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FINNISH GEOSPATIAL
RESEARCH INSTITUTE
FGI

Advanced User Interface for a Geospatial Data Integration Platform

GEOProcessing Conference, Barcelona

May 30, 2024

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Finnish Geospatial Research Institute



Agenda

- Introduction
- Data Integration Platform
- 3D Buildings Provision
- Cross-Collection Queries
- User Interface Upgrade
- Conclusion

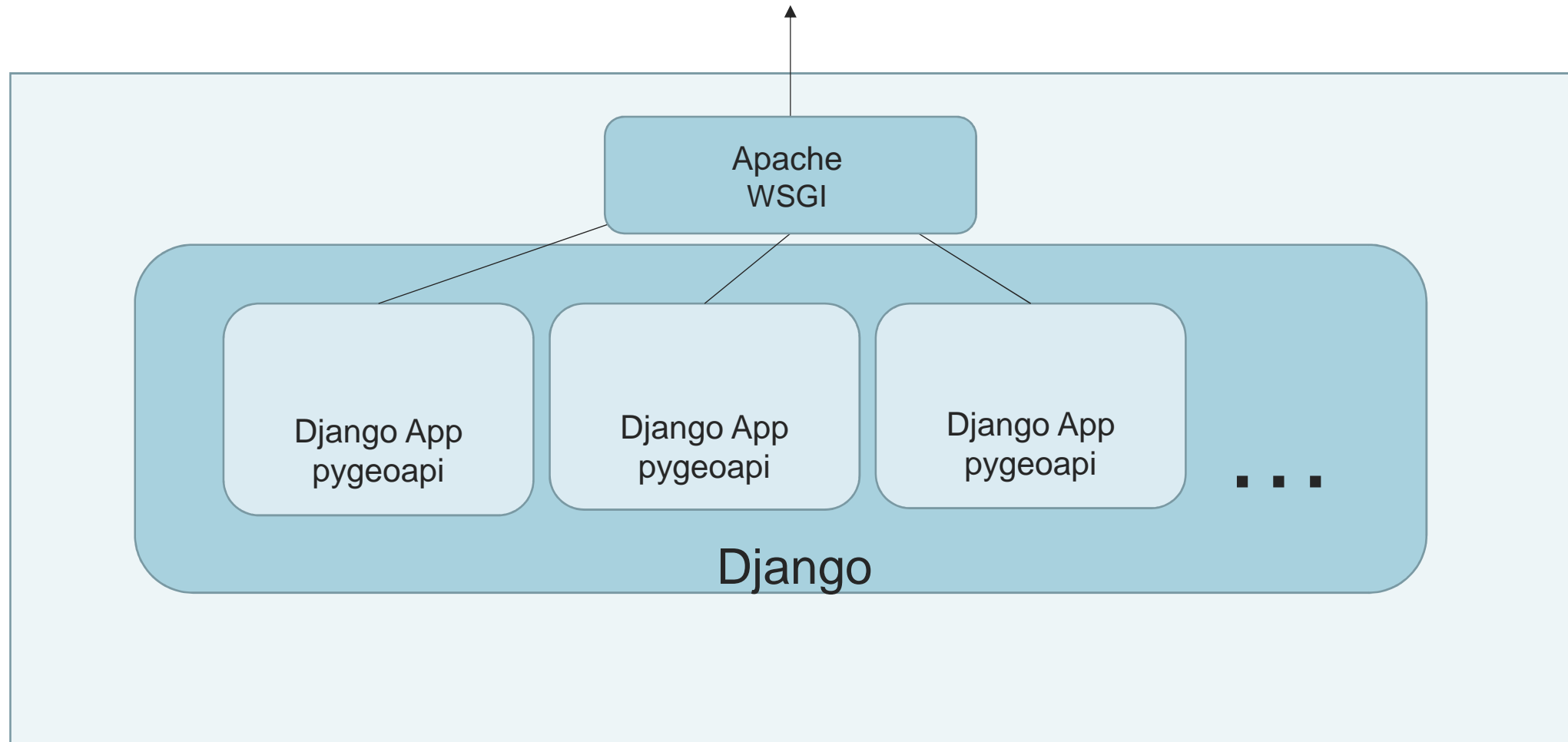
Geospatially Enabled Ecosystem for Europe GeoE3

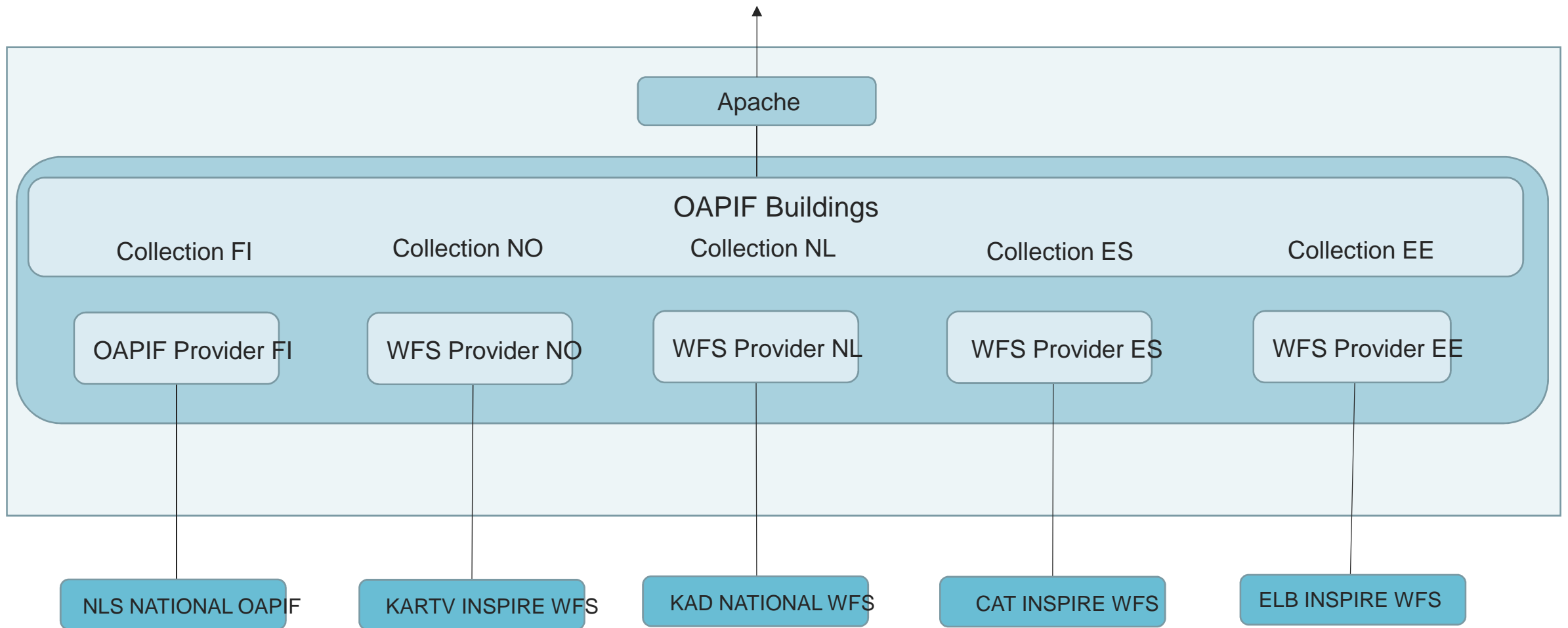
- Cross-border and cross-domain integration of geospatial data
- Use case –driven
 - Renewable energy, Smart city
- Finland, Estonia, Norway,
The Netherlands, Spain



GeoE3 Integration Platform

- Energy-related use cases (Energy Data Space)
 - Buildings, Roads
 - DTM, DSM
 - Climate
- All datasets available via OGC API Features, OGC API Coverages
 - Metadata via OGC API Records
 - LOD1 3D buildings via OGC API Processes
- Runs on a cloud service platform





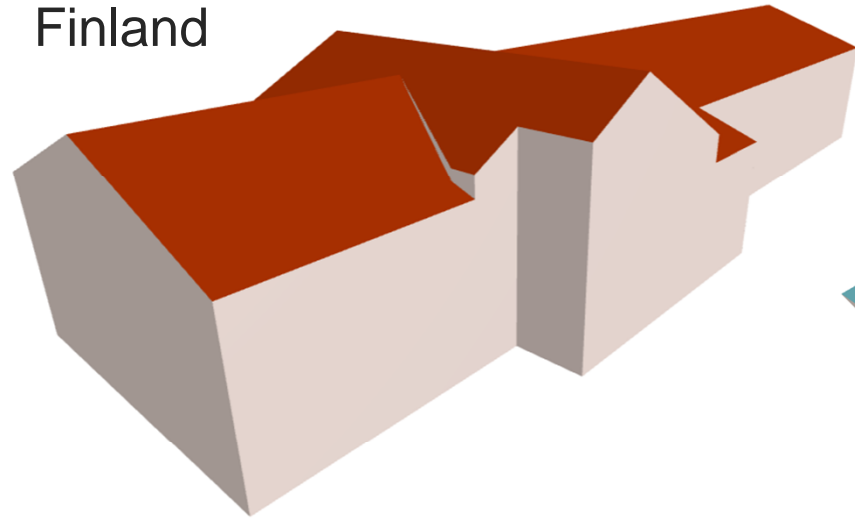
Collections in this service

Name	Type	Description
Finland	feature	Buildings from NLSFI
Norway	feature	Buildings from Kartverket
The Netherlands	feature	Buildings from Kadaster
Spain	feature	Buildings from Spanish Cadastre
Estonia	feature	Buildings from Maa-Amet
Slovakia	feature	Buildings from UGKK
France	feature	Buildings from IGN
Buildings metadata	record	Buildings metadata for GeoE3 countries (FI, NO, ES, NL, EE)

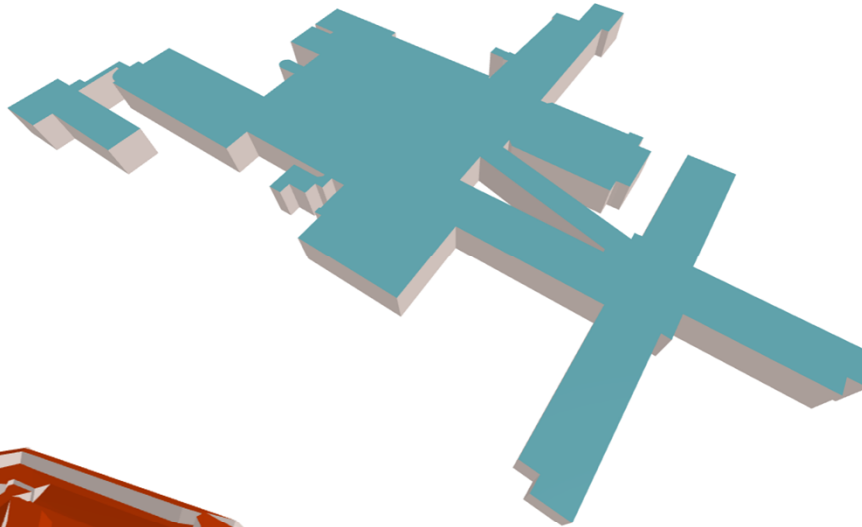
3D Buildings

- Downloaded to Integration Platform (LoD 2)
 - Finland, Estonia, The Netherlands
- Accessed from national-level service, processed on-the-fly (LoD 1)
 - Spain, Norway
- Provided in CityJSON encoding via OGC API Features

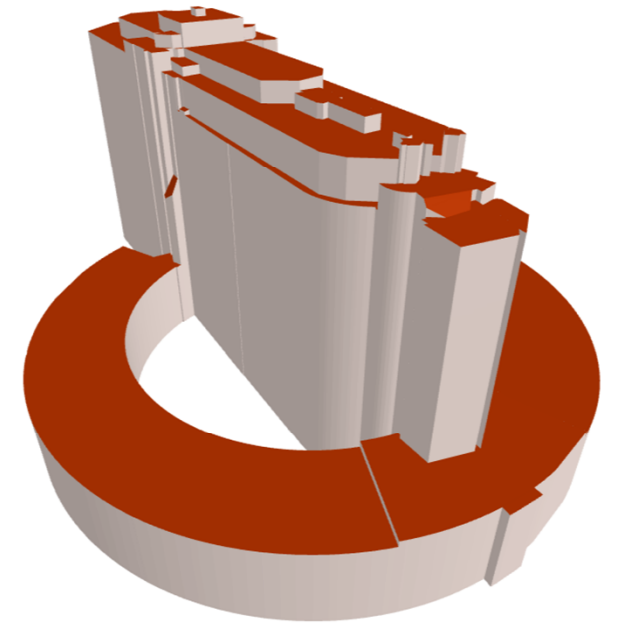
Finland



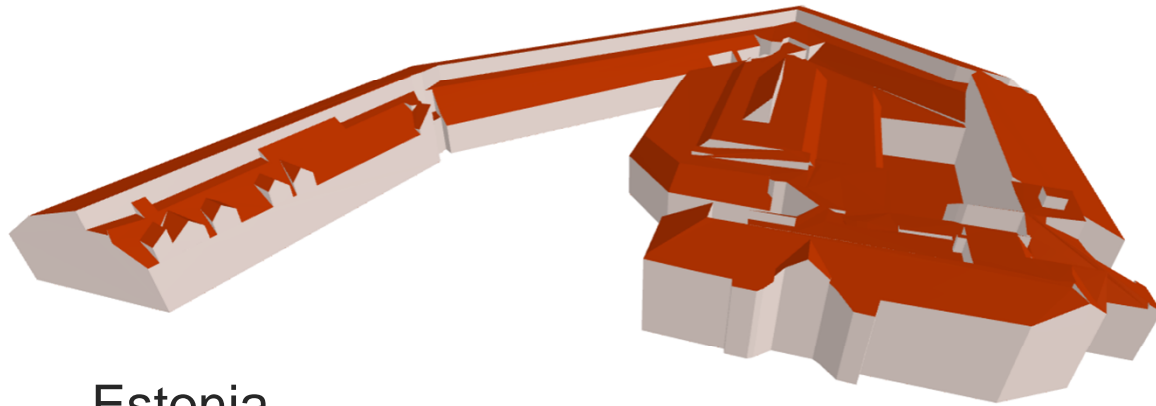
Norway



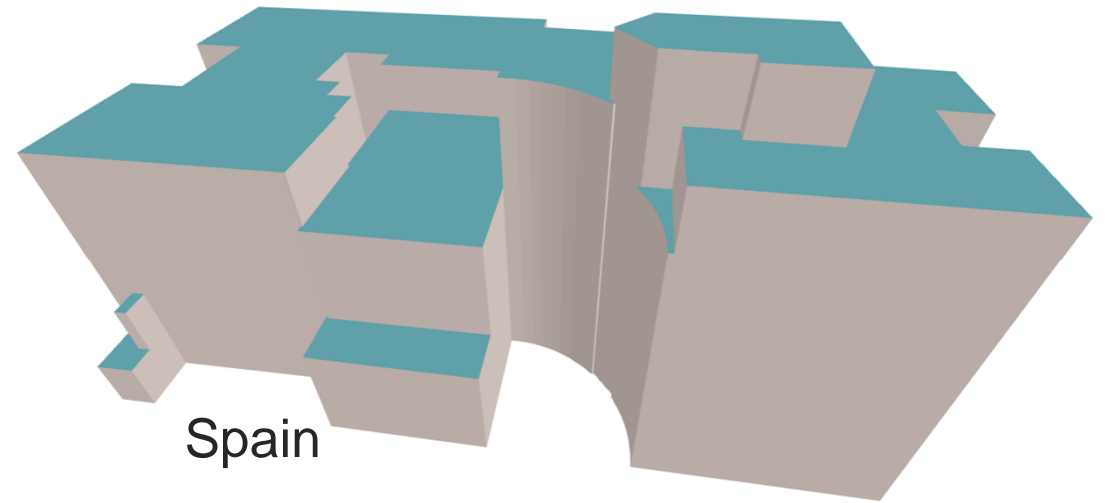
The Netherlands



Estonia

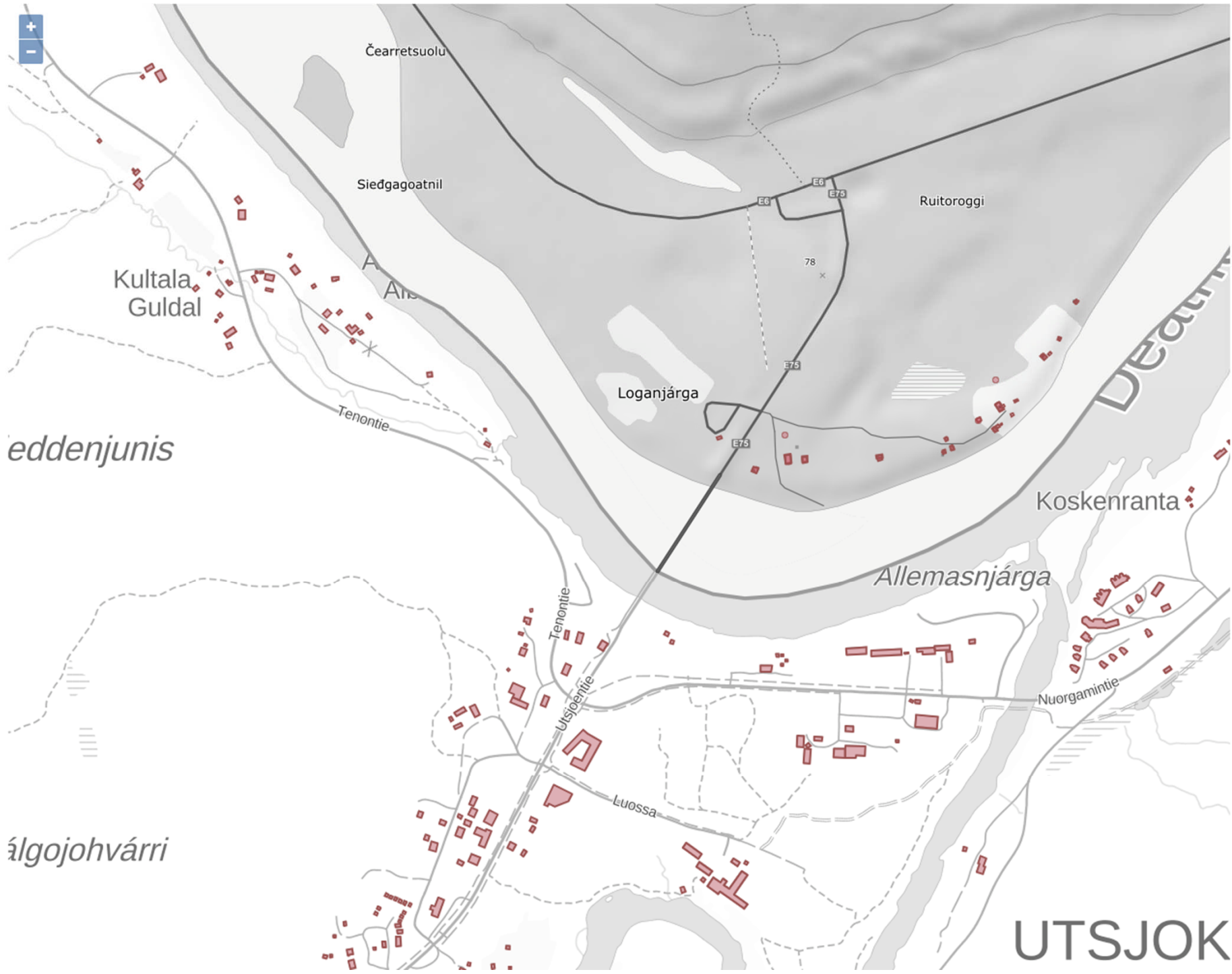


Spain



Cross-Collection Queries

- Enable cross-border provision of datasets
- Idea from the OGC API Features Part 3, Draft
- [https://.../geoe3/buildings/search?](https://.../geoe3/buildings/search?collections=buildings_FI,buildings_NO&bbox=26.998585,69.903087,27.061414,69.920908&f=json&limit=1000)
[collections=buildings_FI,buildings_NO](#)
[&bbox=26.998585,69.903087,27.061414,69.920908](#)
[&f=json](#)
[&limit=1000](#)



Elements Console Network >> 30 30

search Hide data URLs

All XHR JS CSS Img Media Font Doc WS Manifest Other

Has blocked cookies Blocked Requests

1000 ms 2000 ms 3000 ms 4000 ms

Name	St...	Ty...	Initiator	Size	T..	Waterfall
search?collecti...	200	xhr	featur...	2...	4...	

1 / 66 requests 215 kB / 1.0 MB transferred 215 kB / 1.8 MB resources Finish:

Console What's New Issues

Highlights from the Chrome 90 update

New CSS Flexbox debugging tools
Debug and inspect CSS Flexbox with the new CSS Flexbox debugging tools.

New Core Web Vitals overlay
Visualize page performance with the new Core Web Vitals overlay.

Cross-Collection Queries

- OGC API Coverages, experimental

- <https://.../geoe3/dsm/search?>

`collections=DSM_NO,DSM_FI`

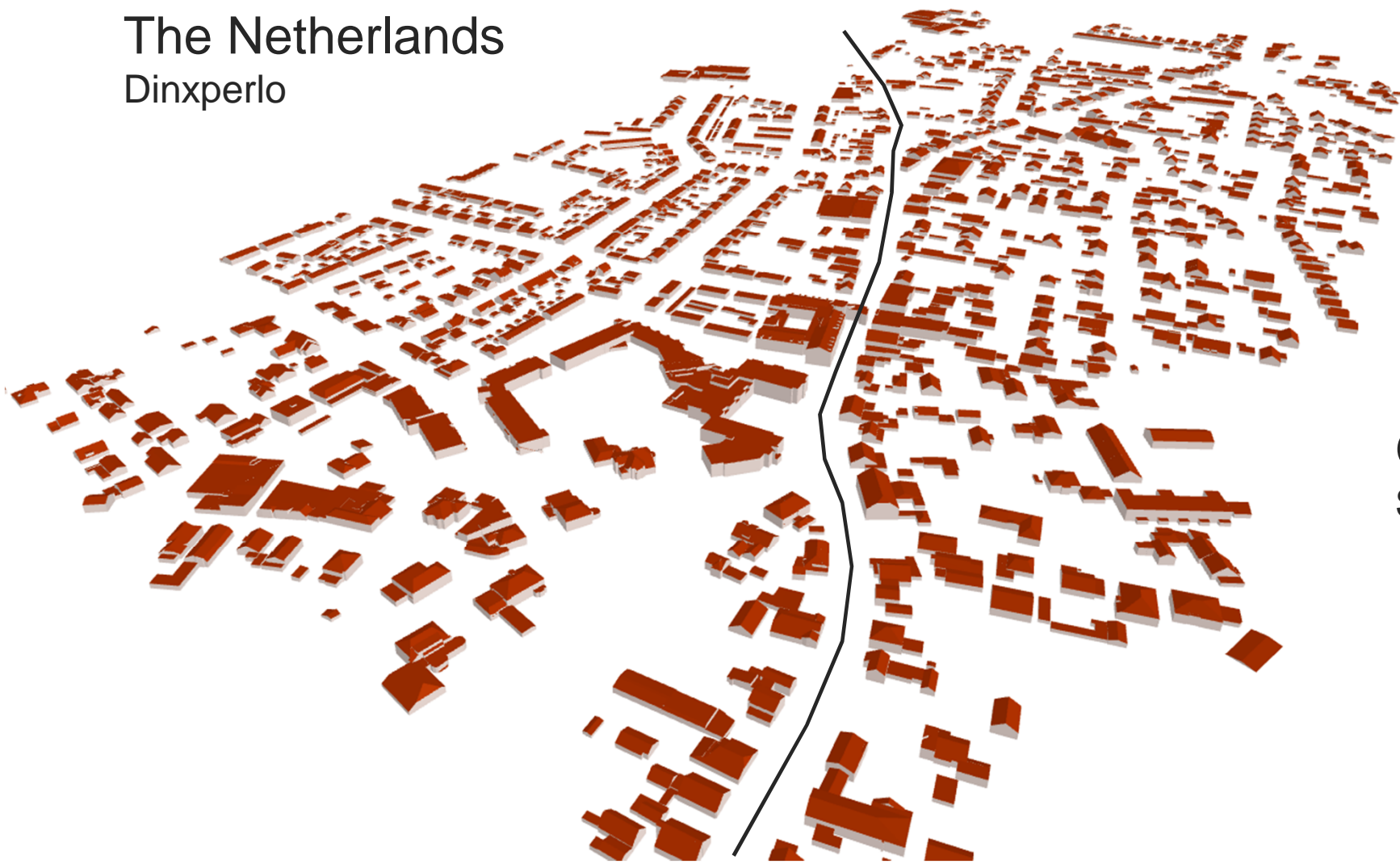
`&subset=x(1756108.1:3748915.4),y(10110879.3:11705125.2)`

`&scale-size=x(1000),y(800)`

`&f=png`



The Netherlands
Dinxperlo



Germany
Suderwick

User interface upgrade

- Professional UI designer
- Bootstrap components
 - Navigation Bar, Accordion, Card, Forms etc.
- Two parts
 - API-based for developers
 - User-friendly for managers

[Explore](#)[Use cases](#)[Join](#)[APIs ▾](#)[About us](#)

Location Europe

We connect national data sources to support the creation of location-based services in Europe.

[Explore data](#)

Use cases

There are many possibilities how you can benefit from the available location-based data and use it for your business.

[View use cases](#)

Join our network

If you are working in an organisation that publishes or produces data, join our network and share your location-based data for wide audiences.

[Join us](#)

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Location Europe

The Location Europe data integration platform provides harmonised location data from different countries across Europe. The Location Europe is part of Location Innovation Hub and their networks.

Contact us

locationinnovationhub@nls.fi

firstname.lastname@nls.fi

locationinnovationhub.eu



Co-funded by
the European Union



Location
Innovation
Hub



Use cases

Solar Energy Potential of a Building

Investigation of the solar energy potential and energy efficiency of buildings based on detailed 3D building data, digital elevation models, climate normals, and forecasts.

When designing a building, its heating and cooling facilities are planned in the context of the environmental effects (like exposure to sun and wind) at the building's proposed geographical location.

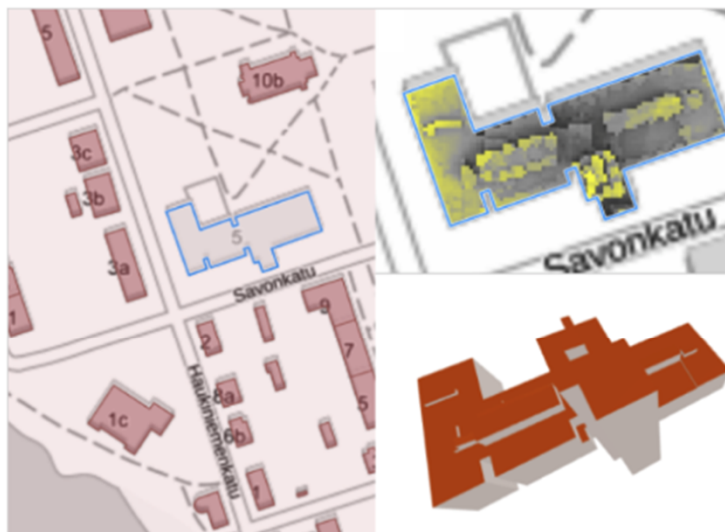
With the available data on our platform, it is possible to combine 3D buildings, digital elevation models and weather/climate data to investigate solar energy potential and energy efficiency of buildings from our partner countries. This information can be used for better placement of solar panels, for example.

APIs used in this use case

[Buildings 2D](#)

[Buildings 3D](#)

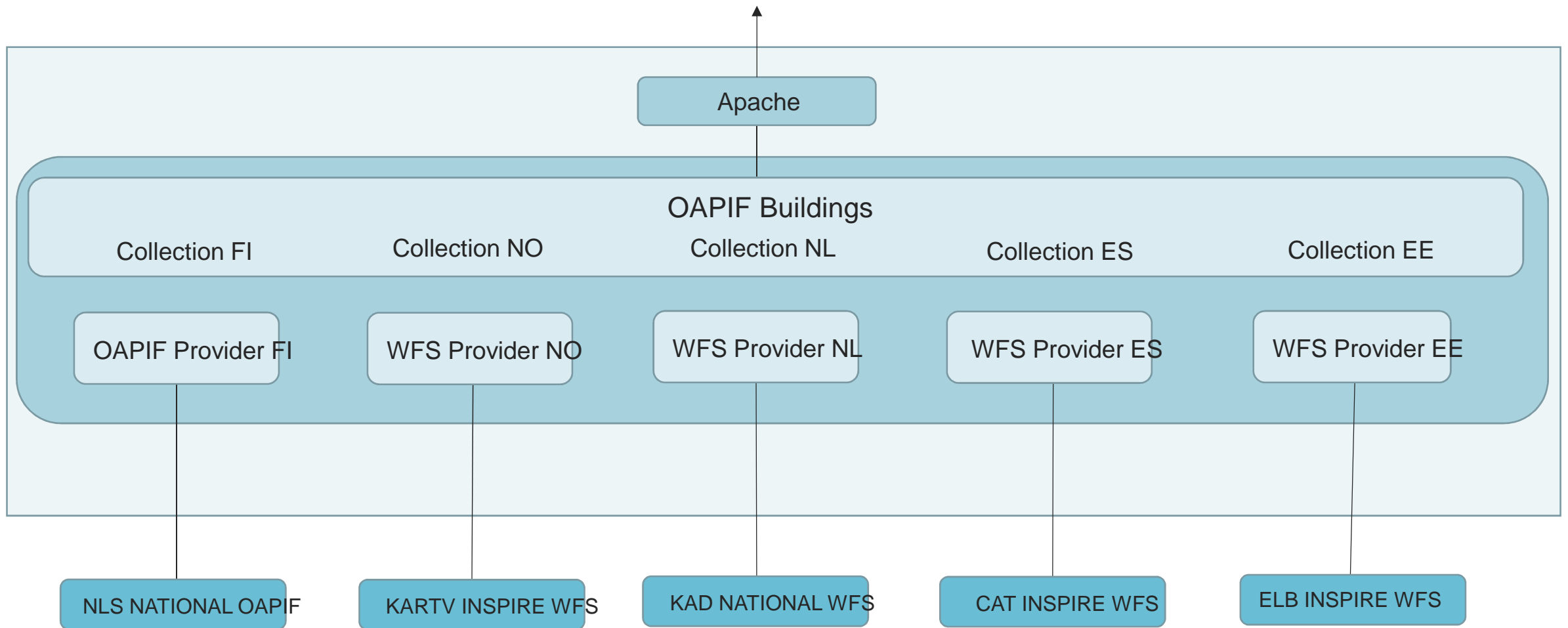
[Digital Surface Model \(DSM\)](#)

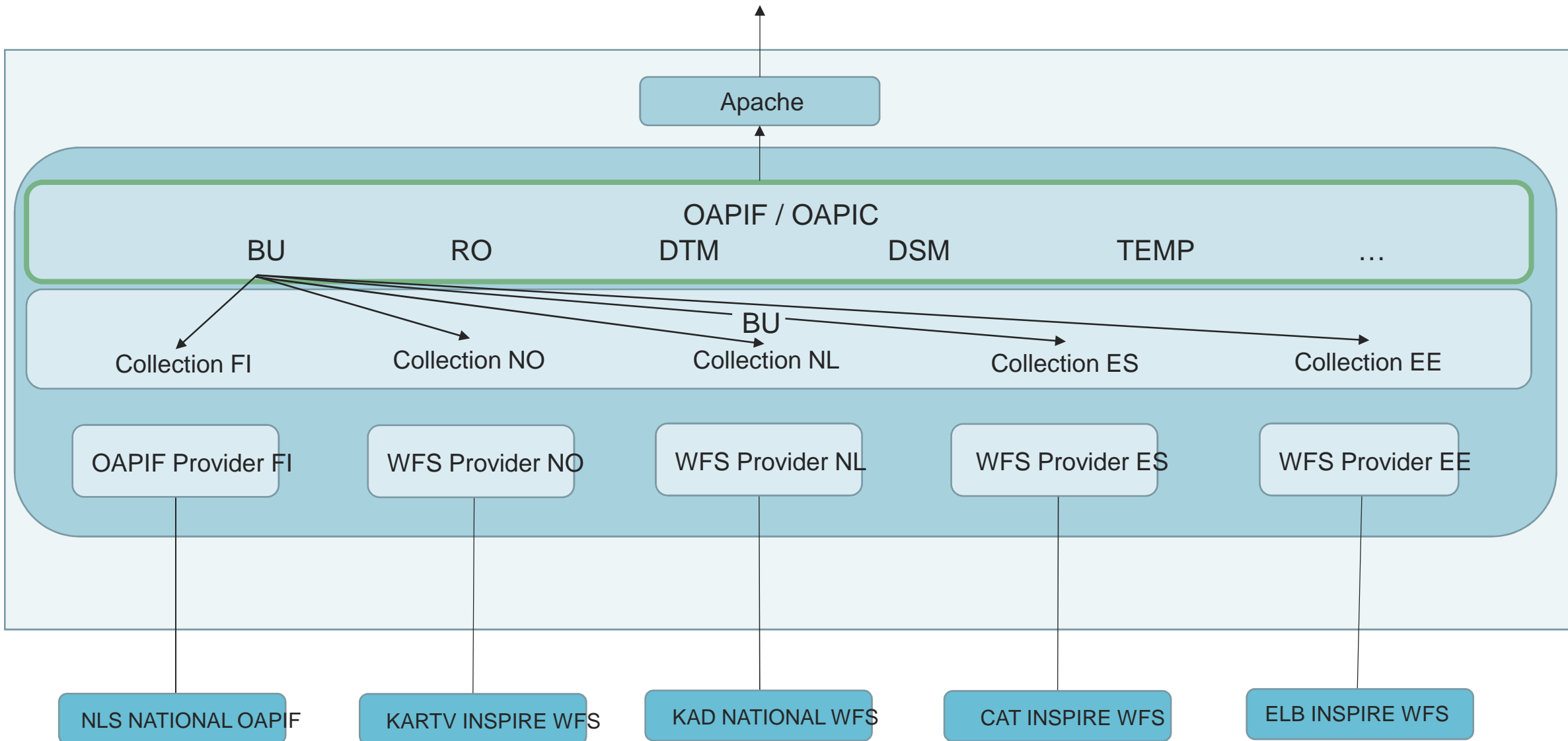


A 2D building (left), its sunshine hours (top right) and its 3D model (bottom right). The yellow colour indicates sunshine hours.

Support for Multi-Theme Displays

- Cross-border integration previously with cross-collection queries
- Now integration is carried out behind the API
 - Calls to background services filtered using query BBOX and country BoundingBoxes
- OGC API Coverages
 - CRS transformations







Data themes

Explore what kind of geospatial data our APIs provide. Data themes are listed below, each theme has its own API.

- Buildings 2D ^
- Buildings 3D ^
- Roads 2D ^
- Roads 3D ^
- Digital Terrain Model ^
- Digital Surface Model ^
- Temperature ^
- Windspeed ^
- Sunshine ^

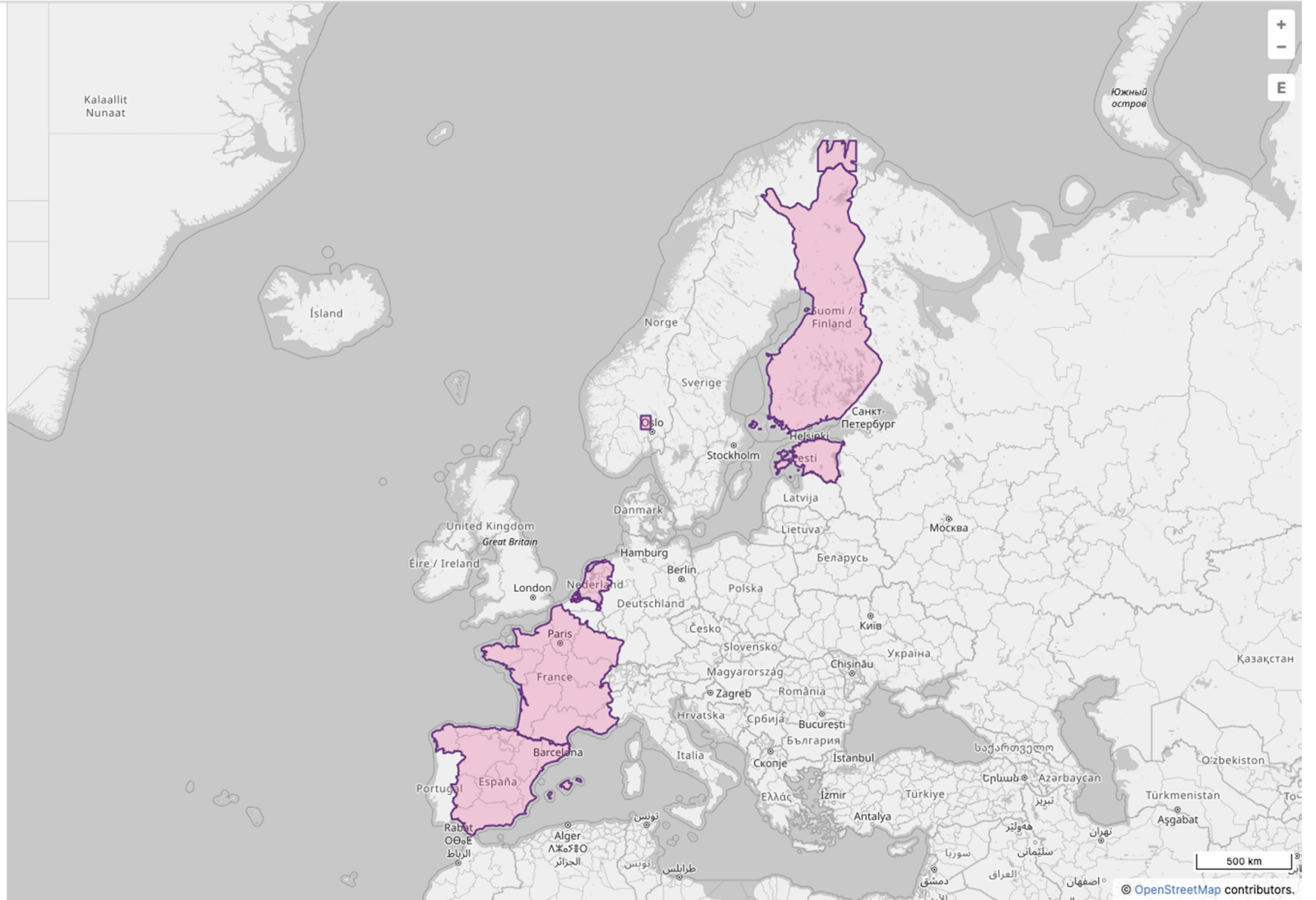




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Data themes

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Buildings 2D ▾

Buildings 3D ▾

Roads 2D ▾

Roads 3D ▾

Digital Terrain Model ▲

Data opacity



Topography of the Earth's bare ground without any objects, such as trees or buildings. Also called Digital Elevation Model (DEM).

Zoom in to view the raster data. Only one raster theme can be active at a time.

Estonia

Finland



Zoom in to view individual items.

Data opacity



Data from the current viewport

Download

Query URL of the current viewport

https://vm4062.kaj.pouta.csc.fi/geoe3/buildings/collections/buildings_F

Copy to clipboard

Copy



Zoom in to view individual items.

Data opacity



Data from the current viewport

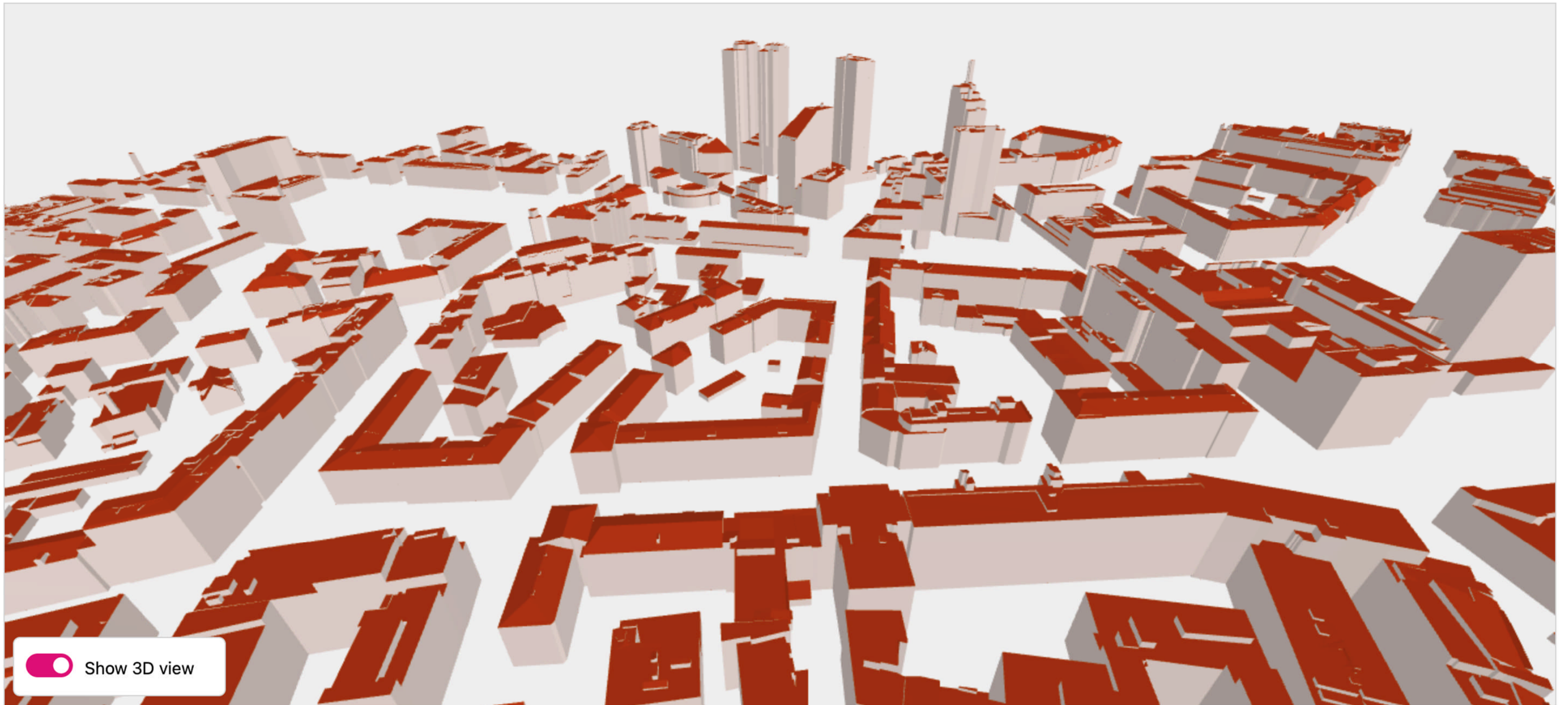
Download

Query URL of the current viewport

<https://vm4062.kaj.pouta.csc.fi/geoe3/buildings3d/collections/buildings>

Copy to clipboard

Copy



Show 3D view

GeoE3 Integration Platform URL

- locationeurope.eu
- All feedback welcome!
 - lassi.lehto@nls.fi

Conclusion

- Integration platform for geospatial data supporting renewable energy applications
- Altogether 42 background services / data resources, and published OGC API compliant service interfaces
- Focus on 3D data provision
- Cross-border data integration behind the API
- New UI with multi-theme explore view for managers
- Traditional API-based UI available for developers
- Available for testing at locationeurope.eu

Thank you!

