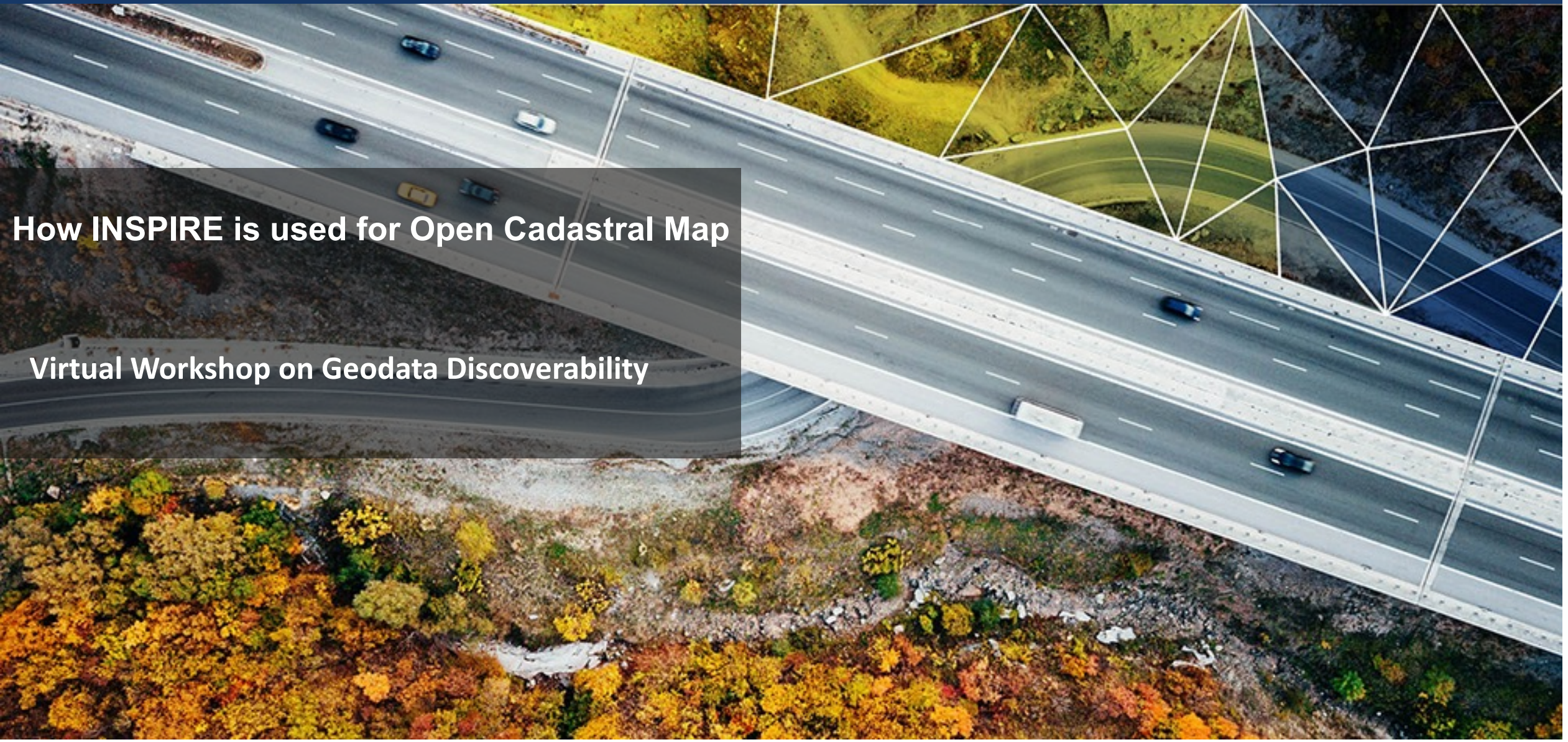


How INSPIRE is used for Open Cadastral Map

Virtual Workshop on Geodata Discoverability

Hara Papadaki – Hellenic Cadastre

The Open Cadastral Map

https://www.mapsforeurope.org/datasets/cadastral-all

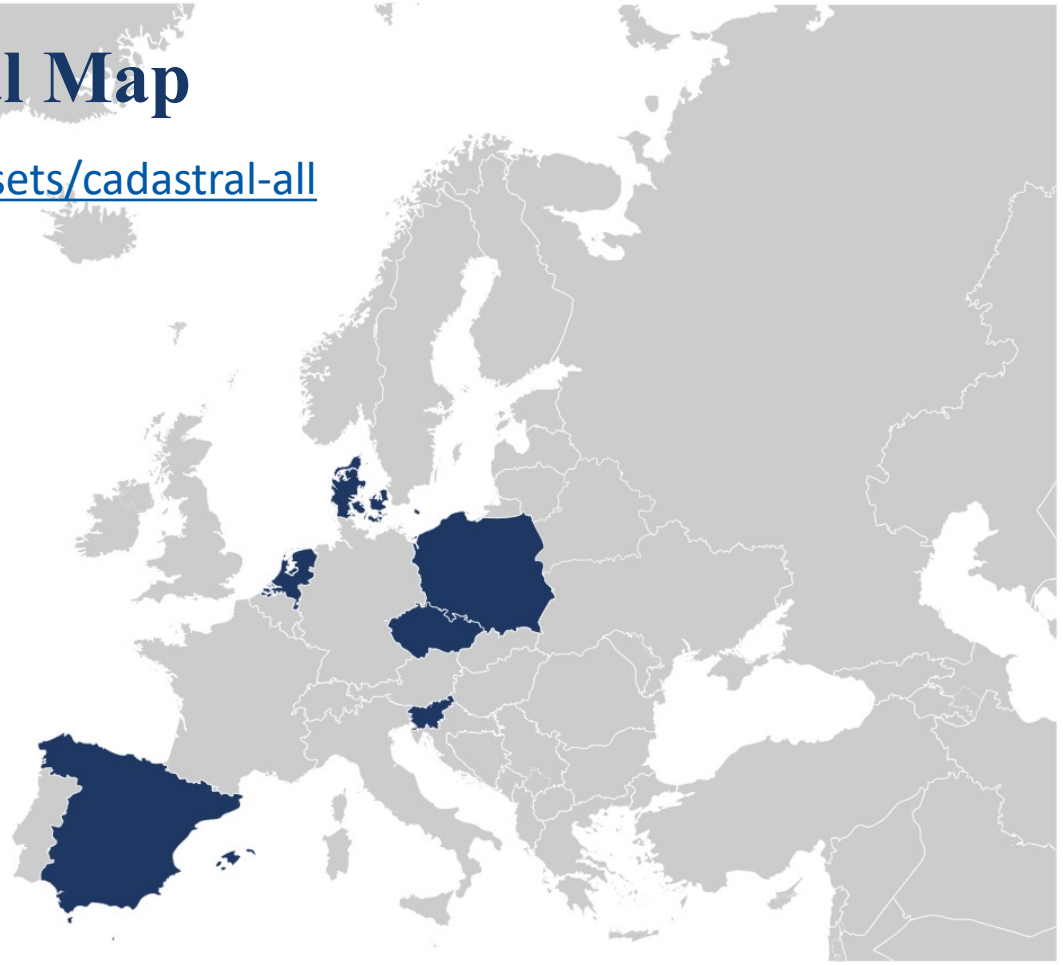
HVD: Cadastral Parcels, Buildings, Addresses and Administrative Units

Sustain: Currently data from 6 countries provided through the OME interface

The OME 2 Open Cadastral Map project will build on the successful results of the OME project

Extend: 9 additional countries by the end of 2025

Enhance: New functionalities



Czech Republic
Denmark
Netherlands
Poland
Slovenia
Spain

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European Open Cadastral Map

Aim:

Become a single place to find harmonized the authorized European Cadastral Data

Limitations:

- Budget
- Diversity of methods, tools, and technology in geospatial data processes among countries

- Practical
- Effective
- Cost-Efficient

One standardized production process for all countries

V s

Country-specific additions and exceptions

- Impractical
- Demands additional development work
- Expensive

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One harmonized view coming from different national authorities

Need for common rules:

Data Model

Data Format

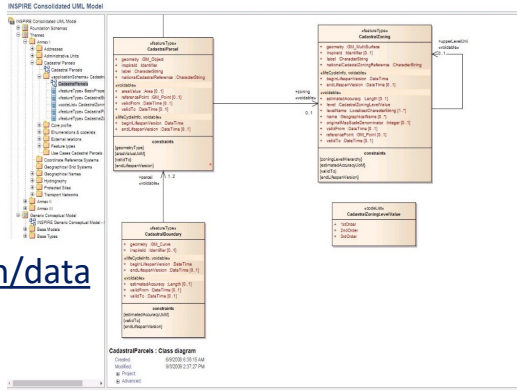
Metadata Schema

Metadata Vocabulary

Distribution Services

INSPIRE sets some common regulations which help streamline the existing data from countries that comply with the Directive and thus, make the OCM possible.

INSPIRE TGs provide standardisation:



https://github.com/INSPIRE-MIF/technical-guidelines/tree/main/data

https://inspire-mif.github.io/uml-models/draft/html

https://inspire.ec.europa.eu/schemas/index.html

https://github.com/INSPIRE-MIF/technical-guidelines/tree/main/metadata/metadata-iso19139

https://github.com/INSPIRE-MIF/technical-guidelines/tree/main/services

https://inspire.ec.europa.eu/documents/technical-guidance-implementation-inspire-download-services

…… and more

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Need for further specifications

INSPIRE regulations allow:

- variations in implementation
- different approaches for data formats or download services
- INSPIRE compliance to not identical solutions

OCM production process had to impose further specifications:

- INSPIRE endorsed gml schema required
  - To allow the identification of certain tags in data structure and the integration of the different datasets
- INSPIRE ATOM Feed Service for download
  - To allow the download of the entire dataset
- The download must return zip file(s)
  - To reduce the amount of data downloaded (user side) and the required storage space and bandwidth for data transfer (server/provider side)

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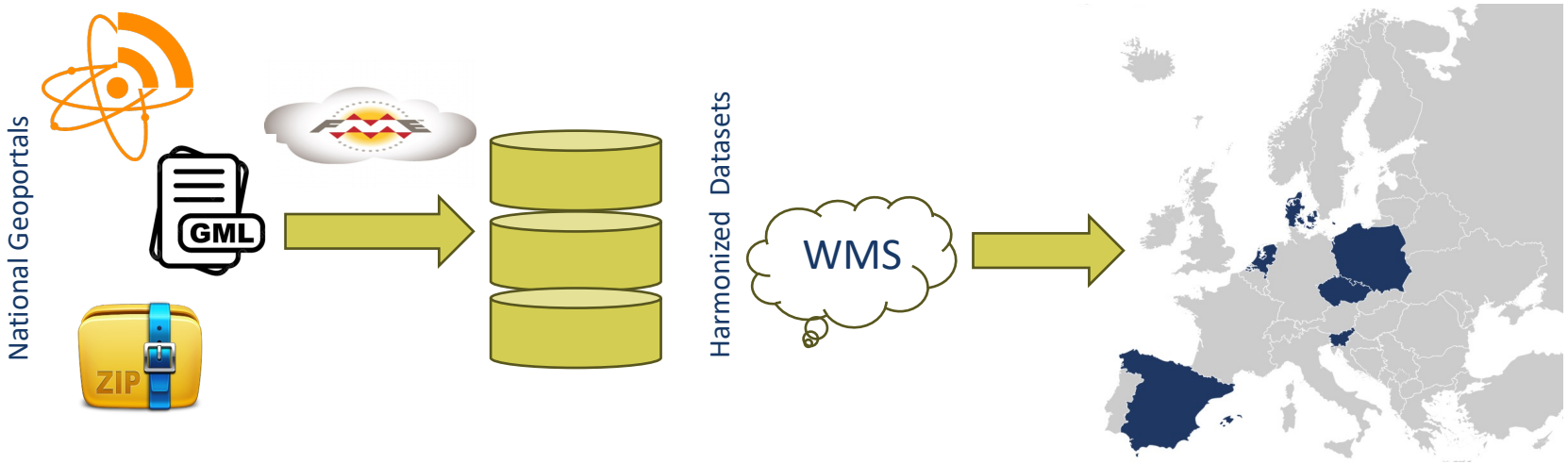
Specifications and process for the OCM



ATOM FEED service can be deployed as a one level access for all predefined datasets provided or as a hierarchical structure sorting and grouping the files of a dataset by levels based on a characteristic, for example at administrative unit level.

Other requirements for OCM Atom Feeds :

- download files need to be in .gml (rather than, e.g. shapefile)
- The entries in the Atom Feed which link to the download itself must contain the *category_label* ‘ETRS-89’
- the download must either return a zip file, or the URL must end in *.zip / *.gz to be identified within the process.

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Extend the OCM – Work with Data Producers

OCM specifications are not completely in line with the member's implementation of INSPIRE

Cooperation with members is needed to make the appropriate adjustments

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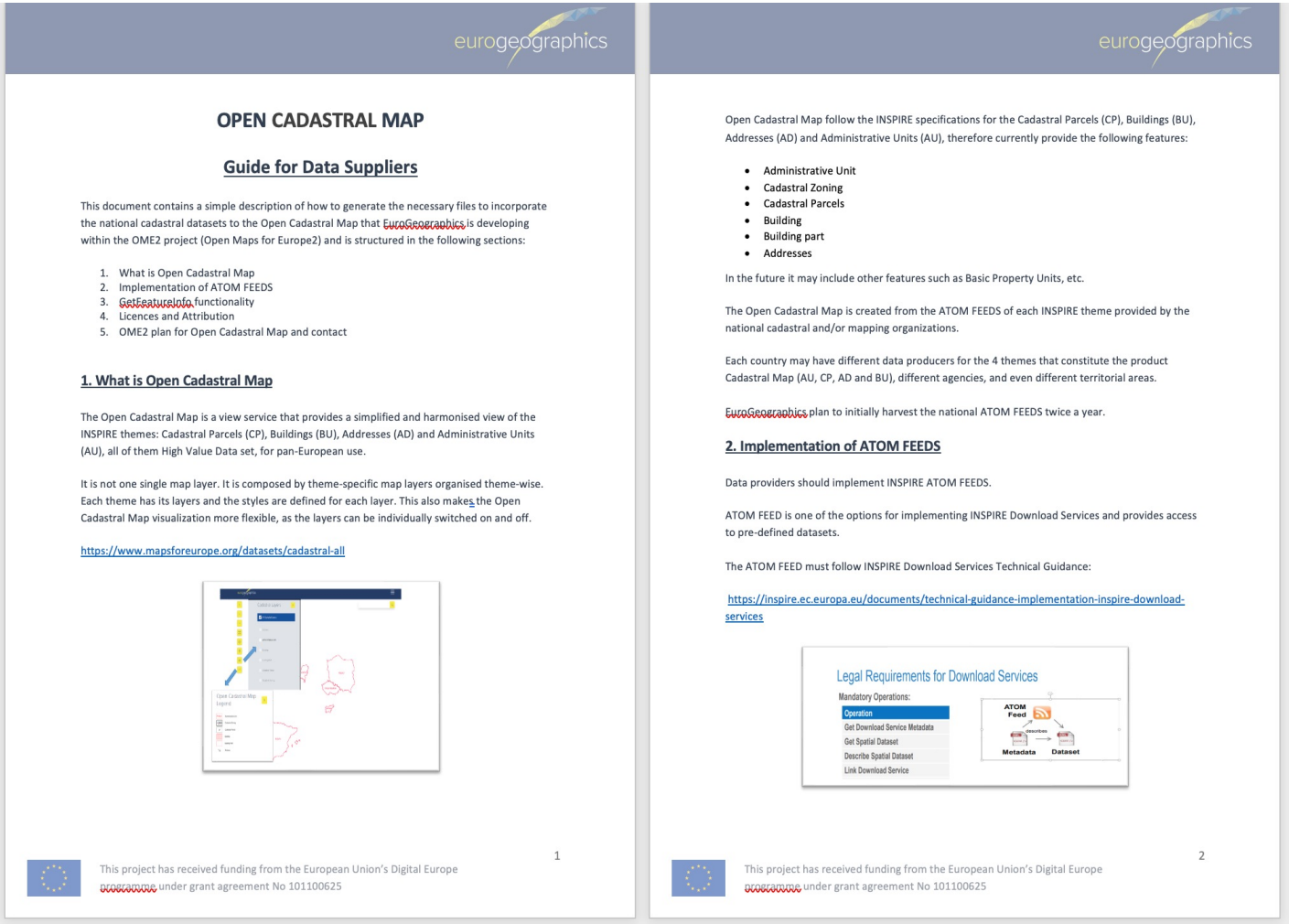
Guide for Data Suppliers

The Guide for Data Suppliers is an informative document describing how to generate the necessary files to incorporate a country's national cadastral datasets to the Open Cadastral Map.

It is developed within the OME2 project and it has been shared to members in order to provide all the details needed for the required technical specifications for the OCM production process.



OPEN CADASTRAL MAP

Guide for Data Suppliers

This document contains a simple description of how to generate the necessary files to incorporate the national cadastral datasets to the Open Cadastral Map that EuroGeographics is developing within the OME2 project (Open Maps for Europe2) and is structured in the following sections:

1. What is Open Cadastral Map
2. Implementation of ATOM FEEDS
3. GetFeatureInfo functionality
4. Licences and Attribution
5. OME2 plan for Open Cadastral Map and contact

1. What is Open Cadastral Map

The Open Cadastral Map is a view service that provides a simplified and harmonised view of the INSPIRE themes: Cadastral Parcels (CP), Buildings (BU), Addresses (AD) and Administrative Units (AU), all of them High Value Data set, for pan-European use.

It is not one single map layer. It is composed by theme-specific map layers organised theme-wise. Each theme has its layers and the styles are defined for each layer. This also makes the Open Cadastral Map visualization more flexible, as the layers can be individually switched on and off.

https://www.mapsforeurope.org/datasets/cadastral-all

This project has received funding from the European Union's Digital Europe programme under grant agreement No 101100625

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Open Cadastral Map follow the INSPIRE specifications for the Cadastral Parcels (CP), Buildings (BU), Addresses (AD) and Administrative Units (AU), therefore currently provide the following features:

- Administrative Unit
- Cadastral Zoning
- Cadastral Parcels
- Building
- Building part
- Addresses

In the future it may include other features such as Basic Property Units, etc.

The Open Cadastral Map is created from the ATOM FEEDS of each INSPIRE theme provided by the national cadastral and/or mapping organizations.

Each country may have different data producers for the 4 themes that constitute the product Cadastral Map (AU, CP, AD and BU), different agencies, and even different territorial areas.

EuroGeographics plan to initially harvest the national ATOM FEEDS twice a year.

2. Implementation of ATOM FEEDS

Data providers should implement INSPIRE ATOM FEEDS.

ATOM FEED is one of the options for implementing INSPIRE Download Services and provides access to pre-defined datasets.

The ATOM FEED must follow INSPIRE Download Services Technical Guidance:

https://inspire.ec.europa.eu/documents/technical-guidance-implementation-inspire-download-services

Legal Requirements for Download Services

Mandatory Operations:

Operation
Get Download Service Metadata
Get Spatial Dataset
Describe Spatial Dataset
Link Download Service

ATOM Feed describes Metadata Dataset

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Working with members for the OCM extension

Some Challenges encountered	Solutions Given
Some members have both the required datasets in INSPIRE gml formats and openly provided via INSPIRE AtomFeeds (e.g. Luxembourg). They had chosen however to provide their INSPIRE data in non-zipped gml files.	This is a variation allowed in INSPIRE but not functional in the OCM. We solved it with the great cooperation we had with Luxemburg's experts, who added zipped files to their atom feeds in addition to the already existing GML files.
Some members have INSPIRE AtomFeeds implemented but the data format is not gml (e.g. Greece). They openly provide datastes via INSPIRE AtomFeeds but the data format was in ESRI FGDB (others provide other formats such as GeoPackage, Shapefile).	A three-person team from the Greek Cadastre was required to transform their data in two weeks. Now they can use this experience to assist other data suppliers in doing the same.
Some members have the required datasets in INSPIRE gml formats, openly available for direct download but no AtomFeeds implemented.	We work together with members, exchange emails with information or have online meetings to share other similar experiences and try find the best way to proceed.
Some members provide OGC WFS as a download service for their cadastral data. A predefined dataset has to become available in INSPIRE gml format, then it has to be zipped and an Atom Feed Service has to be implemented to provide access to the dataset.	As above, we work together with members, exchange emails with information or have online meetings to share other similar experiences and try find the best way to proceed.
Some don't agree with the dataset's format choice. While gml is recommended by INSPIRE it is not considered good for cadastral data by all members. GML (ISO 19136) and ISO/TS 19139 are promoted as the default encoding in INSPIRE **(Source: https://knowledge-base.inspire.ec.europa.eu/system/files/2023-12/d2.7_v3.3.pdf)**	For the current project the required data format cannot be altered due to the already established production process. Future implementation of the OCM will be designed to enable more data formats and more flexible ways in incorporating data.

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Questions asked by members for the OCM

Question	Answer
Where is the national data downloaded?	Members' national data is downloaded into the servers of EG's subcontractor, Idox France. The only data downloaded are the ones visualised on the Open Maps For Europe interface: cadastral parcels, administrative borders, building footprints and addresses. No download or visualisation of information such as ownership or property values occures.
Are the servers used for the OCM located in Europe?	All servers are located in the European Union.
What kind of services are set up for OME2 from these servers?	From these servers, WMS and WMTS services are set up for OME2. This is the only access provided to users.
Is the any download service provided for our cadastral data from the EuroGeographics server?	No data for the Open Cadastral Map is downloadable from EG's server. Links and human-readable metadata are provided to guide the user to the members' national geoportal. If the user wants to download the (vector) data, they need to access it from the official national geoportal of the member country.

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OCM additional implementations

Metadata (OME2):

- Implementation of human readable metadata
- a short description of the datasets for the OCM homepage
- Info extracted from the members' metadata

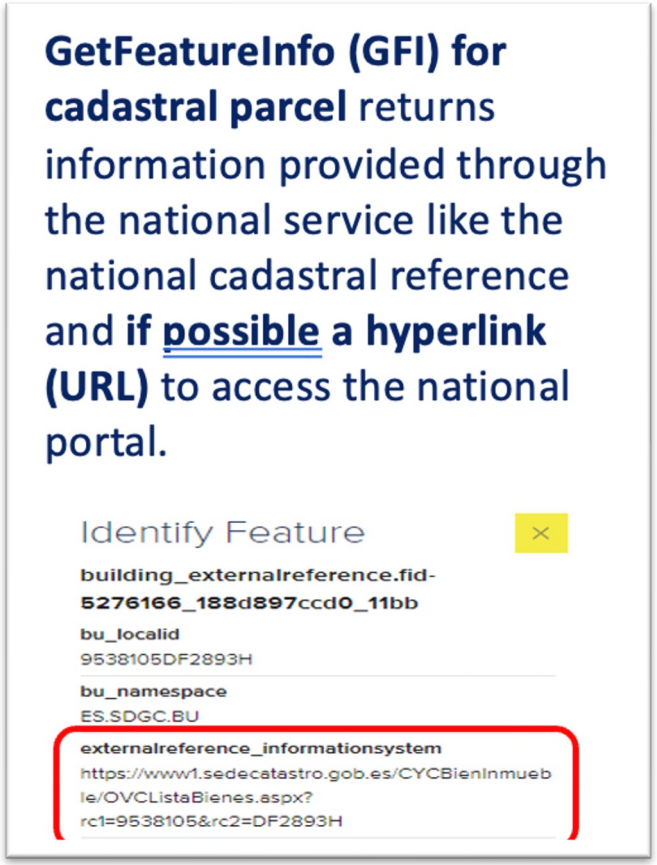
GetFeatureInfo (OME2):

- Implementation of a generalised solution for GetFeatureInfo
- user transferred from a cadastral parcel geometry in the Open Cadastral Map to the information page of that cadastral parcel on the national geoportal.

Adapt as much possible to members' needs and expectations (future OCM):

- Identify current and future OCM users, their needs and expectations and adapt respectively when possible.

GetFeatureInfo (GFI) for cadastral parcel returns information provided through the national service like the national cadastral reference and **if possible a hyperlink (URL)** to access the national portal.



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OCM, the pan-European Cadastral Map future steps

Summary:

- Provides pan-European cadastral data access from a single point and addresses the challenge of
  - finding
  - easily accessing authoritative pan-European high-value geospatial data.
- Saves users time, effort and resources by providing harmonized data from multiple countries through one central portal.

Plans and expectations:

- Enhance further the awareness of the Open Cadastral Map and its usefulness to cadastral communities
  - Hopefully, many more countries will open their cadastral parcel data this year, which will allow for more countries to be included in the OCM.
  - More challenges may come across but we are looking forward to meeting these challenges together with the data suppliers.
  - Work together to prepare the next day of the OCM – European Strategy for Cadastral Data

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Thank you for your attention!

Hara Papadaki – Hellenic Cadastre / Geospatial Information Directorate

Contact : hpapadak@ktimatologio.gr