GEOE3

A GEOSPATIALLY ENABLED ECOSYSTEM FOR EUROPE

Energy Efficiency of Buildings and GeoE3 project

Cadastral Information in Support of Infrastructure Development

Joint PCC and EuroGeographics CLRKEN Conference

Plenary Meeting of the Permanent Committee on Cadastre in the European Union

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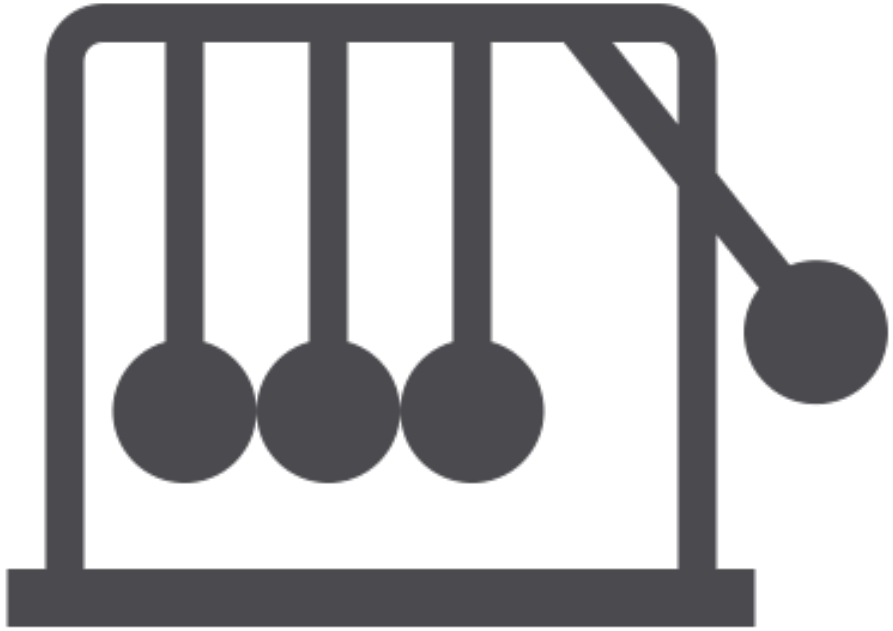
Efficiency

a situation in which
a person, company, factory, etc.
uses resources such
as time, materials, or labour well,
without wasting any



https://dictionary.cambridge.org/dictionary/english/efficiency
(Bussines english)

"GeoE3 is a project co-financed by the Connecting Europe Facility of the European Union that will provide the vital connection between existing and emerging National, Regional and Cross-Border digital services."

https://geoe3.eu/

Goal of GeoE3:

- exploit existing national geospatial platforms, and
- develop a cloud-based ecosystem of services…

… that …

dynamically integrate various data sets (statistical, meteorological, etc…) with geospatial data, …

…to …

- simplify the analysis and visualization of Open Public Data, and
- offer better services to citizens.

Better access and interoperability of Geospatial data /other data

- Usability of metadata information – e.g. dashboards
- Integration with other data (e.g. statistics, weather data)
- Accessibility through Europan Data Portal (DCAT.AP)

Dynamic harmonisation of geospatial data based on use cases and new APIs

- Example Cloud Platform which will demonstrate use cases and then used for national platform implementatios through different APIs and tools

Build an ecosystem based on national platforms

- eLearning videos
- Innovation events
- Benefits

Participants:

- National Land Survey of Finland
- Finnish meteorological Institute
- Statistics Finland
- Spatineo (Finland)
- Norwegian Mapping Authority
- Cadastre, Land Registry and Mapping Agency
- Open Geospatial Consortium Europe
- Centro Nacional de Información Geográfica - Spain
- Estonian Land Board
- Information Technology Center of the Ministry of the Environment Estonia
- Aventi Intelligent Communication Norway
- Dirección General del Catastro - Spain

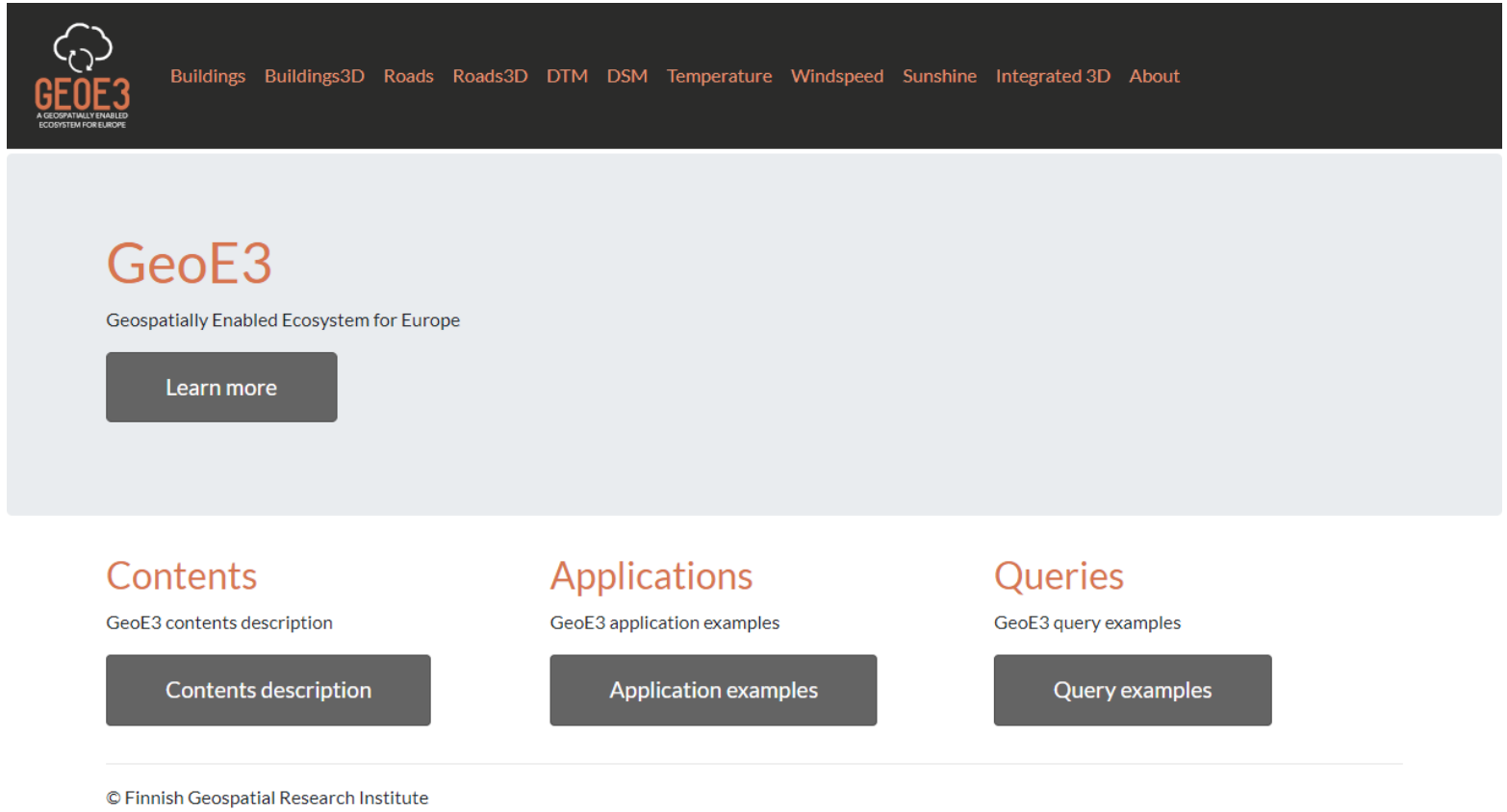
Solution based on use cases and national implementation (not vice versa)

GeoE3 develops tools and APIs that will merge available information from national sources.

Use case 1: Solar Energy potential and energy efficiency of buildings	•Detailed 3D representation of buildings with all relevant attribute data •Digital Elevation Model •Climate normals and forecasts (statistical data) •Data from Finland, Netherlands, Spain
Use case 2: Energy consumption of Electric cars	•Road data 2D and 3D •Weather data and traffic data •Road signs and speed limits (Finland, Sweden and Norway) •Norway and Spain
Use case 3:Cross-border/Cross domain Smart City Finland/Estonia	•3D data buildingis and other relevant data •Innovation event

A platform is being developed to:

- demonstrate data and service interoperability
- create dashboards, and
- create visualizations for an improved understanding of data from a variety of sources.



https://geoe3platform.eu/geoe3/

The platform simplifies the discovery of relevant data for the use cases and improve access to them through new API standard.

GEOE3 A GEOSPATIALLY ENABLED ECOSYSTEM FOR EUROPE

Buildings3D

GeoE3 OAPIF Buildings 3D

Experimental service for cross-border provision of 3D buildings

geospatial ecosystem cross-border building

Terms of service	https://creativecommons.org/licenses/by/4.0
License	CC-BY 4.0 license

Collections

View the collections in this service

Processes

View the processes in this service

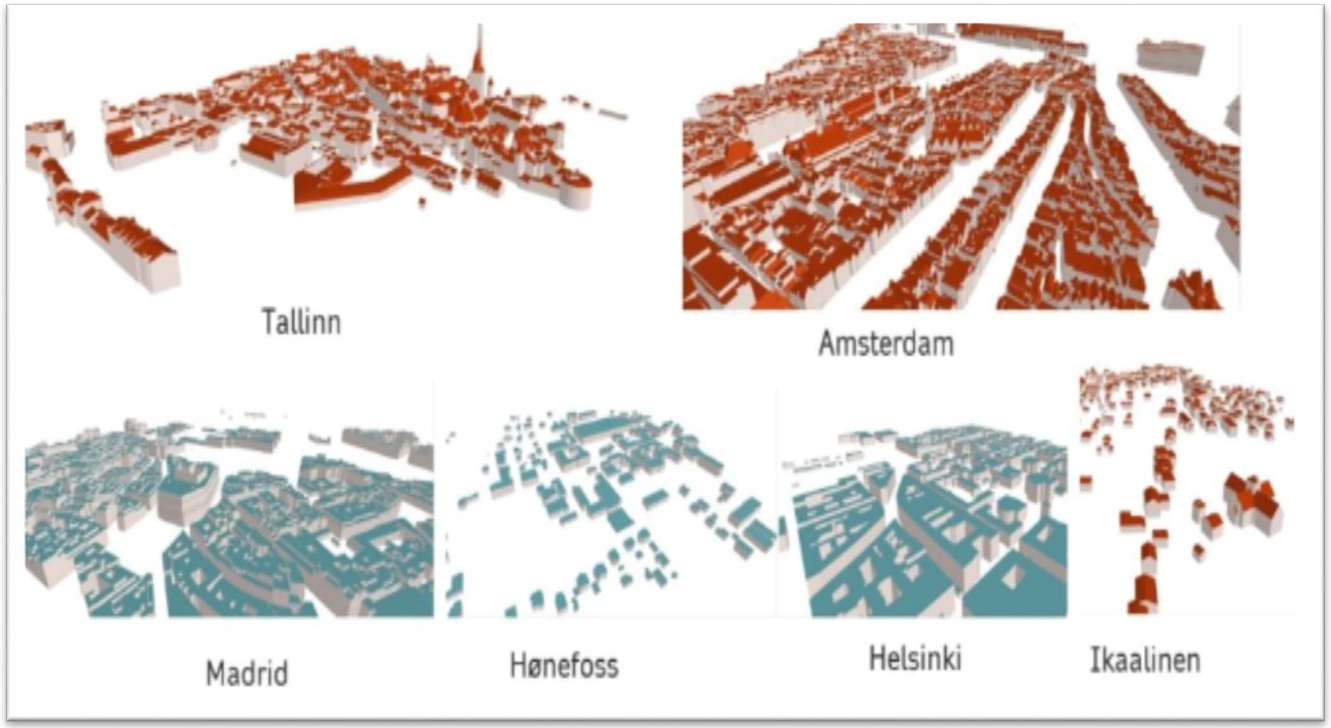
API Definition

Documentation

OpenAPI Document

Conformance

View the conformance classes of this service



Example of the GEOE3 data integration platform. Buildings in red are at Level of Detail 2 (LoD2) and buildings in blue are at Level of Detail 1 (LoD1). LoD1 is generated on the fly using the height of the building (Spain) or the digital surface model (Finland, Norway).

Development of the project

1 - Administration and action management (NLS-FI)

2 - Content Discovery and Evaluation (DISCOVER) (KAD-NL)

3 - Data interoperability of the Geospatially Enabled Ecosystem (IMPROVE) (KARTV-NO)

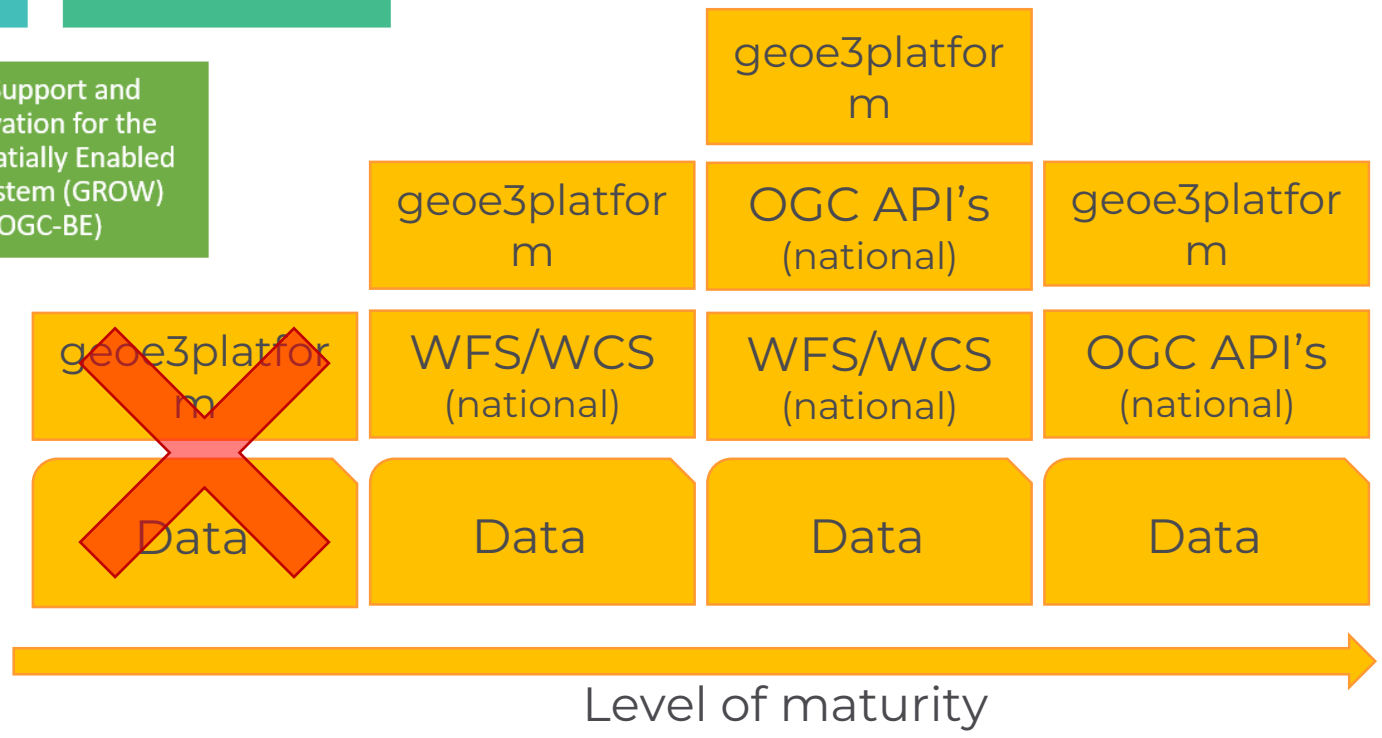
4 - Integration of tabular data in the Geospatially Enabled Ecosystem (DISCOVER) (NLS-FI)

5 - Service and tool development for the Geospatially Enabled Ecosystem (IMPROVE) (FMI-FI)

6 - National platform and cross domain spatial platforms and portal implementation (GROW) (NLS-FI)

7 - Support and innovation for the Geospatially Enabled Ecosystem (GROW) (OGC-BE)

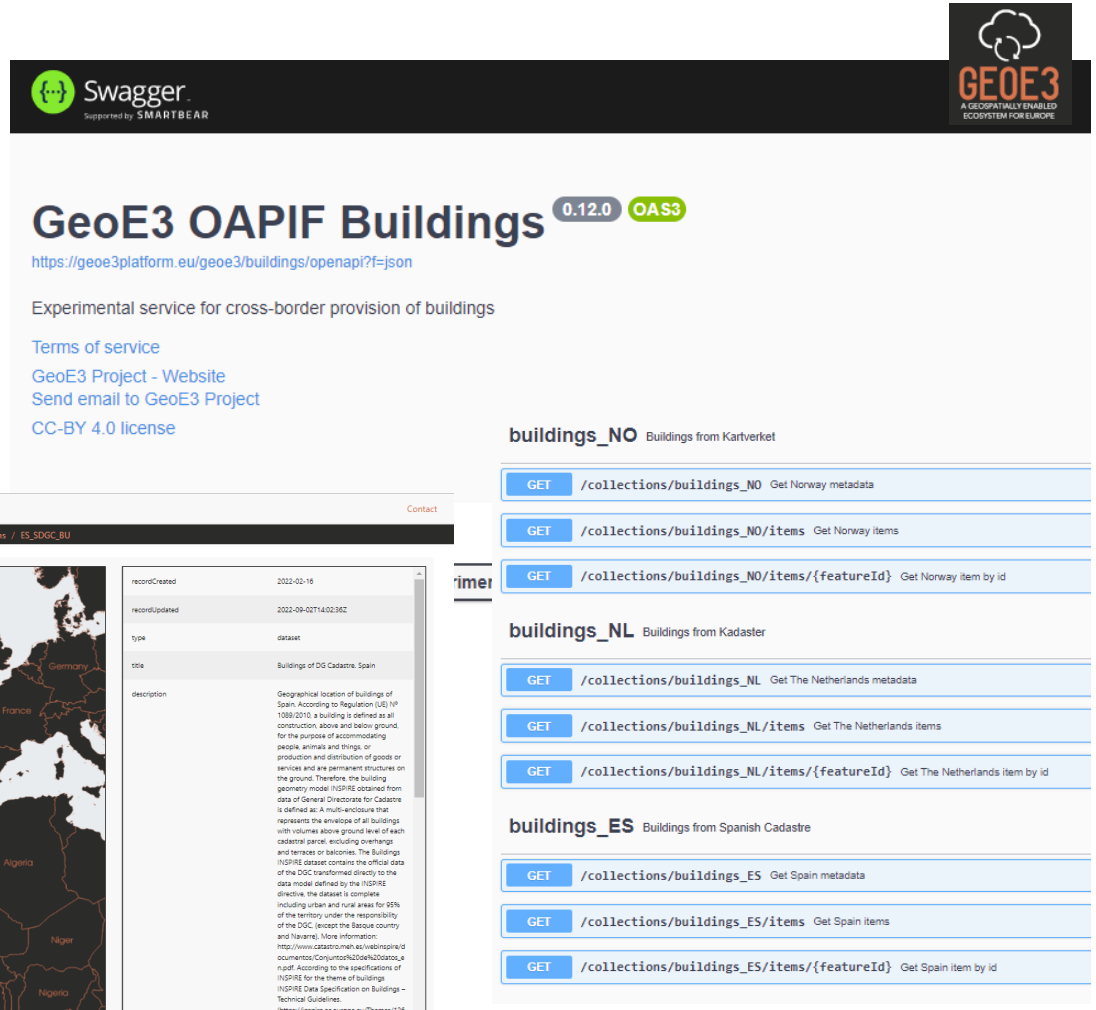
- Iterative development.
- Different alternatives for implementation.
- Starting national implementations that allow knowledge transfer.



Benefits of the project

- New APIs (simplicity)
- Metadata management/accessibility
- Solutions for integration
- Innovation
- Learning

Tools developed will be very useful to the General Directorate of the Cadastre of Spain to comply with the provisions of the Open Data Directive.



Focusing on energy efficiency of buildings…

… through the platform, energy class of the buildings could be offered (if it e

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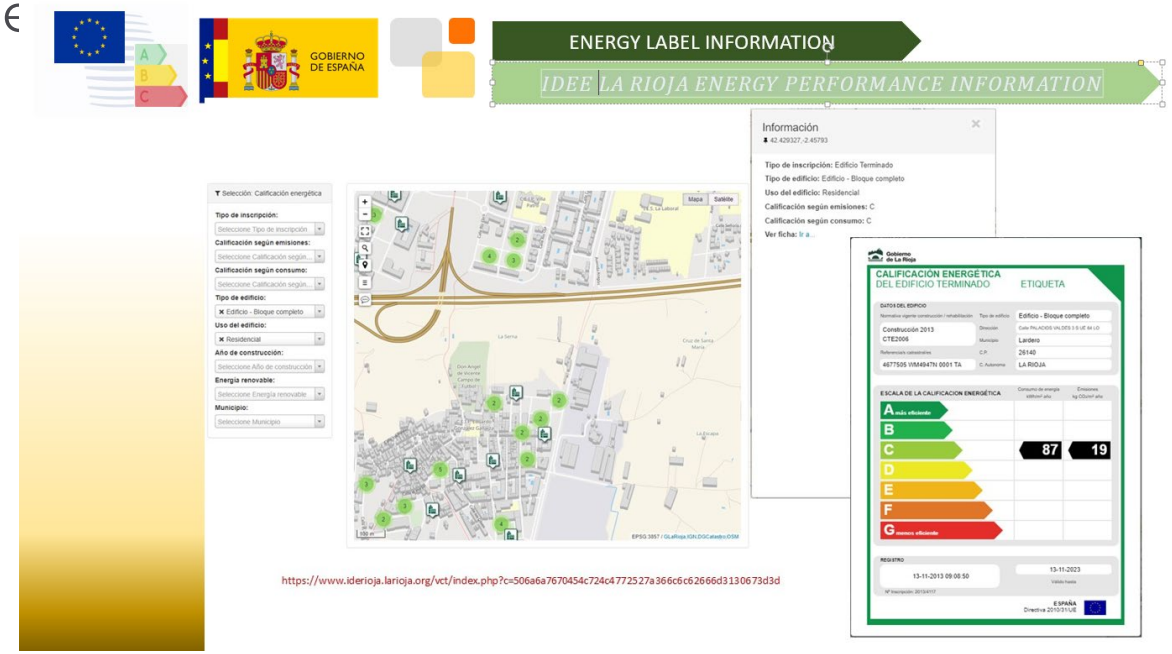

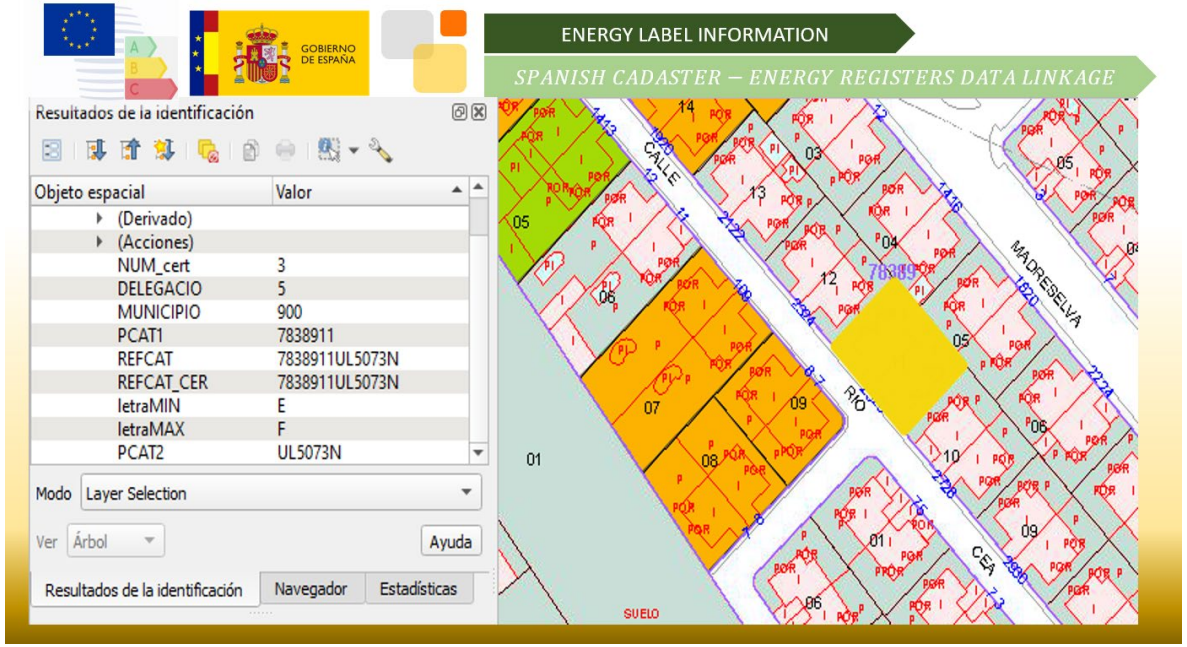

Focusing on energy efficiency of buildings…

… but also, it can be offered most of the data required for its estimation where it haven't been calculated.

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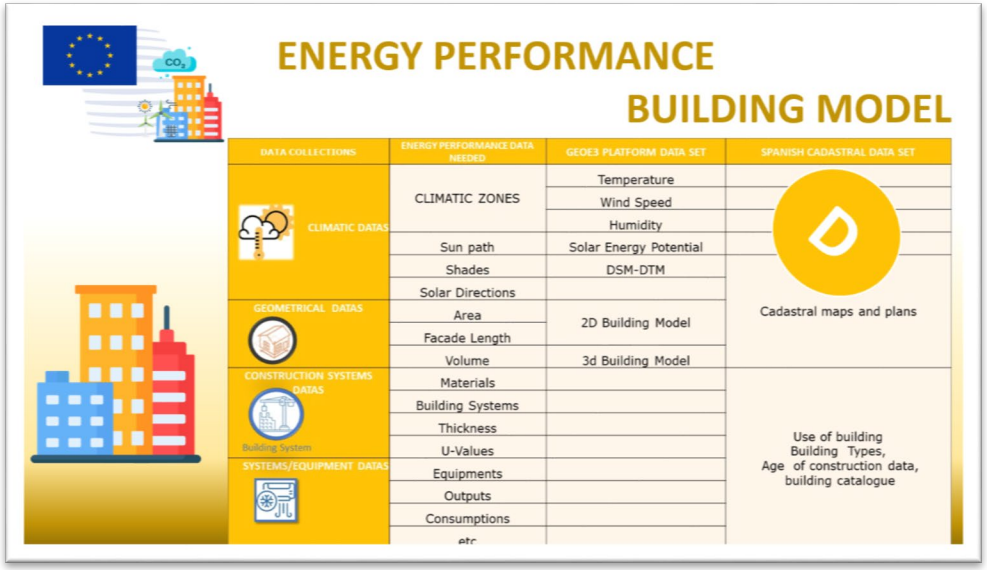


- 3D building model with LoD 2 detail
- relevant building attributes
- digital Surface Model (DSM) of the surrounding area
- shadow index coverage
- number of sunshine hours at the nearest observation station.
- High resolution Digital Elevation Model (DEM)
- Average wind conditions
- Wind speed normal at the nearest observation station

DATA SET NAME		DATA SET TYPE
ENERGY EFICIENCY LABEL		ENERGY EFFICIENCY CERTIFICATE
		ENERGY LABEL LETTER
Data for estimating energy eficiency label	GEOMETRICAL BUILDING DATA	FLOOR PLANE
		FLOOR AREA BY USE
		VOLUME BY USE
		AREA OF HOLES (doors, window ,rooflights)
		AREA OF WALL (without doors, windows etc.....)
		BUILDING USE
		BUILDING TYPOLOGY DATA
		ANTIQUITY DATA
	CONSTRUCTION SYSTEM BUILDING DATA	CONSTRUCTION MATERIALS
	EQUIPMENT BUILDING DATA DATA	EQUIPMENT BUILDING STUDY BY AGE BANDS

C=D/η

ENERGY EFFICIENCY CALCULATION METHOD

CONSUMPTIONS = DEMAND/OUTPUTS

ENERGY EFFICIENCY: MINIMIZE DEMAND, MAXIMIZE OUTPUTS

KG CO2/m2

$$C = \frac{D \downarrow}{\eta \uparrow} =$$

KWh/m2

Possibility of reconstruction

A
B
C

3D BUILDING MODEL

CONSTRUCTION SYSTEM

OUTDOOR CLIMA CONDITIONS

EQUIPMENTS OUTPUTS

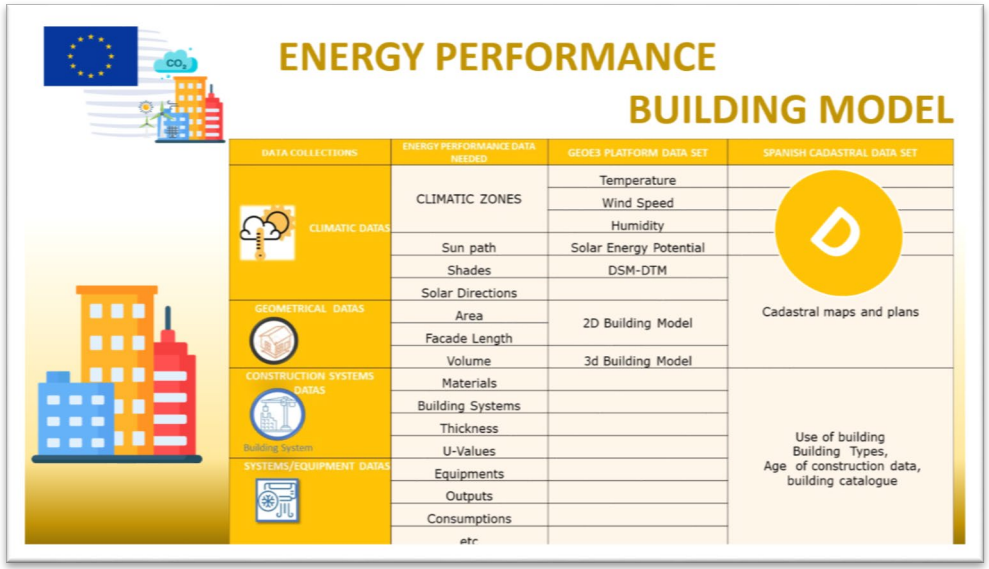
INDOOR CLIMA CONDITIONS

Energy Performance Building Model

… and which role can play Cadastral Agencies here?

Cadastral agencies may have many information of interest for energy efficiency determination.

- Location
- Shape
- Building structure (dwelings if exists, materials, …)
- Qualities
- …



… and which role can play Cadastral Agencies here?

Cadastral information is useful to obtain energy efficiency classification and certificate of a construction…

DATA SET NAME		DATA SET TYPE
ENERGY EFICIENCY LABEL		ENERGY EFFICIENCY CERTIFICATE
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GEOMETRICAL BUILDING DATA		FLOOR PLANE
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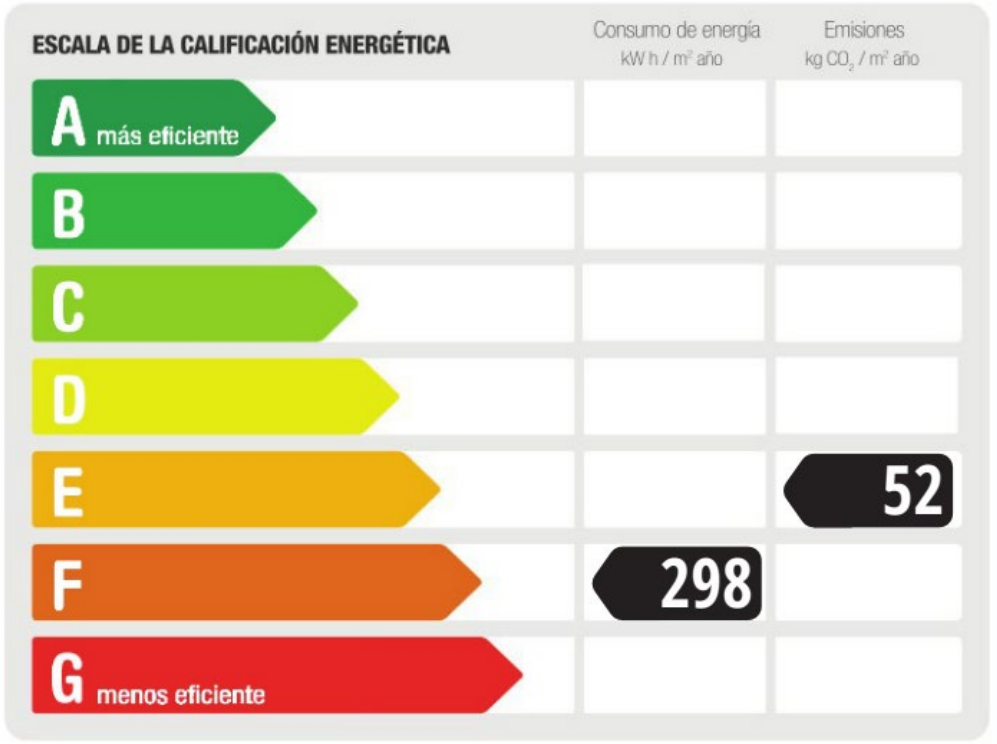
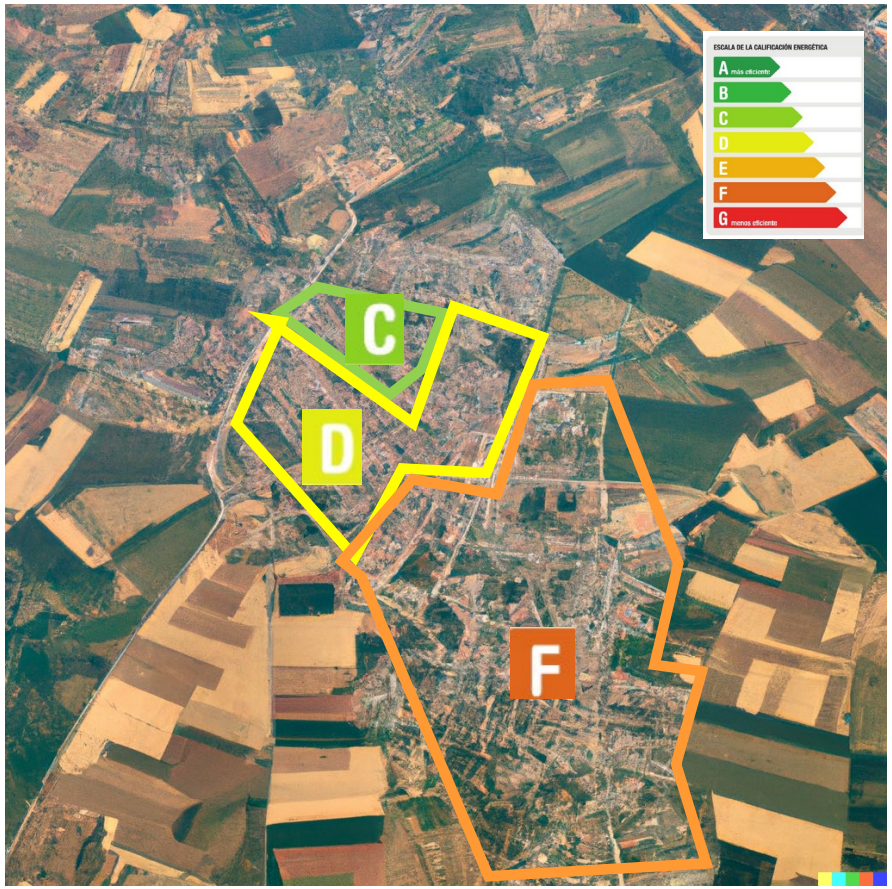
		BUILDING USE
		BUILDING TYPOLOGY DATA
		ANTIQUITY DATA
		CONSTRUCTION MATERIALS
ATA		EQUIPMENT BUILDING STUDY BY AGE BANDS



… and which role can play Cadastral Agencies here?

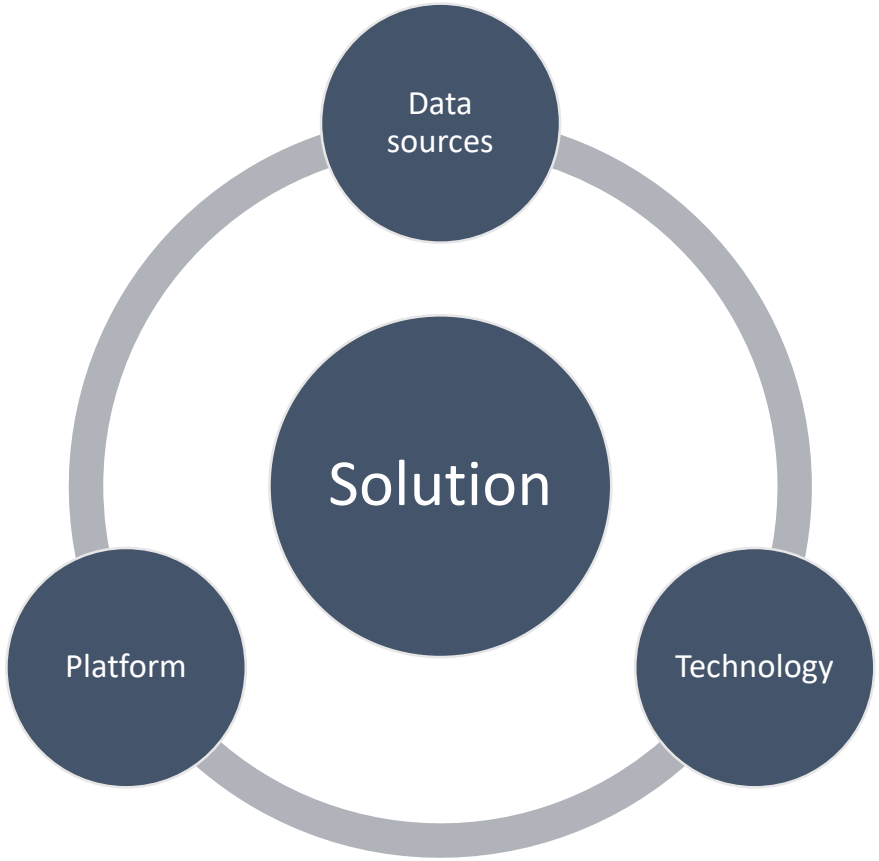
…but also, to estimate classification in large areas without using much more external information.



The inclusion of the information in this platform allows to obtain a more FAIR data

The combination of right data sources in a platform using last state of the art technology can foster…

- new applications,
- solutions for day to day problems,
- facilitate decision making,
- development of policy planning,
- …



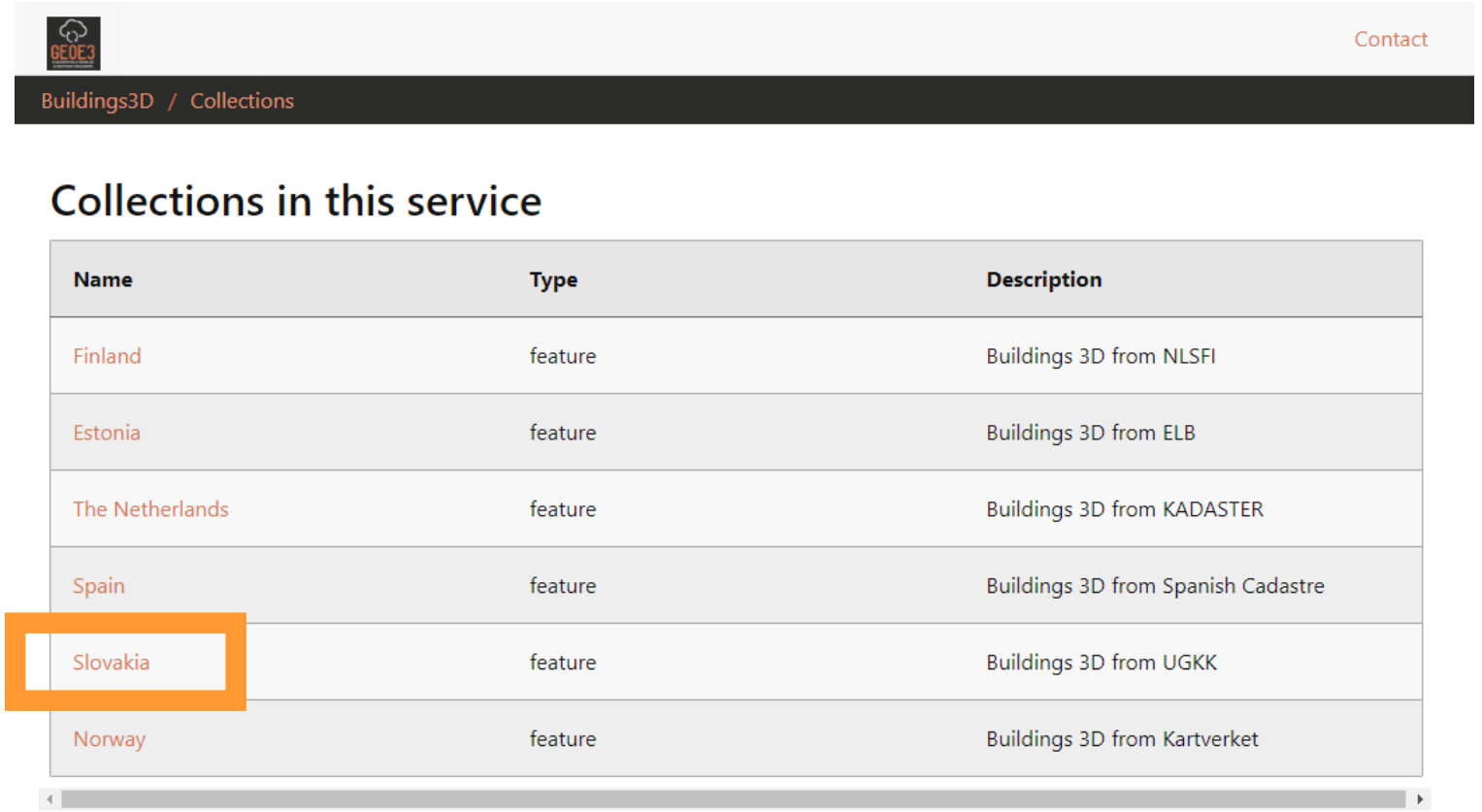
Finally…

Platform is not limited to the data from countries of participating partners

…data from other countries can be integrated too.

Last incorporation → Slovakia

If you want to be there, please ask!!!



Many thanks for your attention!

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