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```

# Open Cadastral Map – Human readable metadata

PERMANENT COMMITTEE ON CADASTRE IN THE EUROPEAN UNION (PCC)  
CONFERENCE AND PLENARY

Session 6: Open Maps for Europe (OME2)  
Progress, issues and solutions + Panel session

June 19th, 2024

Javier Luque  
Spanish General Directorate of Cadastre





## Today's topics:

- Background
- Landing at OCM
- Datasets Metadata
- Human readable metadata
- Conclusions



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the European Union

# Background - OME2 project

*“Open Maps for Europe is a new online service that provides free to use maps from more than 40 European countries. The datasets are created using official map, geospatial and land information from official, national sources. The new OME2 project, co-funded by the European Union, builds on its success by developing a production process and high-value, large-scale pan-European prototype.”*

<https://eurogeographics.org/open-maps-for-europe/>

The screenshot shows a dark-themed interface for 'Open Maps for Europe'. The title 'Open Maps for Europe' is in large yellow font. Below it, the text reads: 'Providing easy access to pan-European open data created using official map, geospatial and land information.' There are two yellow buttons: 'Access Data' with a download icon and 'Explore Map' with a globe icon. At the bottom right, there is a white box with the European Union flag and the text 'Co-financed by the European Union Connecting Europe Facility'. The background of the interface is an aerial view of a road winding through a forested area.



# Background - OCM

“Open Cadastral Map is a single place to find an European Cadastral map.”

<https://eurogeographics.org/open-maps-for-europe/>



- Background
- Landing at OCM
- Datasets Metadata
- Human readable metadata
- Conclusions



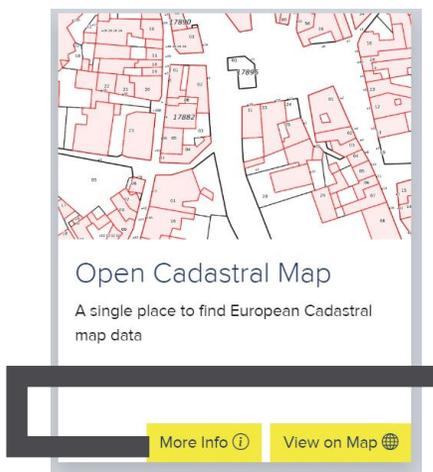


# OCM Landing page



## Open Cadastral Map

[Access Data](#) [View on Map](#)



Open Cadastral Map is a single place to find a European Cadastral map. At the moment this is a prototype and more coverage will be added in time. This cadastral map comprises four data types: Administrative Units, Cadastral Parcels (and Cadastral Zones), Buildings (and Building Parts) and Addresses.

Please note not all countries have all datasets / layers available within this map. The map takes INSPIRE open data allowing the user to find out what is available in one place. Users should then go to the data provider for the actual cadastral data.

Whilst EuroGeographics update the Open Cadastral Map every six months, the data from the Cadastral Agency may be updated on a different frequency cycle.

### Last Update

November 2022

### Themes

Addresses, Administrative Units, Buildings, Cadastral Parcels

### Scales

Administrative Units national to municipal  
 Cadastral Parcels / zones from 1:100 - 1:10000  
 Buildings 1:100 - 1:10000  
 Addresses 1:100 - 1:2000

### Coordinate System

Decimal degrees ETRS89-WGS84

### Available Formats

Web Services  
 WMS, WMTS

### Dataset Documentation

Attribution Document

## Coverage

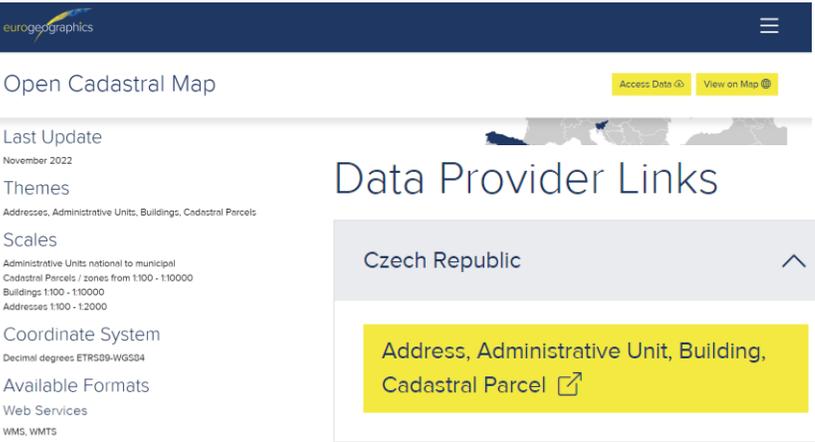


Czech Republic  
 Denmark  
 Netherlands  
 Poland  
 Slovenia  
 Spain





# OCM Landing page



Open Cadastral Map

Last Update: November 2022

Themes: Addresses, Administrative Units, Buildings, Cadastral Parcels

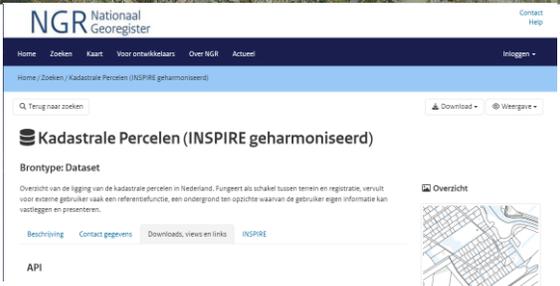
Scales: Administrative Units national to municipal, Cadastral Parcels / zones from 1:100 - 1:10000, Buildings 1:100 - 1:10000, Addresses 1:100 - 1:2000

Coordinate System: Decimal degrees ETRS89-WGS84

Available Formats: Web Services (WMS, WMTS), Dataset Documentation, Attribution Document

## Data Provider Links

Czech Republic	Address, Administrative Unit, Building
Denmark	Cadastral Parcel
Netherlands	Administrative Unit, Building, Cadastral Parcel
Poland	
Slovenia	Address, Administrative Unit, Building, Cadastral Parcel
Spain	Address, Building, Cadastral Parcel, Administrative Unit

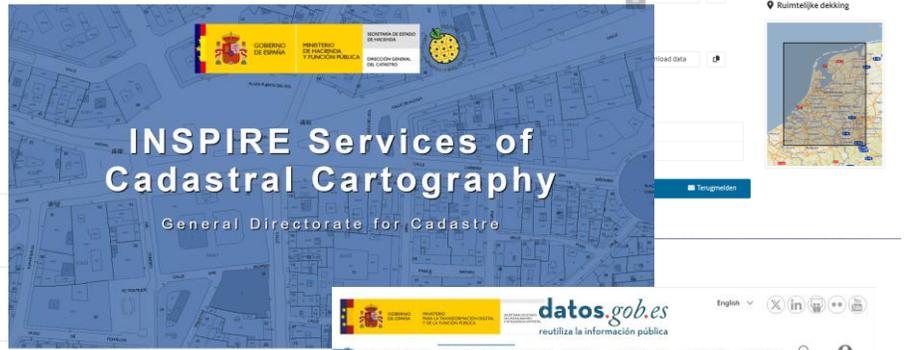


NGR National Georegister

Kadastrale Percelen (INSPIRE geharmoniseerd)

Brontype: Dataset

API



INSPIRE Services of Cadastral Cartography

General Directorate for Cadastre



datos.gob.es

Base de Datos de Divisiones Administrativas de España

Public sector

Descripción: Recintos municipales, provinciales y autonómicos y las líneas límite municipales, provinciales y autonómicas inscritas en la Base de Datos de Límites Jurisdiccionales de España (BDLJE)...



# *OCM – How to improve access and understanding?*

Information about layers needs to be extended...

... but ...

... how and from what sources?



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# Datasets metadata

- Under INSPIRE regulation, each theme / dataset has its own metadata following the defined schema.



INSPIRE - Infrastructure for Spatial Information in Europe

L 326/12

EN

Official Journal of the European Union

4.12.2008

COMMISSION REGULATION (EC) No 1205/2008  
of 3 December 2008

implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata

## Technical Guidance for the implementation of INSPIRE dataset and service metadata based on ISO/TS 19139:2007



Co-funded by the European Union



# Datasets metadata

- Official INSPIRE metadata has many parts.
  - Abstract
  - Responsible party / Contact details
  - Keywords
  - Quality
  - Lineage
  - ...
- Metadata provided in XML schema

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```

<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<sw:GetRecordByIdResponse xmlns:sw="http://www.opengis.net/cat/csw/2.0.2">
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            <gmd:textGroup>
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    </gmd:contact>
  </sw:MD_Metadata>
</sw:GetRecordByIdResponse>

```





# Datasets metadata

- Metadata in XML schema is hard to be read directly by humans
- Style pages makes these files readable
- But, in order to provide details to make OCM more understandable are not yet the most suitable way
- It is required to access to too many files (one per layer and country)
- Have many details, not a simple explanation of the dataset.
- **How to simplify this for OCM?**

Terug naar zoeken

## Kadastrale Percelen (INSPIRE geharmoniseerd)

Brontype: Dataset

Overzicht van de ligging van de kadastrale percelen in Nederland. Fungeert als schakel tussen terrein en registratie, vervult voor externe gebruiker vaak een referentiefunctie, een ondergrond ten opzichte waarvan de gebruiker eigen informatie kan vastleggen en presenteren.

Beschrijving    Contact gegevens    Downloads, views en links    INSPIRE

### Over deze bron

Trefwoorden	<a href="#">Kadastrale percelen, Nationaal</a>
Categorieën	<a href="#">planning kadaster</a> , <a href="#">economie</a> , <a href="#">natuur en milieu</a> , <a href="#">landbouw en veeteelt</a>
Gebruiksbeperkingen	Geen gebruiksbeperkingen
Licenties	<a href="http://creativecommons.org/licenses/by/4.0/deed.nl">http://creativecommons.org/licenses/by/4.0/deed.nl</a> <a href="http://inspire.ec.europa.eu/metadata-codelist/ConditionsApplyingToAccessAndUse/noConditionsApply">http://inspire.ec.europa.eu/metadata-codelist/ConditionsApplyingToAccessAndUse/noConditionsApply</a> <a href="http://inspire.ec.europa.eu/metadata-codelist/LimitationsOnPublicAccess/noLimitations">http://inspire.ec.europa.eu/metadata-codelist/LimitationsOnPublicAccess/noLimitations</a>
Status	continu geactualiseerd
Herzieningsfrequentie	1 x per half jaar
Datum van de bron (publicatie)	06-03-2024

### Technische informatie

Bron identificatie	0f9b8c87-80a6-435f-b3b3-e07c3918d344
Code referentie systeem	EPSG:4258
Algemene beschrijving herkomst	Selectie van grenzen en vlakken uit de Basisregistratie Kadaster

### Metadata informatie

Metadata unieke identifier	e80ad426-1392-4349-9f80-14dae5f1bf57
Brontype	dataset
Metadata datum	30-03-2024
Metadata standaard naam	ISO 19115
Metadata standaard versie	Nederlands metadata profiel op ISO 19115 voor geografie 2.1.0
Status validatie	Valide ( <a href="http://iso19139.nl/geografie.2.1.0">iso19139.nl/geografie.2.1.0</a> )





# OCM Human readable metadata

- Easy to read
- Focus on description and basic details
- To achieve this:
  - Identify main questions that describe the information of each dataset
    - Main questions and guidance questions (sub-questions to help focus about the main question)
  - Identify main parts from original metadata to be used as sources
    - Abstract, Purpose, Source, Lineage





## *OCM Human readable metadata*

- Key questions identified for Administrative Units
- What is the structure of administrative units in the country?
  - How many levels are there?
  - How are they named?
  - How are the levels related?
- How are they defined / delimited?
  - What is the positional accuracy / reference map scale for these objects?
- Who is the responsible party and/or publisher?





# OCM Human readable metadata

- Example of human readable metadata elaborated from Spanish metadata for Administrative Units

Questions	Guidance questions	Human readable metadata
What is the structure of administrative units in the country?		Spain
	How many levels are there? How are they named?	Municipal, provincial and autonomous areas and municipal, provincial and Autonomous Community boundaries registered in the Central Register of Cartography ( <a href="https://www.ign.es/web/en/ign/portal/rcc-area-rcc">https://www.ign.es/web/en/ign/portal/rcc-area-rcc</a> ). The geometry reflects the interpretation of the legal titles included in the Central Register of Cartography: limit line minutes, administrative rulings, court rulings etc. may be 'provisional', i.e. they do not have a legal title to support their geometry and therefore their representation in the cartography is only due to the topological necessity of the closure of municipal polygons.
	How are the levels related?	<b>The administrative units dataset is composed of three administrative levels behind the national one (1st order). Spain is divided into autonomous communities (2nd order), which are formed by one or more provinces (3rd order), which in turn are composed of municipalities (4th order).</b>
How are they defined / delimited?		It should be noted that, as a general rule, the geometry with which each line is listed in the Central Register of Cartography has a geometrical uncertainty of around 40 metres, based on the experience and contrast with specific one-off work carried out by the Geographic Institute on a large number of borderline lines. This is the result of inaccuracies in the topographical methods and instruments used at the time by the Geographic Institute for lifting and subsequent mapping on the national topographic map, which should be added to the processes of digitisation of those lines on printed cartography, carried out after years to obtain their digital version. The exception to this is those where a series of technical and administrative work has been carried out as required by the national or Autonomous Community legislation in force for the demarcation of municipal terms in force, allowing for the registration of a more precise geometry.
	What is the positional accuracy / reference map scale for these objects?	In general, this geometry has the precision of the 1/25,000 scale and therefore can not be used for the representation of jurisdictional limits in larger scale cartography (smaller denominator)
Who is the responsible party and/or publisher?		Spanish National Geographic Institute

\* Sentence in red is not directly extracted from INSPIRE metadata.



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# OCM Human readable metadata

- Key questions identified for Cadastral Parcels
- How is the cadastral information structured?
  - How many levels of information are there?
  - How are they named?
  - How are the levels related?
  - How is cadastral structure related to administrative units?
- What is the level of coverage?
  - Is the data available for the whole country or focused on urban areas?
- How are they defined / delimited?
  - What is the positional accuracy / reference map scale for these objects?
- Who is the responsible party and/or publisher?





# OCM Human readable metadata

- Example of human readable metadata elaborated from Spanish metadata for Cadastral Parcels

Questions	Guidance questions	Human readable metadata Spain
How is the cadastral information structured?		Areas defined by cadastral registers or equivalent of Spain. According to Regulation (UE) Nº 1089/2010, a cadastral parcel should be considered as a single area of Earth surface (land and/or water), national law under homogeneous property rights and unique ownership, property rights and ownership being defined by national law.
	How many levels of information are there?	
	How are they named?	The main object within the dataset of Cadastral Parcels is CadastralParcel containing the geometry, topology of enclosure, which delimits a cadastral parcel. Another of the objects that constitutes the data set according to the specifications of INSPIRE is CadastralZoning, which in the data model of DGC cadastre represents urban blocs and rural polygons.
	How are the levels related?	<b>A cadastral parcel belongs to one municipality only and the same condition apply for cadastral zoning.</b>
	How is cadastral structure related to administrative units?	
What is the level of data coverage?	Is available the data for the whole country or focused on urban areas?	The <b>dataset is complete including urban and rural areas under the responsibility of the DGC (95% of the territory, except the Basque country and Navarre)</b>
How are they defined / delimited?		In origin, digital cartography of rural land 1: 5000 was generated municipally by municipally in the process of cadastral renovation, from orthophotography (1/5.000- expanded 1/2.500), upon which rural parcel boundaries were projected. Orthophotographs were at the beginning on paper and since last ninety_s also available in digital format. Process: 1. Generation of orthophotos, 2. Fieldwork, to identify the property, re-dyed on the orthophoto and later on digitalization and edition in office to incorporate the cadastral parcelary, 3. Semantic Treatment: codification, alteration and assignment of cadastral References and labels. In origin digital urban cartography 1: 500 and 1:1000 was generated at the municipal level from the digitalization of existing cadastral cartography following verification of its quality, or using new cartography generated by a process of analytical restitution of apparent parcelary entities obtained in stereographical flights upon which the cadastral parcelary data is placed, identified and updated. Process: 1. Photogrametrical numerical restitution to obtain an apparent parcelary; 2. "Fieldwork and later edition in office to incorporate the property parcelary"; 3. "Semantic Treatment: codification, alteration and assignment of cadastral References and labels" From then (90') data is continuously maintain using field work and other technologies. Transformation to INSPIRE by own developed process of SDGC.
	What is the positional accuracy / reference map scale for these objects?	Spanish General Directorate for Cadastre
Who is the responsible party and/or publisher?		

\* Sentence in red is not directly extracted from INSPIRE metadata.





## ***OCM Human readable metadata***

- Key questions identified for Buildings
- How are the buildings represented in the dataset?
  - What is the (usual) available LOD?
  - What is the (usual) available type of representation (footprint, roof edge, envelope, etc.)?
- What is the level of coverage?
  - What types of buildings are represented?
  - Is the data available for the whole country or focused on urban areas?
- How are they defined / delimited?
  - What is the positional accuracy / reference map scale for these objects?
- Who is the responsible party and/or publisher?





# OCM Human readable metadata

- Example of human readable metadata elaborated from Spanish metadata for Buildings

Questions	Guidance questions	Human readable metadata Spain
How are the buildings represented in the dataset?	<p>What is the available LOD?</p> <p>What is the available type of representation (footprint, roof edge, envelope, etc.)?</p>	<p>Geographical location of buildings of Spain. According to Regulation (UE) Nº 1089/2010, a building is defined as all construction, above and below ground, for the purpose of accommodating people, animals and things, or production and distribution of goods or services and are permanent structures on the ground.</p>
What is the level of coverage?	<p>What types of buildings are represented?</p> <p>Is available the data for the whole country or focused on urban areas?</p>	<p>Therefore, the building geometry model INSPIRE obtained from data of General Directorate for Cadastre is defined as: A multi-enclosure that represents the envelope of all buildings with volumes above ground level of each cadastral parcel, excluding overhangs and terraces or balconies. The geometry of Buildings is defined a multi-surface feature that represents the footprint of the all existing constructions above ground inside each cadastral parcel. BuildingPart is each of the parts of a building that has homogeneous volume (numbers of floors, <b>LOD1</b>).</p>
How are they defined / delimited?	<p>What is the positional accuracy / reference map scale for these objects?</p>	<p>The Buildings INSPIRE dataset contains the official data of the DGC transformed directly to the data model defined by the INSPIRE directive. <b>The dataset is complete including urban and rural areas under the responsibility of the DGC (95% of the territory, except the Basque country and Navarre).</b></p>
Who is the responsible party and/or publisher?		Spanish General Directorate for Cadastre

\* Sentence in red is not directly extracted from INSPIRE metadata.





## OCM Human readable metadata

- Key questions identified for Addresses
- What is the usual address structure in the country?
  - How is the address formed?
  - What are the usual address components?
- What is the usual level of georeferencing of addresses (entrance, parcel, etc.)?
- What is the level of coverage?
  - Is the data available the data for the whole country or focused on urban areas?
- Who is the responsible party and/or publisher?



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# OCM Human readable metadata

- Example of human readable metadata elaborated from Spanish metadata for Addresses

Questions	Guidance questions	Human readable metadata Spain
What is the usual address structure in the country?	How is the address formed? What are the usual address components?	Addresses are georeferenced, when it is possible, to the entrance of the building and in other cases to the centroid of the cadastral parcel. Continuously updated. Transformed in its whole to INSPIRE AD model; populating Address, ThoroughfareName, <b>Locator</b> , PostalDescriptor and AdminUnitName features.
What is the usual level of georeferencing of addresses (entrance, parcel, etc.)? What is the level of data coverage?	Is available the data for the whole country or focused on urban areas?	Address data <b>is complete including urban and rural areas under the responsibility of the DGC (95% of the territory, except the Basque country and Navarre).</b>
Who is the responsible party and/or publisher? Who is the responsible party and/or publisher?		Spanish General Directorate for Cadastre

\* Sentence in red is not directly extracted from INSPIRE metadata.





## Conclusions

- To facilitate use and better understanding of OCM is necessary provide extra information.
- This extra information can be extracted (partly) from existing metadata.
- Issues:
  - Requires elaboration → not automatic extraction
  - Not all countries give same level of detail in metadata
  - Maybe not all aspects are covered in metadata



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# Many thanks for your attention!

Javier Luque

[javier.luque@catastro.hacienda.gob.es](mailto:javier.luque@catastro.hacienda.gob.es)

Spanish General Directorate of Cadastre



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