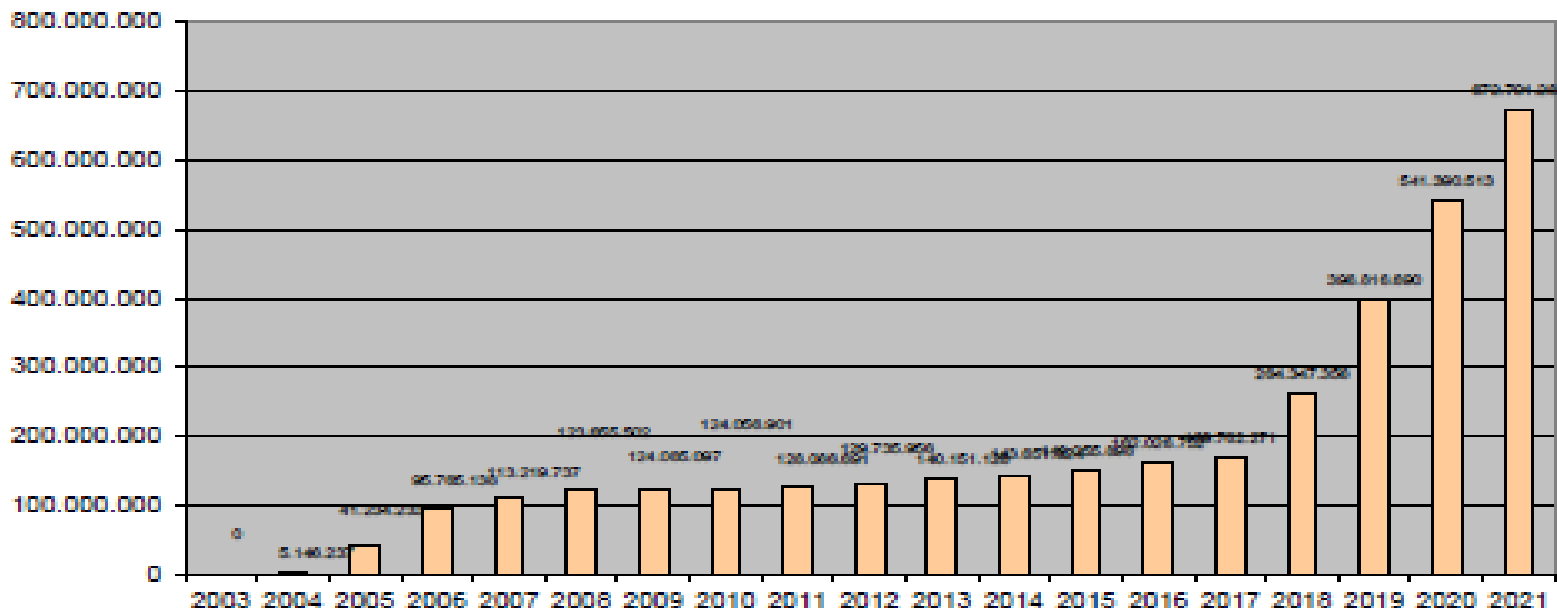
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### Consultas a Cartografía



The internet and PICS have prevented millions of people from coming to our office.

It is estimated at about € 80 of savings for the citizen and it has allowed us to optimize the services of attention to the citizen.

In 2002 we had 2,100,000 visits to provincial management offices, in 2021 there were 300,000.

Fecha Desde 30/12/2019

Fecha Hasta 12/09/2021

accesses,  
consultations,  
cartography queries,  
wms,  
gazeteer,  
coordinates,  
sketches,  
wfs.

Indicador	Total Anual	Promedio Mensual	Promedio Semanal	Promedio Diario
<b>Accesos</b>	8.923.432.064	429.699.778	100.263.282	14.323.326
<b>Consultas</b>	194.157.743	9.349.490	2.181.548	311.650
<b>Cartografía</b>	536.366.579	25.828.246	6.026.591	860.942
<b>Servidor WMS</b>	379.796.441	18.288.753	4.267.376	609.625
<b>OVCCallejero</b>	108.041.210	5.202.626	1.213.946	173.421
<b>OVCCoordenadas</b>	44.054.062	2.121.383	494.989	70.713
<b>Croquis y Datos</b>	16.475.381	793.357	185.117	26.445
<b>Servidor WFS</b>	7.329.868	352.963	82.358	11.765
<b>Ponencias WMS</b>	6.327.314	304.686	71.093	10.156

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# The open data strategy enhanced inter-administrative collaboration for cadastral maintenance

*The Spanish General Directorate for Cadastre (SGDC) is responsible for the creation, maintenance and diffusion of this cadastral data either directly or in collaboration with local authorities and 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*

Offering collaborators all our information enhanced a win-win situation that facilitated their work and improved cadastral management





## Agreements with Collaborators

- ✓ The strategy consists of gathering other Public Administrations, as well as other organizations, sharing useful information for all of them
- ✓ They are all considered as providers and beneficiaries:
  - ✓ they help us to maintain our data base updated,
  - ✓ they obtain all necessary data for their goals



- ✓ Data is electronically provided by collaborators: they can even process the information working directly in our system or sending data through the E-Office

## Activity

5.000.000 changes/ year



Notaries, Property registrars and Public administrations that work in the territory must submit electronically to the Cadastre the information that represented a modification of data in the Real Estate Cadastre.

## We had to change our model of business

- From a direct processing.....  
to management and control.
- Transition from a corporate system .....  
to a system of information  
available to all agents collaborators
- Definition of services available.
- Collaboration Scenarios
- Identity Management of internal users and collaborators



# The open data strategy facilitates cadastral maintenance

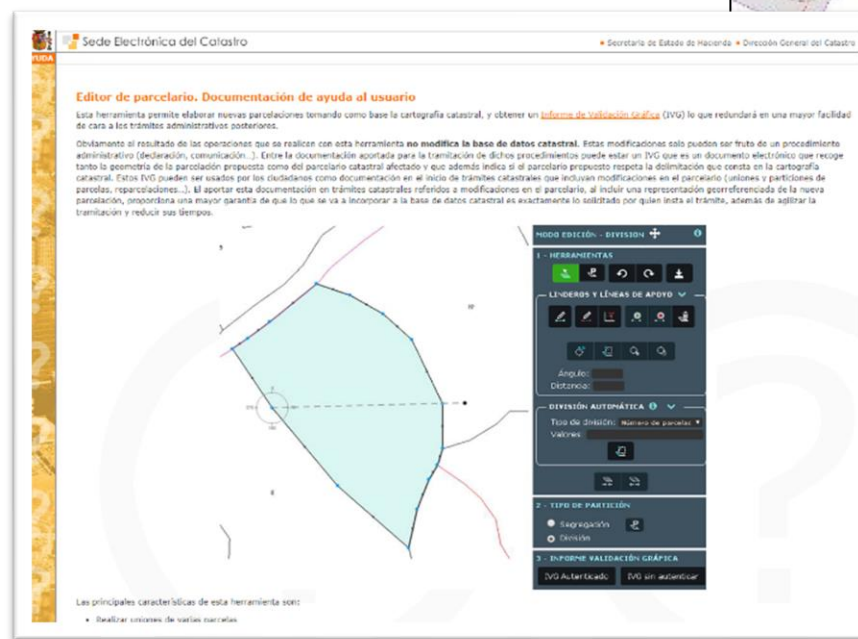
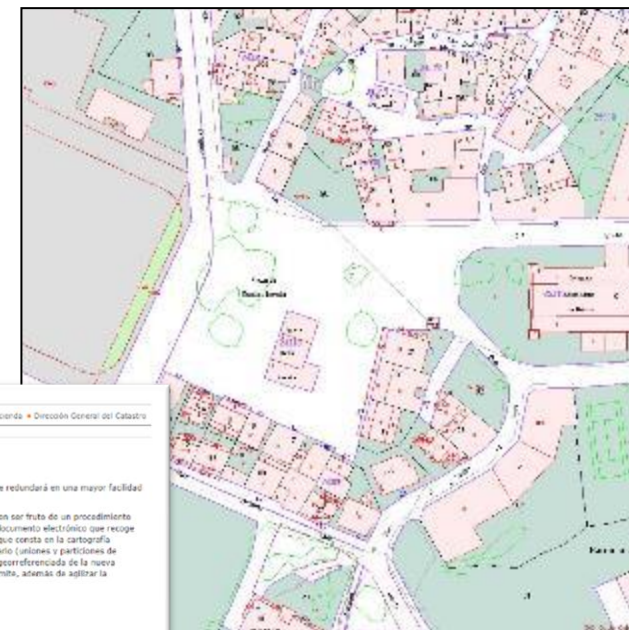
The open data strategy standardizes geospatial information and facilitates cadastral maintenance since for any action on the territory



cadastral information is taken as a basis



and therefore we are more efficient in incorporating the modification to the cadastre

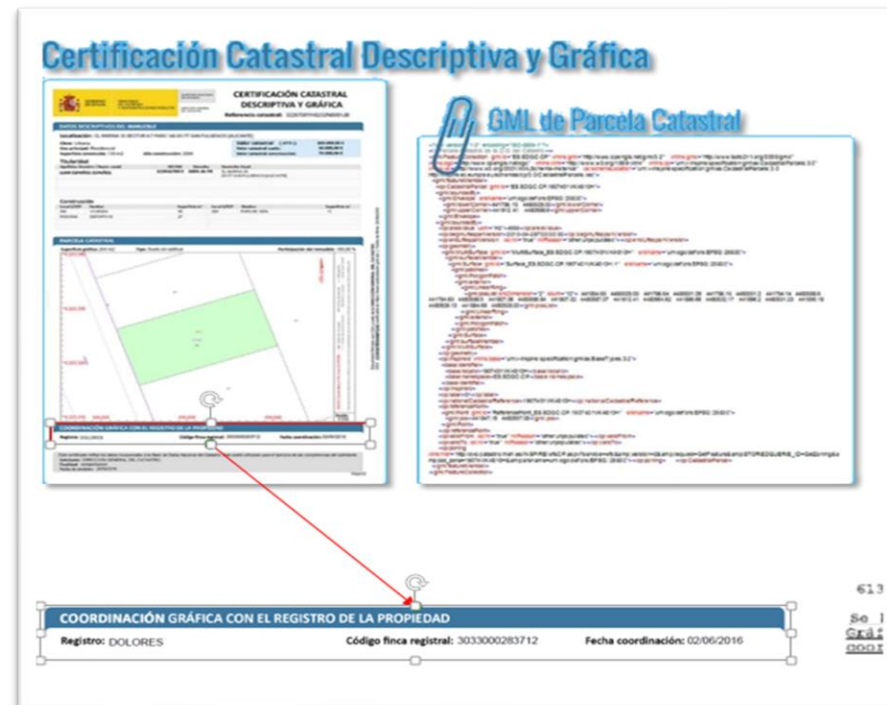


<http://ovc.catastro.meh.es/cartografia/wms/servidorwms.aspx?service=wms&request=getmap&format=image/jpeg&bbox=512300,4663000,512500,4663200&width=1000&height=1000&srs=epsg:23029>



# Law 13/2015 of June 24

- Coordination of two institutions: Cadastre and Registry
- Mortgage Law Reform
  - Article 10: 1. The base of graphic representation of the registry properties will be the cadastral cartography, which will be available to the Property Registrars.
  - Article 9: The registration will contain: b) whenever a plot is registered, or operations are carried out (...) the georeferenced graphic representation of the plot (...) expressing the georeferenced coordinates of its vertices.
- Reform of the Consolidated Text of the Real Estate Cadastre Law
  - 4. In order to facilitate the use of cadastral cartography as basic cartography for the identification of properties in the Property Registry, the General Directorate of Cadastre will provide access to the service of identification and graphic representation of said properties on the cadastral cartography, through an interoperable system.
  - 2. The geometric base of the Real Estate Cadastre is constituted by the parcel mapping, base for the georeferencing of real estate.
  - 3. The cadastral cartography will be available to citizens and companies, as well as to Administrations and public entities that require information on the territory or on specific real estate, preferably through a map server.



# The open data strategy improved data quality



*we have stated that the increase in transparency of the system has resulted in many users telling it about errors in the data or potential improvements, thus improving the quality of the data with the users feedback.*

# The open data strategy boost the economy

*Open cadastral data has boost the economy with the developing of services based on knowledge and innovation*

- Providing information to the totality of the Public Administrations and private users
- With strong presence and big potential in the Digital society

Información de parcelas e inmuebles

PARCELA CATASTRAL 0422206VG4102A

Croquis

Fotografía fachada

Parcela construida sin división horizontal  
CL SAN MIGUEL 2 BI:REPE  
CULLAR VEGA (GRANADA)  
84 m<sup>2</sup>

INHOUSE consultores inmobiliarios

INFORMACIÓN DE LOS INMUEBLES [Excel](#)

0422206VG4102A0001LK CL SAN MIGUEL 2  
Residencial | 121 m<sup>2</sup> | 100,00% | 1956

Economic benefits for user of the data. Reducing cost , creating new Jobs, developing new busines...

Private users savings	2012	2013	2014	2015	2016	2017	2018
Saving in number of hours	2.800.674	3.246.573	6.174.663	7.694.667	8.253.567	8.867.987	9.120.201
Monetaring savings	72.064.926	49.270.251	135.403.871	105.293.298	112.678.498	115.723.615	120.265.784

Social benefits are difficult to count in monetary units but very important for society





# The open data strategy increases transparency, providing legal security and preventing corruption

## Cadastral published-----Rights Protection:

In cadastre we offered information:

- ✓ Property rights extended to all real estate. Private and Public (patrimonial and public domain)
- ✓ Other rights (agricultural subsidies) , restrictions (urbanism) and responsibility

--- but also other rights, for example compensations : e.g. floods, earthquakes, volcanos etc.

To publish these data gives **Transparency** and **Security** in the real estate conveyance



• Citizens can be reassured that a certificate is correct.

• The descriptive and graphical cadastral certification is an electronic document (PDF format + InspireGML+coordinates).

• The certificate and his attached file are signed electronically using the secure verification code (CSV). With this code is possible to access to the digital file in the Electronic Office of Cadastre.

• Applications of notaries and registrars use a web service to access the content of the GML attached file using the code CSV.

The screenshot displays the 'Sede Electrónica del Catastro' interface. At the top, it shows the date '18/11/2013 10:05:04' and the user 'Secretaría de Estado de Hacienda - Dirección General del Catastro'. The main heading is 'Certificación Catastral Descriptiva y Gráfica'. Below this, there is a section for 'Código Seguro de Verificación' with an input field. A red arrow points from this field to a large preview of the certification document. The document includes the following information:

- DATOS DESCRIPTIVOS DEL INMUEBLE:**
  - Localización: LOCALIDAD SI SECTOR 67 PARCELA 546 01177 SAN PULGENCIO (ALICANTE)
  - Clase: Urbana
  - Uso principal: Residencial
  - Superficie construida: 133 m<sup>2</sup>
  - Valor catastral (IPIR): 300.000,00 €
  - Valor catastral suelo: 30.000,00 €
  - Valor catastral construcción: 70.000,00 €
- Titularidad:**
  - Apellidos y nombre / Estado civil: JUAN ESPAÑOL ESPAÑOL
  - D.N.I.: 22864769
  - Sexo: M
  - Fecha de nacimiento: 02/06/49
  - Domicilio fiscal: C/ SARRIA, 25
  - Domicilio real: 20177 SAN PULGENCIO (ALICANTE)
- Construcción:**

Localización	Destino	Superficie m <sup>2</sup>	Localización	Destino	Superficie m <sup>2</sup>
100	Residencial	133	100	Residencial	133
100	Residencial	27	100	Residencial	27
- PARCELA CATASTRAL:**
  - Superficie gráfica: 254 m<sup>2</sup>
  - Español: Suelo sin edificar
  - Participación del inmueble: 100,00 %
- COORDINACIÓN GRÁFICA CON EL REGISTRO DE LA PROPIEDAD:**
  - Registro: DOLORES
  - Código finca registral: 303300020712
  - Fecha inscripción: 02/04/2016



# The Open Cadastral data offers many possibilities in the digital society

The **Tax Agency** uses 'big data' tools to cross cadastral data with data from various sources to **prosecute tax fraud**.

Statistic office uses cadastral data for merging statistics and geo-spatial information

## The open data strategy is key to the use of cadastral data in environmental protection and security and emergency policies

### **Environmental Protection:**

- ✓ Delimitation of restricted areas
- ✓ Attribution of energy efficiency in real estate
- ✓ Fire Fighting Improvement

transparency  
availability  
interoperability  
quality (complete, accurate, homogeneous and updated)

### **Personal Protection:**

- ✓ Use for Civil protection (e.g.: police and firefighters use height and structure of building for Catastrophe Management----- Risks, access, evacuation)

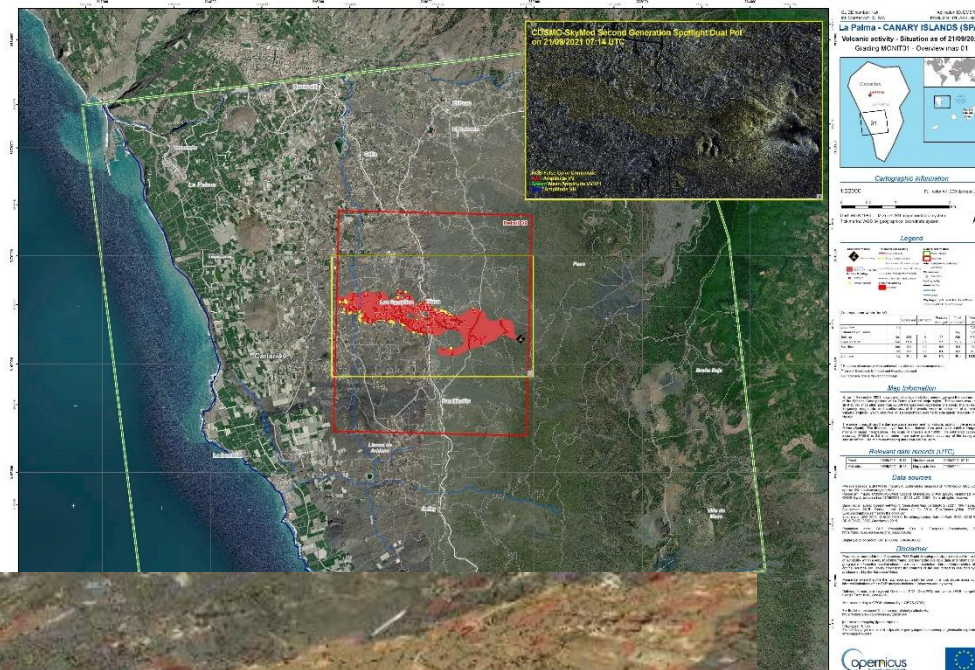


analysis of the Copernicus Emergence Service, check-crossed this information, which delimits the affected area, with the cadastral database and daily collecting and publishing the cadastral information of the affected area.

# LA PALMA VOLCANO CRISIS



## Risks of eruptions



Consequences within the AOI						
		Destroyed	Damaged	Possibly damaged*	Total affected**	Total in AOI
Lava flow	ha					154,4
Estimated population					23	16.118
Built-up	No.	320	0	28	348	348
Transportation	km	11,4	0,0	1,2	12,6	532,4
Facilities	km	0,0	0,0	0,0	0,0	14,1
	ha	0,2	0,0	0,0	0,2	49,4
Land use	ha	NA	NA	NA	154,4	11.529,8

\* Presence of damage proxies and proximity with destroyed/damaged asset  
 \*\* Sum of Destroyed, Damaged and Possibly damaged  
 Full table available in the vector package



It provides more information than that obtained by Copernicus Emergence Service since it not only visually identifies the constructions and crops, but also provides many other valuable data of the affected area.



accessing all this open information.....

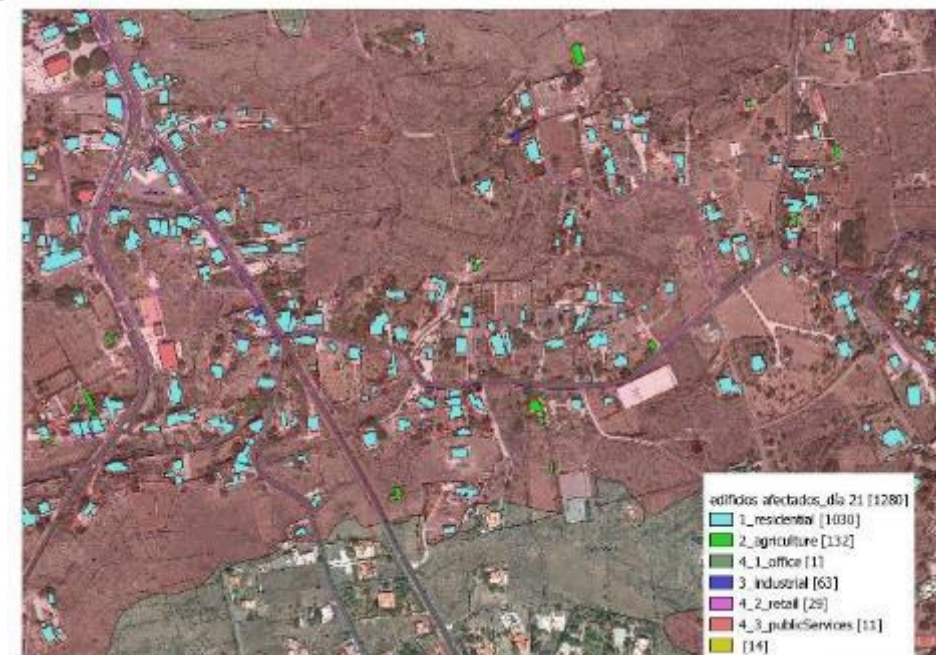
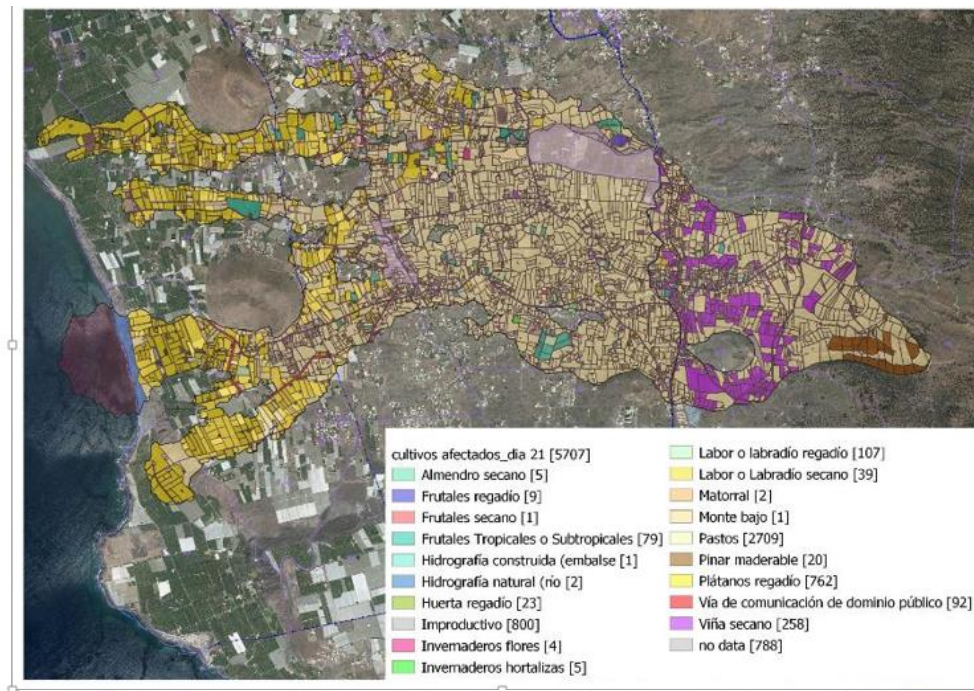
Citizens can demonstrate how their properties were like before they were eliminated or damaged by the natural disaster, both those registered in the Land Registry and those that were not.

The managing administrations can evaluate at any time the damages produced immediately and act appropriately.

The publication of all information in an accessible and user-friendly way provides transparency in the management of natural disasters.

Data allows both private companies and researchers to analyse and manage the territory in natural disasters.

Citizens see the usefulness of cadastral information that goes beyond the payment of property taxes or real estate conveyance.



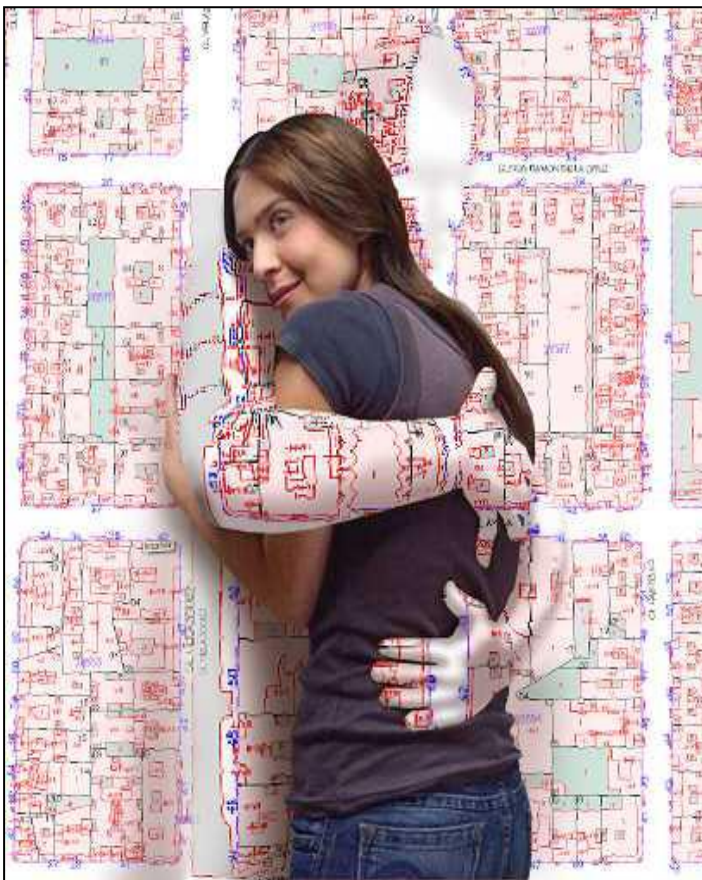
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# Conclusions.



- **The open data strategy has enhanced the role of the cadastre as fundamental tool for territorial polices and socio-economic development.**
- **The cadastre has ceased to serve only for the collection of taxes or the transfer of real estate and has become**
  - A platform for territorial information Services
  - One of the great transversal public services of the country