

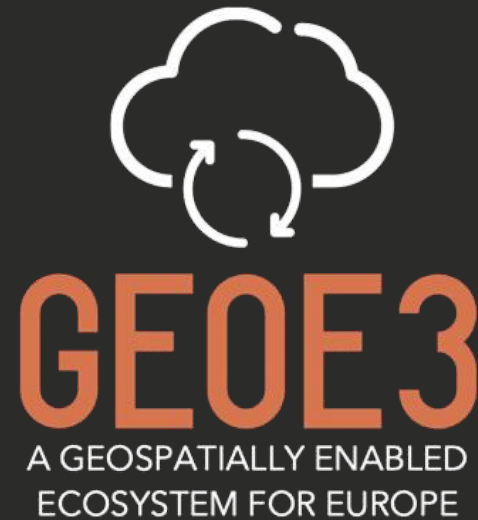


Co-financed by the Connecting Europe
Facility of the European Union

OGC APIS IN PRACTICE

HANNO KUUS (ELB), ALPO TURUNEN (FGI)

2023/06/09





Proposed to be
deprecated by the
end of 2027!

Web Feature Service (WFS)

Web Map Service (WMS)

Web Map Tile Service (WMTS)

Web Processing Service (WPS)

Web Processing Service (WPS)

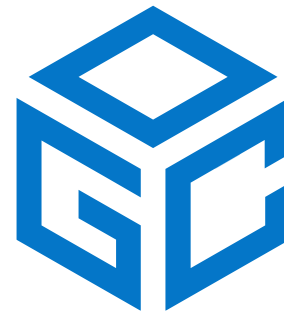
Web Coverage Service (WCS)

Web Map Context (WMC)

Web Coverage Processing Service (WCPS)

Organizations should spatially enable their Web APIs through OGC API Standards to ensure their data is **Findable, Accessible, Interoperable, and Reusable (FAIR)**

- There is an increasing need for interoperability between Web APIs
- Spatially enable Web APIs in a consistent way
 - Developer-friendly (OpenAPI)
 - Open development in GitHub



**Open
Geospatial
Consortium**

Visit ogcapi.ogc.org for more information

APPROVED AND CANDIDATE OGC API STANDARDS

OGC API – Discrete Global Grid Systems



OGC API – Records



OGC API - Maps



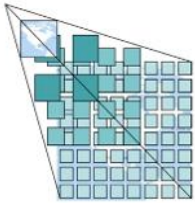
OGC API - Styles



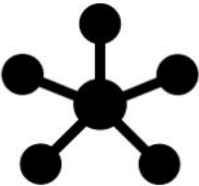
OGC API – Moving Features




OGC API - Tiles



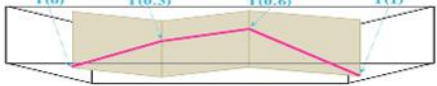
OGC API - Common




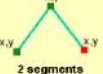
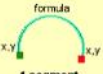
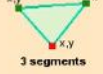

OGC API - Routes




OGC API – Environmental Data Retrieval



OGC API - Features

Points  x,y	Lines  2 segments x,y x,y x,y formula  1 segment x,y x,y	Polygons  3 segments x,y x,y x,y formula  2 segments x,y x,y
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OGC API - Processes



OGC API – Coverages

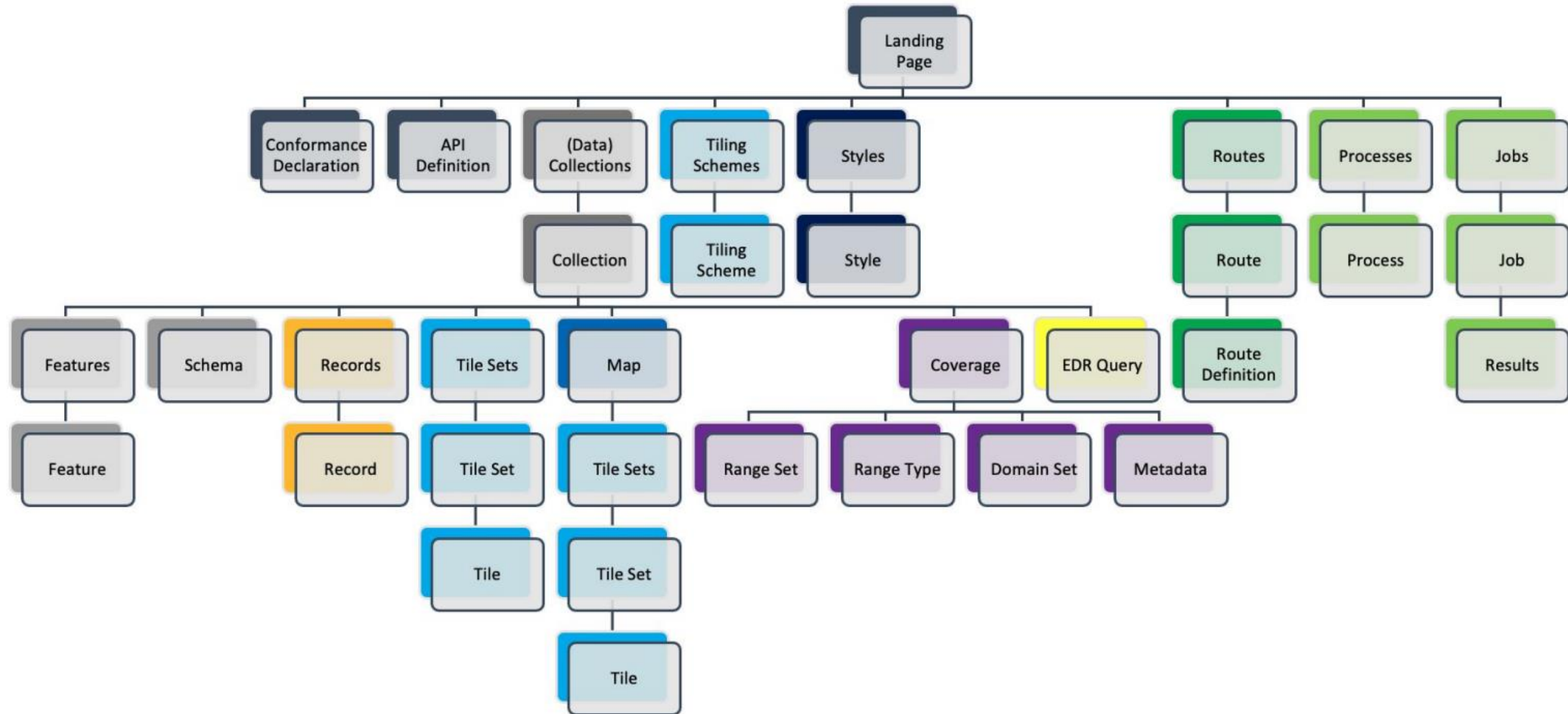


OGC API – Joins



Green border means approved

WHAT IS INSIDE AN API?



HOW TO USE THE APIS?

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](#)

Provider
GeoE3 Project https://geoe3.eu
Contact point
Address Vuorimiehentie 5 Espoo FI-02150 Finland
Email lassi.lehto@nls.fi
Contact URL https://maanmittauslaitos.fi/en
Hours Mo-Fr 09:00-16:00
Contact instructions During hours of service. Off on weekends.



Integration and accessibility of data



GEOE3
A GEOSPATIALLY ENABLED
ECOSYSTEM FOR EUROPE

- Develop tools and APIs to merge available national datasets
- Build an ecosystem based on national platforms
- Dynamic harmonisation of geospatial data in the data integration platform: geoe3platform.eu
- Location Innovation Academy: academy.ogc.org

Visit geoe3.eu for more information

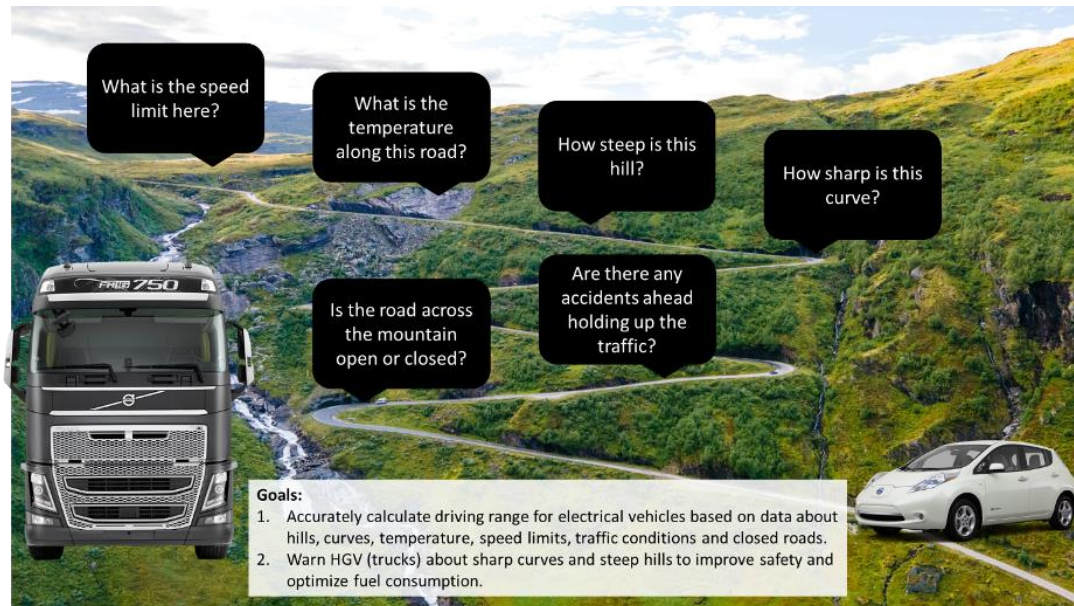
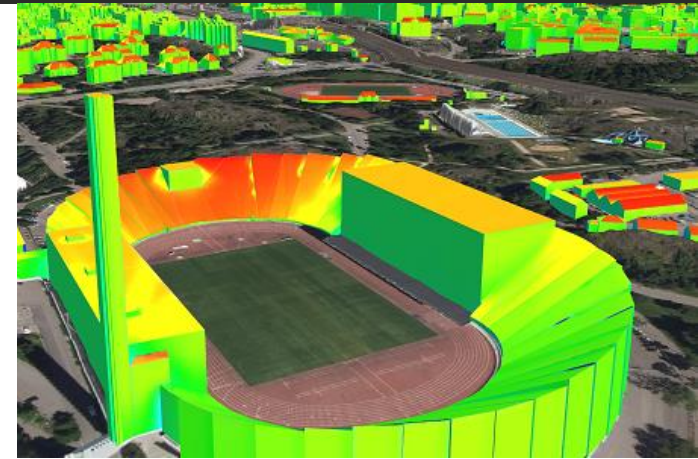


PROJECT PARTNERS



USE CASES

- Solar energy: optimize solar energy use and total energy efficiency of buildings
- Smart cities: city planning for sustainable energy cross-border & cross-domain smart city Finland-Estonia
- Electric cars: cleaner and safer transport



An aerial photograph of a city featuring a complex multi-level highway interchange with several overpasses and ramps. The roads are filled with cars. The surrounding area includes lush green trees, some with autumn-colored foliage, and residential buildings with red-tiled roofs. The overall scene is a mix of urban infrastructure and natural environment.

LOCATION INNOVATION ACADEMY

[ACADEMY.OGC.ORG](https://academy.ogc.org)

- Part of GeoE3-project, which accelerated the accessibility, interoperability and integration of cross-border geospatial data and services over the past two years.
- Three different courses:
 - Data management
 - Service management
 - Data and service integration



Location Innovation Academy offers a comprehensive set of modules that supports modern and cross-border management, integration, processing, and sharing of geospatial data and services.

LET'S TAKE A CLOSER LOOK AT THE MODULES

academy.ogc.org



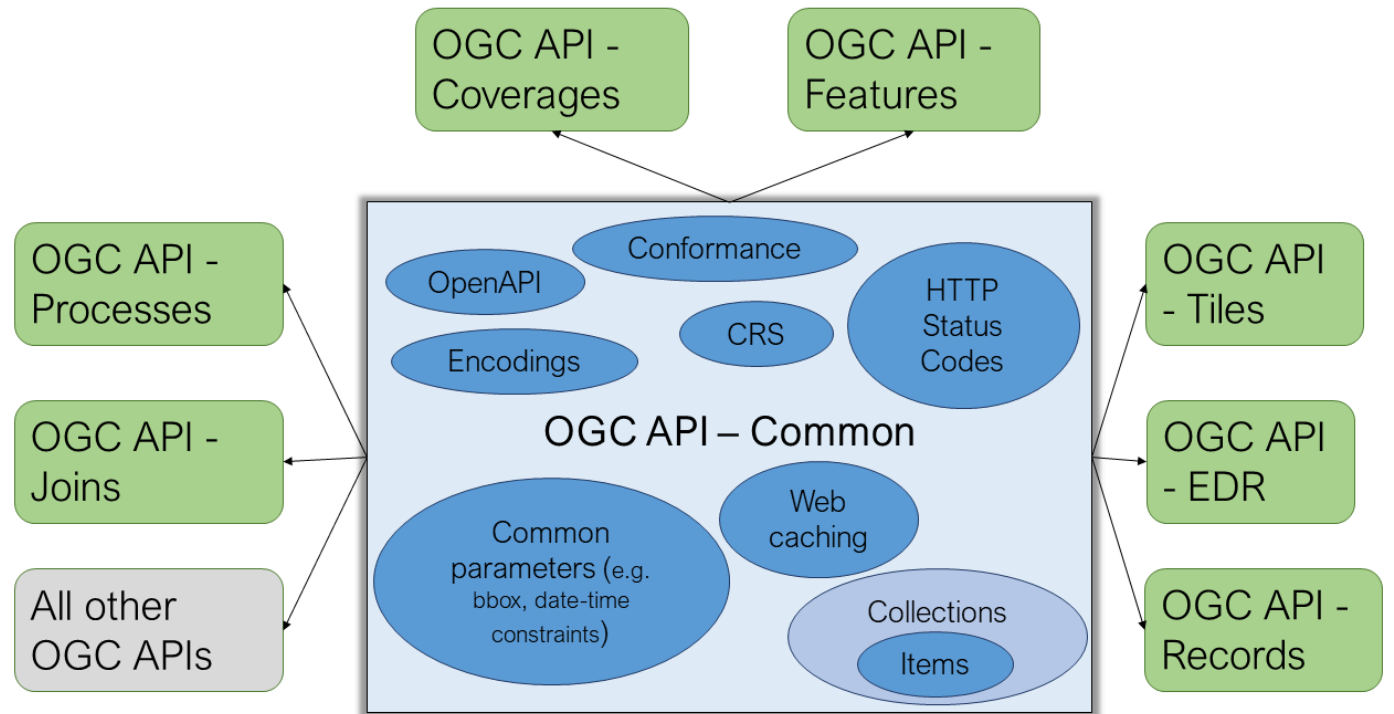
Data Management

Service Management

Data and Service Integration

Module name	Producer
Introduction	Jari Reini, Antti Jakobsson and Alpo Turunen, National Land Survey of Finland
Open Data and Licences	Paloma Adab, National Centre for Geographic Information (CNIG) in Spain
Semantic Interoperability	Morten Borrebaek and Knut Jetlund, Kartverket Norway
Data Quality Assurance	Alpo Turunen, NLS
Quality Dashboards	Sampo Savolainen, Spatineo and Camille Cossec, NLS
Metadata, Semantic Enrichment and EDP	Laura Alemany Gómez, Spatial Data Infrastructure of Spain (IDEE) and Lexi Rowland, The Netherlands' Cadastre, Land Registry and Mapping Agency
Introduction to Standards	Alpo Turunen, NLS and Nils Hempelmann, OGC
Common aspects of the OGC API Standards	Alpo Turunen, NLS
Data Access Standards	Alpo Turunen, NLS
Other OGC API Standards	Alpo Turunen, NLS
Joining spatial and statistical data	Pekka Latvala and Panu Muhli, NLS
Meteorological data integration	Lassi Lehto, NLS and Mikko Visa, FMI
Applications for OGC API's	Andres Kasekamp, Hanno Kuus, Sulev Õitspuu and Triin Tajur, Maa-amet Estonia

- Fundamental concepts and common principles of standards
- Why and what are OGC API standards
- OGC APIs one by one →
- pygeoapi implementation



- For all who are interested in the topics and want to update their knowledge
- Especially targeted for people working in NMCAs or other organisations that produce, integrate, use or share geospatial data

Some of the modules are suitable for beginners, while some are more for experienced and technical experts who want to deepen their skills.



WHY SHOULD YOU STUDY WITH US?

academy.ogc.org



- All modules are produced by the best European experts
- Academy is constantly evolving package of the most recent methods and trends
- All courses are free for all
- No returnable assignments or tests
- Possibility to study anywhere and anytime
- After completing, you get a cool certificate



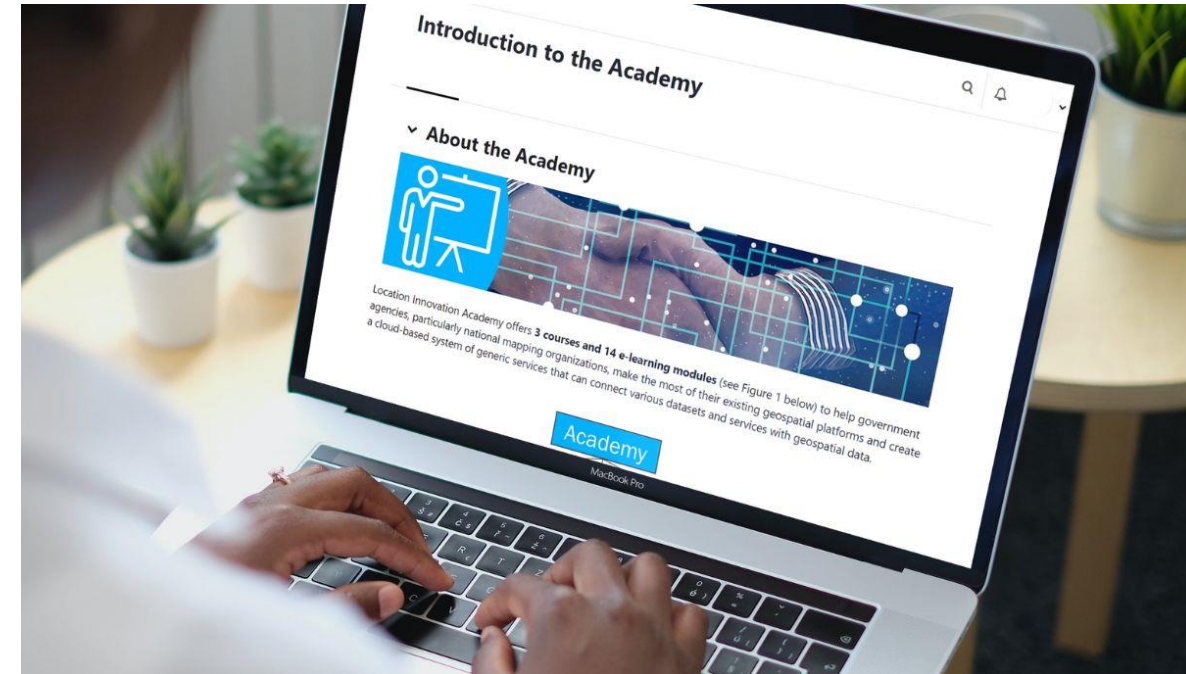
- Log in to <https://academy.ogc.org/>
 - Step-by-step instructions on site
 - Need help? Contact via email: innovation@ogc.org
- Feedback is needed!
 - We will monitor with interest what kind of feedback we receive from different user groups and improve materials based on the feedback received.
 - Leave your comment after studying by using a feedback forms in Moodle or contact OGC

**LOCATION INNOVATION
ACADEMY**

WE INVITE YOU TO LEARN >>



- We will create a business model during this year
- Idea is that Location Innovation Academy is open to other projects promoting use of location data and technology.
- Looking forward to getting feedback and new ideas on how we can support the community
- After the project, The Academy is hosted by **Open Geospatial Consortium (OGC)** and **Location Innovation Hub (LIH)**



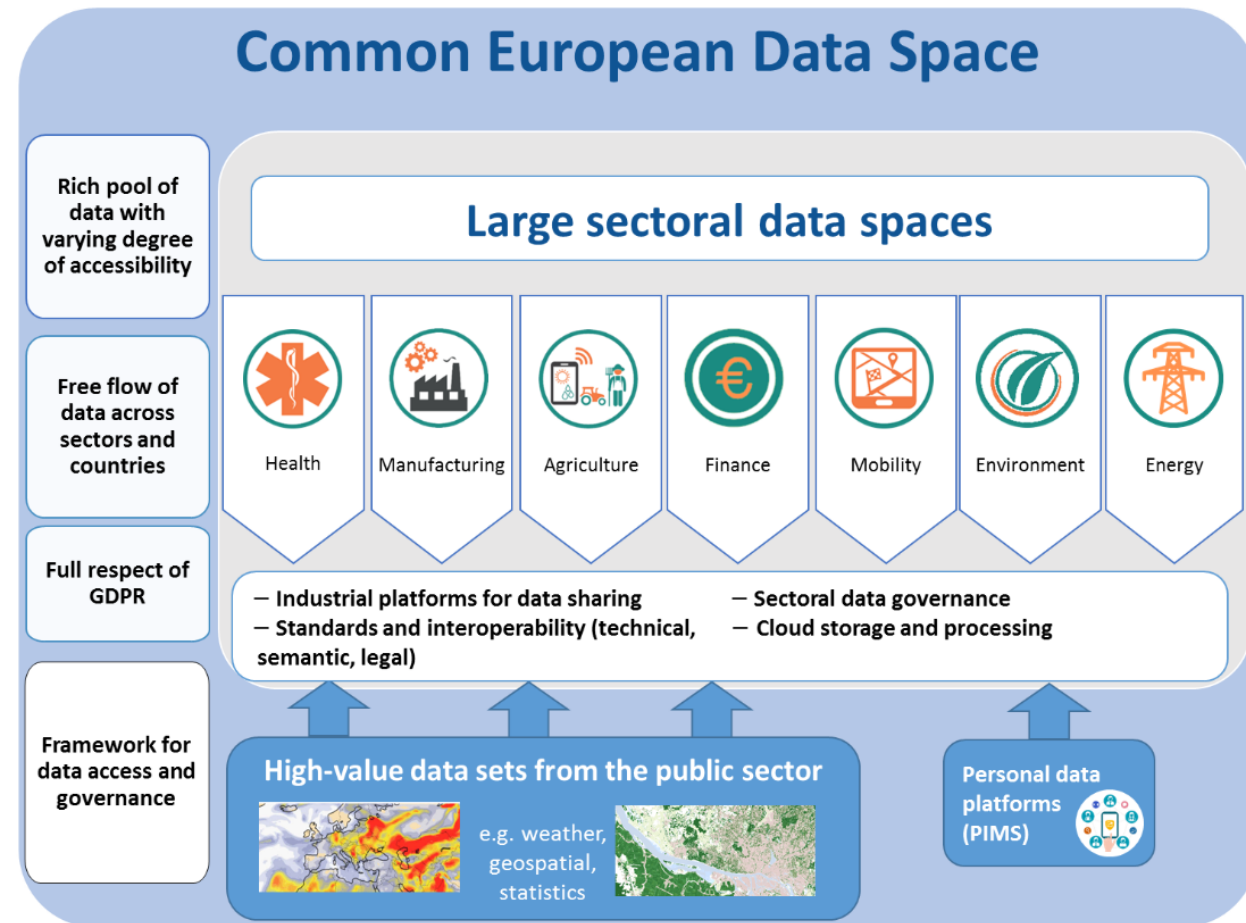
Open
Geospatial
Consortium.



Location
Innovation
Hub

LOCATION INNOVATION HUB (LIH) SHORTLY

- Location Innovation Hub (LIH) will continue to provide both: the academy and the GeoE3 data integration platform
- LIH helps businesses and public sector to create new solutions and innovations using location technology and data
- We will seek new data provision through our European Core Data Provider Network, consider data space calls and Gaia-X developments. There is a need for Location European Data Space solution



Visit our website:
<https://locationinnovationhub.eu/>

Location Innovation Academy



Welcome to the Academy!

Location Innovation Academy offers **3 courses** and **12 e-learning modules** (see the courses below) to help government agencies, particularly national mapping organizations, make the most of their existing geospatial platforms and create a cloud-based system of generic services that can connect various datasets and services with geospatial data.

Site announcements

How to get started?
by Alpo Turunen - Friday, 17 March 2023, 11:34 AM


We have made everything easy for you. To get started, you have to sign up to our platform:

1. In the **Location Innovation Academy**, click the "Log in" button on the upper-right corner of any page.
2. If this is your first time, click "Create new account". Only our introduction modules allow guest access.
3. Fill out the registration form with your personal details. The username is used to log in to the academy.
4. After submitting, check your email for a confirmation message from Moodle. Check also the spam folder!
5. Follow the instructions in the email to activate your Moodle account.
6. Once your account is activated, log in to Moodle using your username and password.
7. Explore courses on the home page and open the most interesting one(s).
8. As a default, you must manually enrol in the courses. Click "Enrol me" to access the course material.
9. Start learning and remember to give feedback!

[Permalink](#)
[Discuss this topic](#), (0 replies so far)

Available courses

Introduction to the Academy 🗨

 Check this out first! Here you can find the following materials:

- Information about the Academy
- Introduction to the Courses
- Glossary
- Future ideas after the academy

geoe3.eu

geoe3platform.eu

academy.ogc.org