



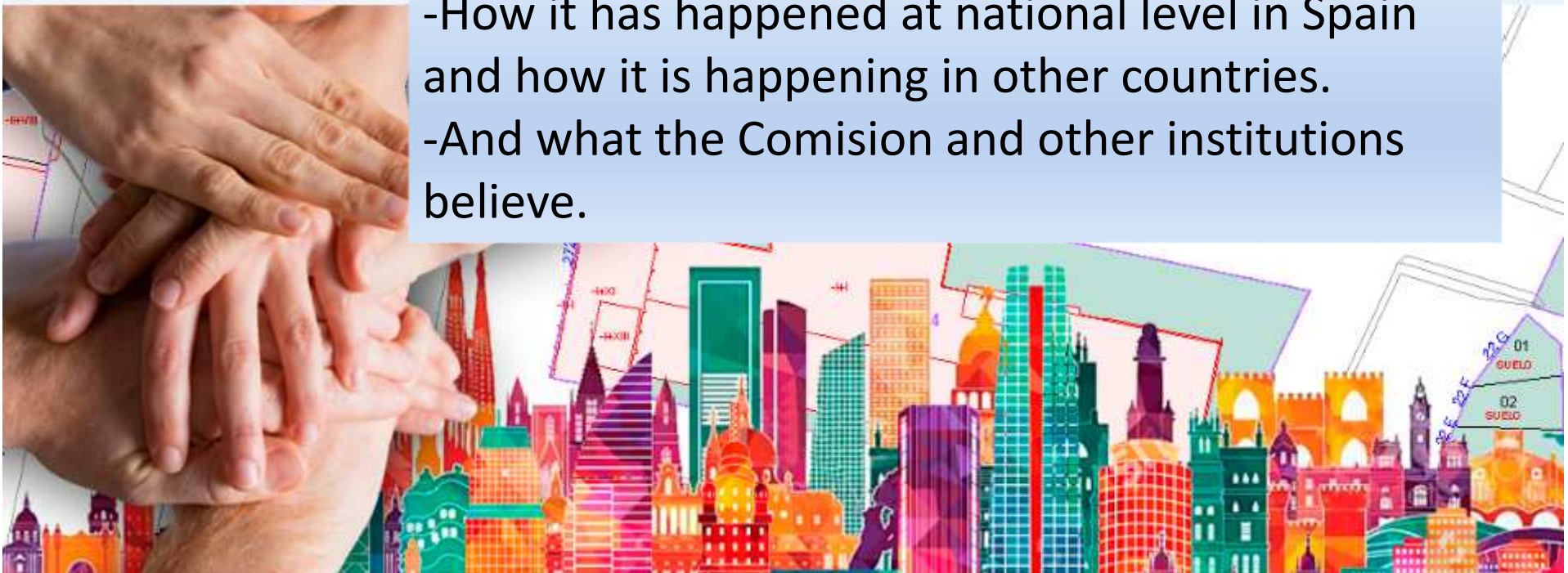
Cadastral Index Map

Amalia Velasco Martín-Varés
Spanish Directorate general for Cadastre

Some previous thoughts

I am totally convinced that having an **open and harmonised** European Cadastral Index Map will boost the economy.

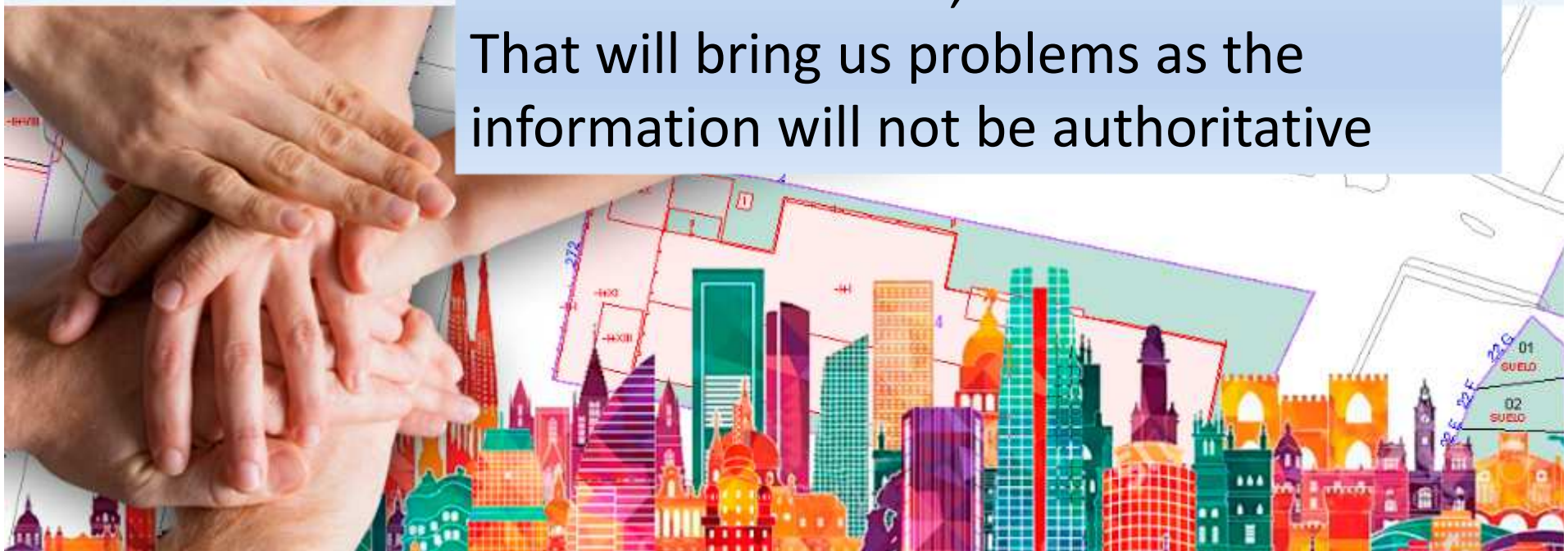
- How it has happened at national level in Spain and how it is happening in other countries.
- And what the Comision and other institutions believe.



Some previous thoughts

Offering an open European Cadastral Index Map empowers our agencies.

If we do not offer it, someone else will. That will bring us problems as the information will not be authoritative



The demand is clear

There are growing demands and expectations for

- **highly detailed,**
- authoritative,
- harmonised,
- cross-border

geospatial information for evidence-based decisions;

both from

- Institutions (Eurostat, EEA.....)
- Citizens and companies



The demand is clear

Open Data Directive.
High Value Datasets

	<i>High Value Datasets</i>
<i>Key purpose</i>	Data in scope of the Open Data Directive – article 14
<i>Actors</i>	European Union Impact Assessment Study: Cabinet Deloitte
<i>Objective</i>	Content description & recommendations for publication as open data (Impact Assessment Study)
<i>Scope</i>	Data on 6 categories

Geospatial


Earth observation and environment

Meteorological

Statistics

Companies and company ownership

Mobility



3

Addresses,
Cadastral Parcels,
Buildings,
Administrative Units,

Just the dataset included in
Cadastral Index map

The demand is clear

For the indicators of SDGs and for other studies it is necessary a

Common geographies for statistics production

Administrative units	Place Names	Addresses	Buildings	Cadastral parcels
OGC BY 4.0				
GeoPackage, GeoJSON, INSPIRE requirements	GeoPackage, CSV, GeoJSON, INSPIRE requirements	GeoPackage, CSV, GeoJSON, INSPIRE requirements	GeoPackage, GeoJSON, INSPIRE requirements	GeoPackage, GeoJSON, INSPIRE requirements
Mandatory				
<ul style="list-style-type: none"> Disk download, INSPIRE distribution services, REST API (e.g. OGC API, ArcGIS REST API, Carto API) 				Read-only mode (WMS service defined by INSPIRE)
INSPIRE				
INSPIRE; GeoDCAT-AP				
INSPIRE				
National Geodata Catalog and/or open data catalog				
Annual update	When necessary	When necessary	When necessary	When necessary
From municipalities to countries, sea-frontiers	National coverage	Partial National coverage (e.g. most populated cities)	Partial National Coverage (e.g. most populated cities), Level of scale 1:5000	National coverage, Level of scale 1:5000
National identification code, identificative code of the upper administrative level, official name, country code, name in multiple languages (only for countries with more than one official language)	Name, name in multiple languages (only for countries with more than one official language), category, latitude and longitude (INSPIRE)	Latitude and longitude, house number, suffix of the number, name of the street, name of the municipality, national identification code of the municipality, last update	Footprint of the building, entrances, floors, type of use	Geometry of cadastral parcels, type of parcel, particle code, references to the administrative area to which the particle belongs

The expected themes for fundamental geospatial infrastructure are present in HVD



The demand is clear



Global Statistical Geospatial Framework

will focus on the themes of main interest for the GSGF

- Addresses,
- Cadastral Parcels,
- Buildings,
- Administrative Units,
- and Statistical Units.



The demand is clear

For example Gisco is trying to get address data but they encounter many problems

DEVELOPMENT GISCO Address API

Welcome to the Address API developed by GISCO

It aims to provide a RESTful API which allows developers to easily get info regarding real-world geospatial data from a pan-European address database.

Endpoints

The following table shows the different endpoints available, along with examples of their usage:

Endpoint	Description
Address	Access to both structured and free form queries. See the geocoding section for more details.
Reverse	Access to both structured and free form reverse geocoding.
Countries	Return all country codes that are compatible with the address API.
Countries	Return all countries within the specified country.
Cities	Return all cities within the specified province.
Postal	Return all postal codes within the specified city.
Postcodes	Return all postal numbers or ranges within the specified postal code.
Postcodes	Return a WKT bounding box for an address response depending on the parameters specified.

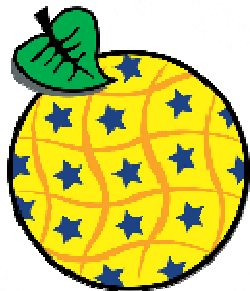
Coverage

This map shows the current coverage of the address API:

Legend: Available (blue), Partial (orange), Unavailable (black)

long term vision of pan-European data for integration: harmonised, open, free, accessible, detailed, high quality, centrally available, continuously incrementally update

INSPIRE as basis



The European national cadastral systems are very different between them.

It is impossible to seek the harmonization of all aspects of European Cadastres.

With INSPIRE only the minimum common data has been harmonized

areaValue - *superficie*

beginLifespanVersion – *alta de la versión*

endLifespanVersion – *baja de la versión*

Geometry - *geometría*

inspireId – *Identificador de Inspire*

obligatory

Label - *etiqueta*

nationalCadastralReference - *referencia catastral nacional*

referencePoint - *centroide*

validFrom – *validez desde*

validTo – *validez hasta*

Zoning

basicPropertyUnit

voidable

administrativeUnit

In the Cadastral Index Map, (as in INSPIRE) cadastral parcels will be mainly used only as **locators for geoinformation**.

National cadastral registers generally contain much more data and users will be able through Cadastral Index Map **to identify the objects and obtain the national cadastral reference**.



and via national cadastral reference, as key attribute, may allow to find other information in the national services: as owners, values, uses etc. , taking into account the **differences of the legal regulations** of such a data in the different Member States.

Approximation in two steps

ELS opens the door to the national cadastres

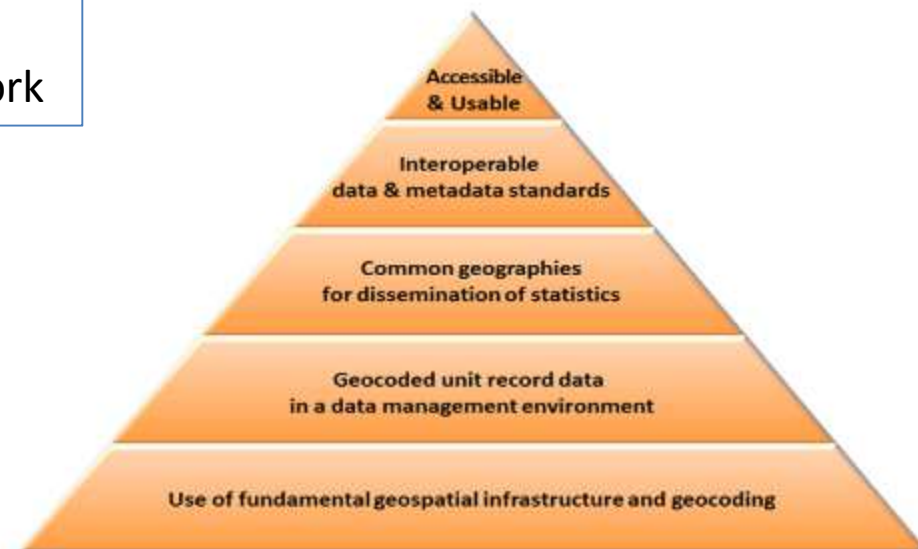


(CIM) Cadastral Index Map is a first attempt to harmonised the access to our data.

- CIM doesn't try to harmonise cadastres
- It tries to harmonise the INSPIRE wms and gives acces to the national data
 - No more
 - But quite a lot!!!

For example: very useful for
Global Statistics Geospatial framework

And It will be the first step to
provide High Value Data set as
WFS or other services

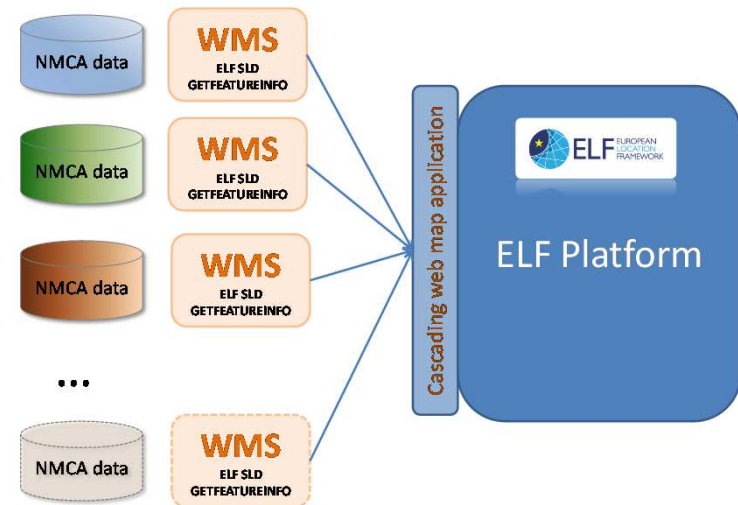


1st project



Cadastral Index Map

Cadastral Index Map was thought as a view service that provides a simplified and harmonised view of footprints of cadastral parcels geometry combined with other basic information as administrative units, addresses and buildings for pan-European use.



CP, BU, AD, AU

Access from a single point to the continuous map of cadastral data for the whole Europe

1st project



The Cadastral Index Map

- ★ **The first ever pan-European map showing cadastral parcels, addresses and buildings**
- ★ **12 Countries, currently includes 8 countries, more to come ...**
- ★ **This service can only be provided by the NMCAs!**



Fragment from Madrid, Madrid Atocha station area



1st project



Cadastral Index Map is not one single map layer. **It is composed by theme-specific map layers**

As data comes from different INSPIRE themes and **could be provided by different NMCA's**; occasionally some of them may be missing.

Each theme has its layers and the **styles are defined for each layer.**



1st project



The main Cadastral Index Map features that are represented in the layers are:

- Cadastral Parcel:
- Address:
- Building:
- Buildingpart: (if any)
- AdministrativeUnit:

Optional features:

- Cadastral Zoning:
- Cadastral Boundaries:
- Basic Property Units



1st project



GetFeatureInfo



The national services shall support the **GetFeatureInfo** functionality for Cadastral Parcel and Addresses.

With it CIM permits to identify the features and to obtain both

- the national **cadastral reference** of the cadastral parcel, that gives users the opportunity to get more information through the cadastral national services,
- and the **complete address** of the cadastral parcel or building.

Two GFI-capable layers are expected: Cadastral Parcels and Addresses

CP.CADASTRALPARCEL: 1907401VK4810H	
Attribute	Value
InspireId.namespace	ES.SDGC.CP
InspireId.localId	1907401VK4810H
areavalue	4558 m2
Begin lifespanVersion	2015-04-28T00:00:00
national cadastral reference	1907401VK4810H
Link to national cadastre reference	1907401VK4810H

link

GetFeatureInfo (GFI) for cadastral parcel must return at least the national cadastral reference and **if possible a hyperlink (URL)** to access the national system.

INSPIRE cadastral parcel has few attributes. Therefore could be possible to provide the table with the attributes and the national value of them, or leave it blank if the data-provider does not have it.

AD.ADDRESS	
	Value
	PS CASTELLANA, 272 28046 MADRID

Also identify each address that is displayed in the ELS Cadastral Index Map with the **GetFeatureInfo for address**.

A template for the recommended GFI style in XML and HTML formats is provided at

These two layers can be provided either by one single WMS instance or by two separate WMS instances.

Information might be provided by two different organisations.

1st project



Portayal

The representation of the ELS CIM is based on INSPIRE data specifications of each of the layers

- CP.CadastralParcel, CP.CadastralZoning,
- AD.Address
- AU.Administrative Unit,
- BU.Building, BU.BuildingPart

Minimum changes to improve representation

Display

There are 2 possibilities to display ELF styl

1. The national services that cannot support SLD, they will provide directly the ELF styles.
2. for the others that can support SLD, the ELF platform is responsible to display correctly

CP.CadastralParcel

Default



BoundariesOnly



ReferencePointOnly

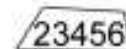


ELFCadastre



CP.CadastralZoning

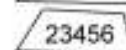
Default



BoundariesOnly



ELFCadastre



AD.Address

Default



Number.ELFCadastre



BU.Building

Default



ELFCadastre



BU.BuildingPart

Default



ELFCadastre



AU.AdministrativeBoundary

Default



ELFCadastre



AU.AdministrativeUnit

Default

Madrid
Scales = 1:2.000
1:10.000



ELFCadastre

Madrid
Scales = 1:1.000



AU layer is imported from the data published by IGN as part of the national reference data and it is produced by eurogeographics Inc. in Spain. IGN is not the legal mandatory organization responsible for AU layer.

1:100 to 1:2.000



1:1.000 rural and urban zones



1:2.000 rural and urban zones

1:2.000 to 1:5.000



1:2.000 rural and urban zones



- SEARCH
- MAP LAYERS
- SELECTED LAYERS **2**
- MY DATA
- MAP PUBLISHING
- MAP LEGENDS
- USER GUIDE
- Navigation icons: Home, Back, Forward, Search, Hand, Measure, Print, Full Screen, Share, Print, Print with Borders, Print with Scale
- Logout
- administration
- English
Change language





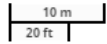
- SEARCH
- MAP LAYERS
- SELECTED LAYERS 2
- MY DATA
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- Change language

CP.CADASTRALPARCEL: 1907401VK4810H

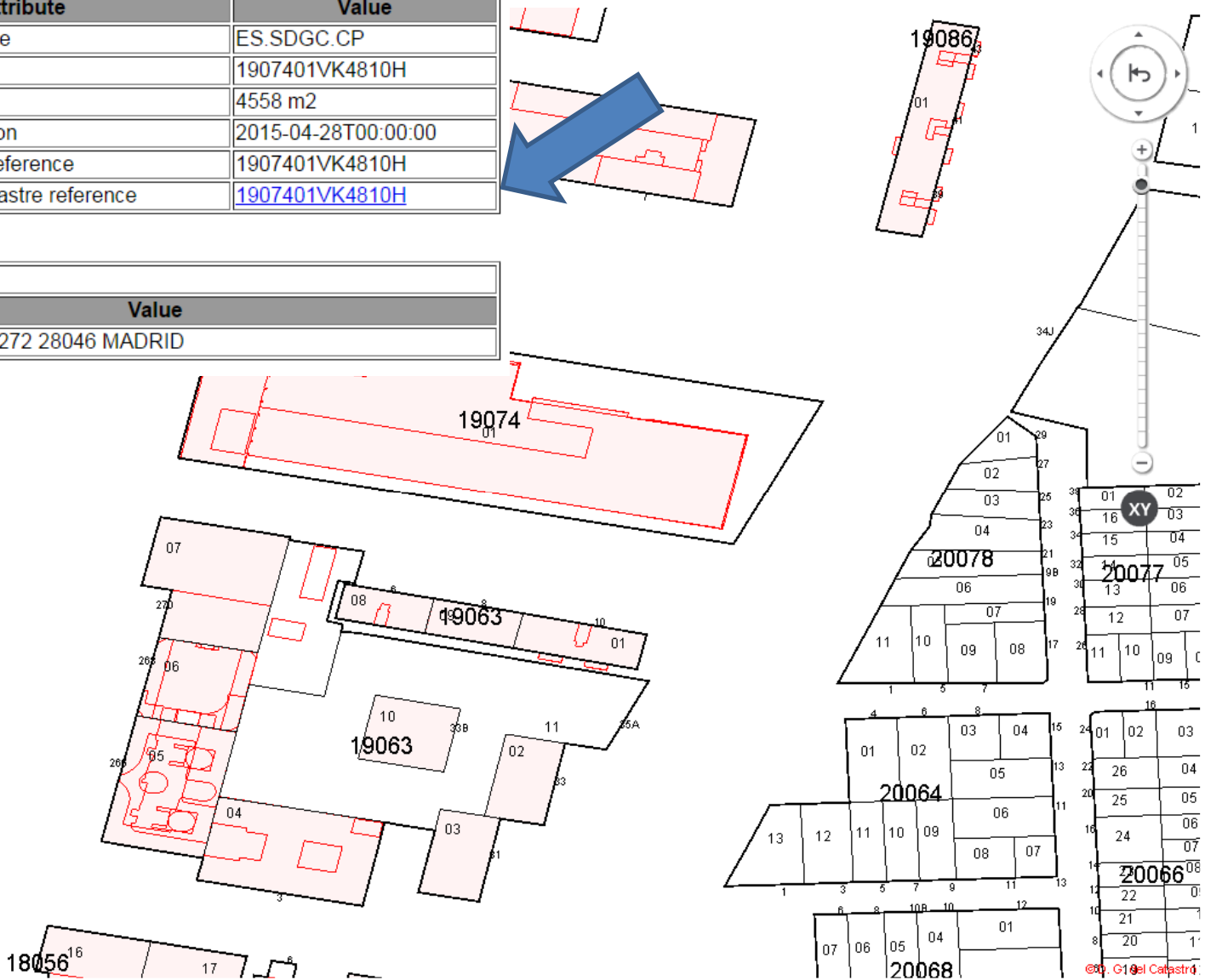
Attribute	Value
InspireId.namespace	ES.SDGC.CP
InspireId.localId	1907401VK4810H
areavalue	4558 m2
Begin lifespanVersion	2015-04-28T00:00:00
national cadastral reference	1907401VK4810H
Link to national cadastre reference	1907401VK4810H

AD ADDRESS

Value
PS CASTELLANA, 272 28046 MADRID



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-
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CP.CADASTRALPARCEL: 1907401VK4810H

Attribute	Value
Inspired.namespace	ES.SDGC.CP
Inspired.localId	1907401VK4810H
areavalue	
Begin lifespanVersion	
national cadastral refer	
Link to national cadastral	

AD.ADDRESS

PS CASTELLANA, 272

Consulta y certificación de Bien Inmueble






CONSULTA DE DATOS CATASTRALES

INFORMACIÓN PROPORCIONADA POR LA DIRECCIÓN GENERAL DEL CATASTRO DEL MINISTERIO DE HACIENDA Y ADMINISTRACIONES PÚBLICAS

Cartografía
 Consulta Descriptiva y Gráfica
 Imprimir Datos

HASTA EL 01/04/2017, EL PROCEDIMIENTO DE REGULARIZACIÓN CATASTRAL ES DE APLICACIÓN EN EL MUNICIPIO EN EL QUE SE ENCUENTRA ESTE INMUEBLE

Datos del Bien Inmueble

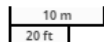
Referencia catastral	1907401VK4810H0001WI
Localización	PS CASTELLANA 272 28046 MADRID (MADRID)
Clase	Urbano
Superficie (*)	12.718 m ²
Coefficiente de participación	100,000000 %
Uso	Oficinas
Año construcción local principal	1996

Datos de la Finca en la que se integra el Bien Inmueble

Localización	PS CASTELLANA 272 MADRID (MADRID)
Superficie construida	12.718 m ²
Superficie suelo	4.602 m ²
Tipo Finca	Parcela construida sin división horizontal

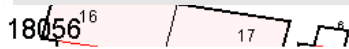
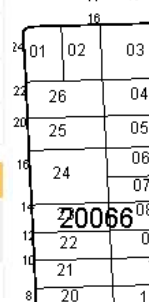
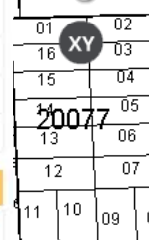
Elementos Construidos del Bien Inmueble

Uso	Escalera	Planta	Puerta	Superficie catastral (m ²)	Tipo Reforma	Fecha Reforma
OFICINA		00	01	427		



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[Castellano](#)
[Galego](#)
[Català](#)
[English](#)





Conference and Plenary Meeting of the Permanent



Committee on Cadastre of the European Union (PCC)



- SEARCH
- MAP LAYERS
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- English
- Change language

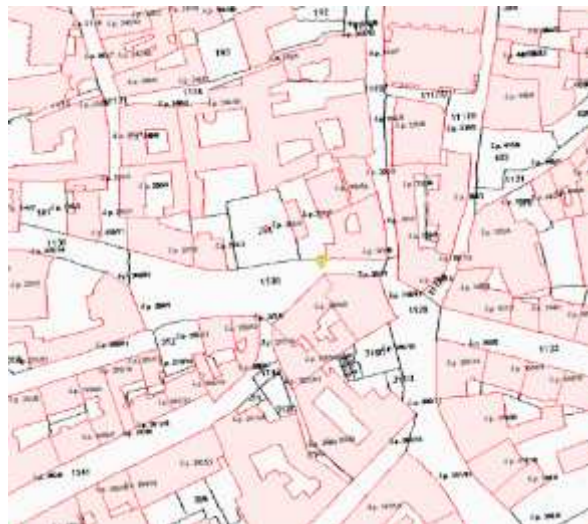
The main map interface displays a cadastral map with various parcels outlined in pink and white. Parcel numbers are visible, such as 63/2, 63/1, 114, 113, 112, 111, 110, 109, 108, 107, 106, 105, 104, 103, 102, 101, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90, 89, 88, 87, 86, 85, 84, 83, 82, 81, 80, 79, 78, 77, 76, 75, 74, 73, 72, 71, 70, 69, 68, 67, 66, 65, 64, 63, 62, 61, 60, 59, 58, 57, 56, 55, 54, 53, 52, 51, 50, 49, 48, 47, 46, 45, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. The map includes a navigation sidebar on the left, a search bar at the top, and a scale bar at the bottom left. The scale bar shows 100 m and 5000 ft. The map also features a compass rose and a zoom control in the top right corner.



Liubliana



Amsterdam



Praga



Copenhagen

1st project



The ELF **Cadastral Index Map and the WFS** of CP, BU, AD,AU meets the **requirements of the main use cases** that was studied in ELF project and that need CP, BU and AD as **geolocators** of human activities; for example:

- Real Estate Information
- Insurance risk assessment application
- Companies that utilize the ELS base map together with various reference data themes and hazard data layers
- Agriculture Energy performing of buildings,
- Solar, wind and other industry
- Infrastructures
- Etc



- E-justice Portal where ELS Cadastral Index Map can provide the geographic information that is needed to access to the legal information.

2nd project **OpenELS**

Only 7 countries “open CIM”
And not all the data sets



OpenELS [Home](#) [About](#) [How](#) [Help](#) [Results](#) [Links](#) [Develop](#) [Info](#) [Latest](#) [Documentation](#) [History](#)

OPEN EUROPEAN LOCATION SERVICES

European open geospatial data services from official national sources



Yeast provides a single point of access to a number of European open geospatial services.



EuroGeographics which represents European National Mapping Authorities and Land Registration Authorities is collaborating to this service.



It aims to provide user-based services using open geospatial data which is already available from EuroGeographics members.

Open Cadastral Index Map Service

The Open Cadastral Index Map provides a pre-styled representation of cadastral parcels with administrative units, addresses and buildings. It has “getfeatureinfo” enabled, to allow the user to find unique cadastral parcel references. As an index this allows other sources of data to be found using this unique reference (for example, in national land registration systems). The service is cascaded, which means the data provided is being supplied and maintained by EuroGeographics members, but is provided under a single access point and open data licence. The Open Cadastral Index Map currently covers seven countries and is ideal for land and property applications, such as the insurance or real estate market.

[Add Service to Account](#)

The idea and the specifications are very good
But Cascading services are not the best.

EG could not maintain the service

3rd project

Open Maps for Europe

Change in the context and
change in EuroGeographics Vision

- **Making more data available by making data previously licenced for a fee, free of charge, for use and reuse;**
- **Ensuring a level-playing field for all re-users,** by applying a consistent open data policy and open data licence;
- Improving **re-usability of data from a technical perspective** by simplifying access through national and European portals, and by the provision of APIs;
- **Reducing costs of data to increase its re-use, and removes integration costs from users.**

3rd project

Open Maps for Europe

Cadastral Index Map is included in Eurogeographics Open Maps for Europe Project

4 | Open Maps for Europe

Project

1. Extension of harmonised open data licenses to cover ERM and EuroDEM
2. Production of open pan European harmonised datasets
3. Enhancement and development of the Open ELS user interface
4. Dissemination, impact and sustainability
5. Project Management

- Includes sub-contractor costs to build on and deliver the user Interface, procurement support and professional communication adviser
- Total cost of the bid = 717,838
- 75% funding = 538,379 (over a 3 year period)
- Project start date 1st Jan 2020, ending 31st December 2022

3rd project

Open Maps for Europe

Improvement of the Cadastral Index Map (CIM)



A sub contractor is being procured and is tasked with:

- Creating a **new supply chain** for the Cadastral Index Map (CIM)
- The CIM service will be enhanced by **consolidating, standardising and styling** the data to create a dataset
- Creating the relevant **metadata** to both GeoDCAT-AP (Data Catalogue Vocabulary) and ISO/GMD (Geographic Metadata) standards
- To **maintain, update and host** the service, and deliver it to the user interface
- Make available **download options** for the dataset, via the user interface, bearing in mind the complexity of the data involved (Update system and size)
- CIM will be made available as **open data** through the enhanced gateway (activity 3)
- The coverage of the service will be gradually increased during the project depending on open data availability
 - Getting the raw open data from at least 5 EuroGeographics Member's cadastral services with a view to increasing this

Conclusions

There is a demand for cadastral data by the EC and the European citizens and businesses .

Spite of the problems of heterogeneity of cadastral data in Europe, we have a solution that allow us to generate a European Cadastre Index Map that meets this demand.

Now with the Open Maps for Europe, new supply chain is going to be defined for CIM.

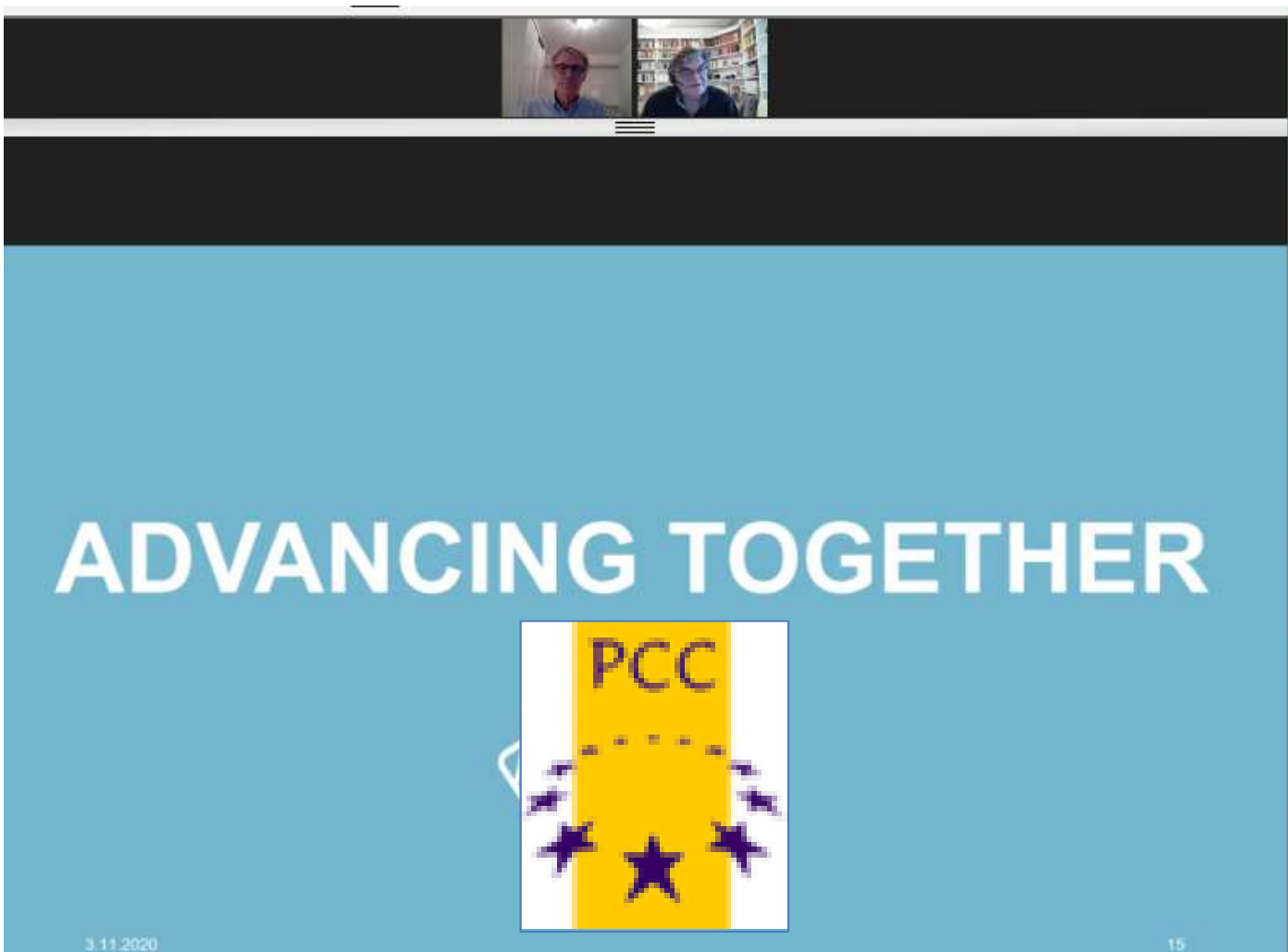
Cadastral institutions that want to participate can do it providing INSPIRE WMS for CP, AU, AD and BU (with Getfeatureinfo)



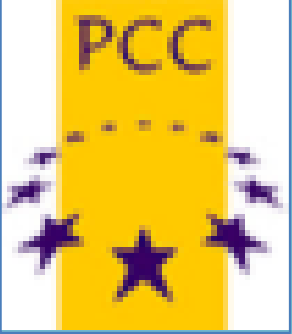
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Committee on Cadastre of the European Union (PCC)



ADVANCING TOGETHER



3.11.2020

15

¿Questions?.....
Thanks a lot.



Amalia Velasco Martín-Varés
Spanish Directorate general for Cadastre