Trust and Federation of Official Geoinformation

Trustful Spatial Data Services and Access Control

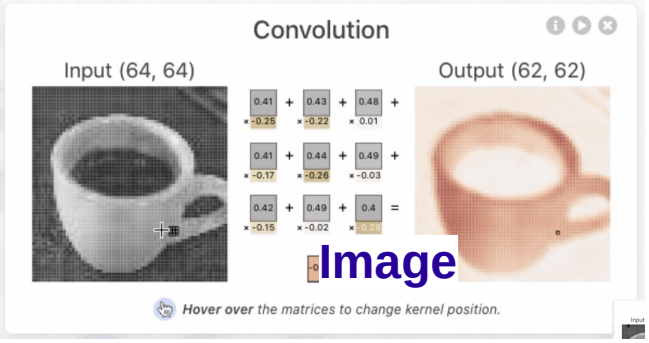
Markus Jobst
Federal Office of Metrology and Surveying
Budapest, October 2026

Agenda

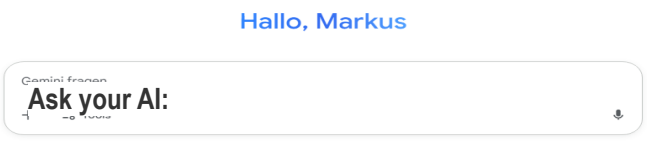
- Future Geospatial Knowledge Ecosystem
- Value of Geospatial Knowledge
- Portal Federation and Trusted Network
- Examples

(Generative) AI Ecosystem

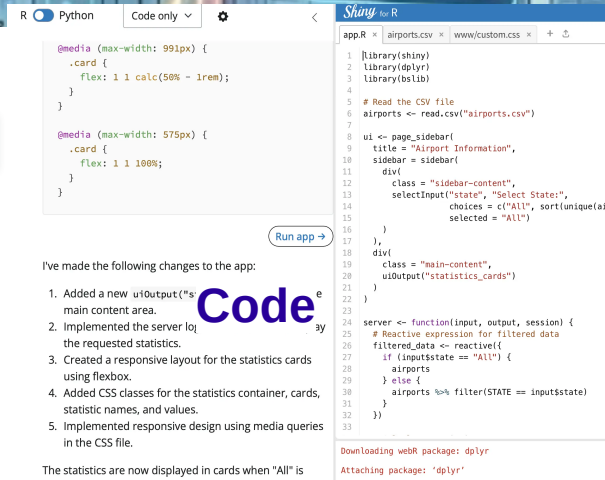




Image

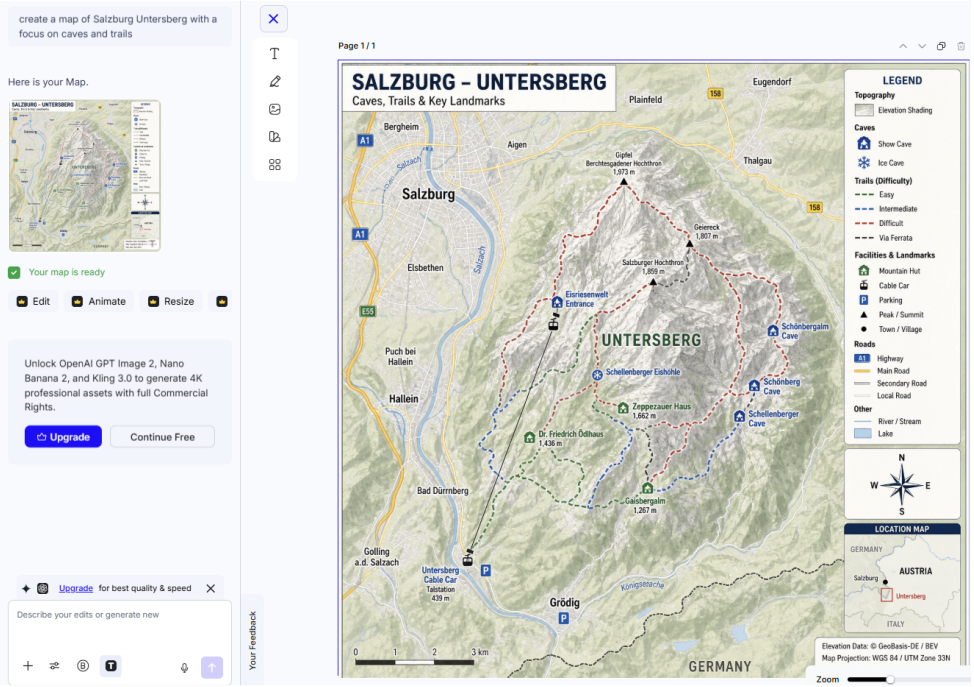


Language



Code

AI Ecosystem – MapAI - situation/directions



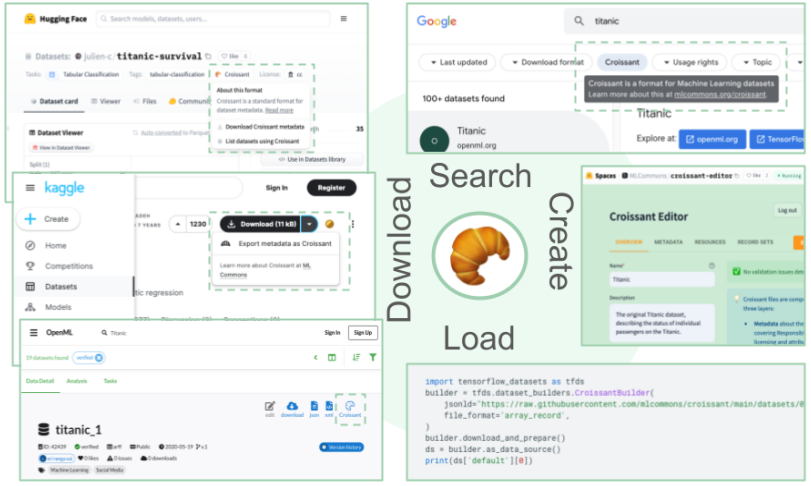
https://www.template.net/ai-map-generator

Austrian Map

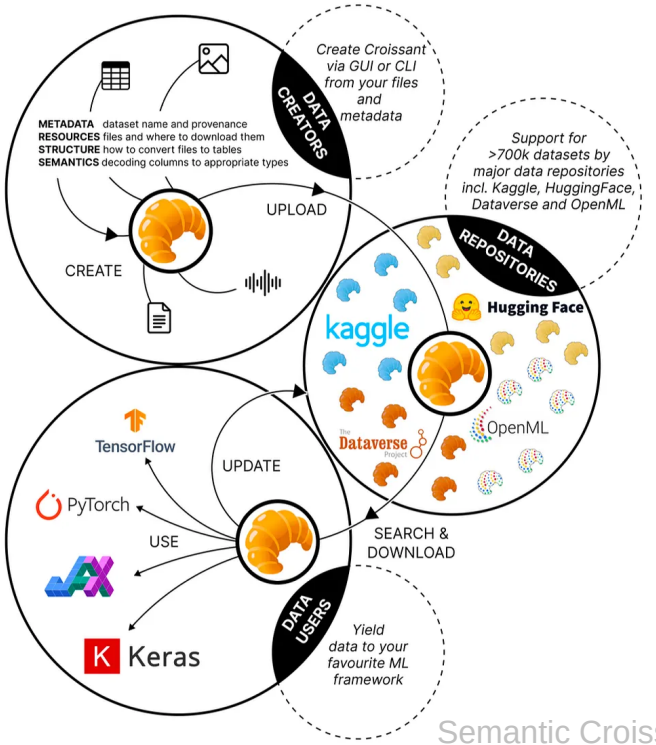


maps.bev.gv.at

Croissant Framework



https://research.google/blog/croissant-a-metadata-format-for-ml-ready-datasets/



Semantic Croissant

- Data is paramount in machine learning (ML). However, **finding, understanding and using ML datasets** is still unnecessarily tedious.
  One reason is the lack of a consistent way to describe ML datasets to facilitate reuse. That's the aim of Croissant.
- Semantic Croissant
  (https://zenodo.org/records/18116719, https://iskouk.org/event-6736474, https://github.com/codata/semantic-croissant/blob/main/Skills.md, https://chiefscientist.org/semantic-croissant-181c1a9bd9b9, ...)

Croissant Frame

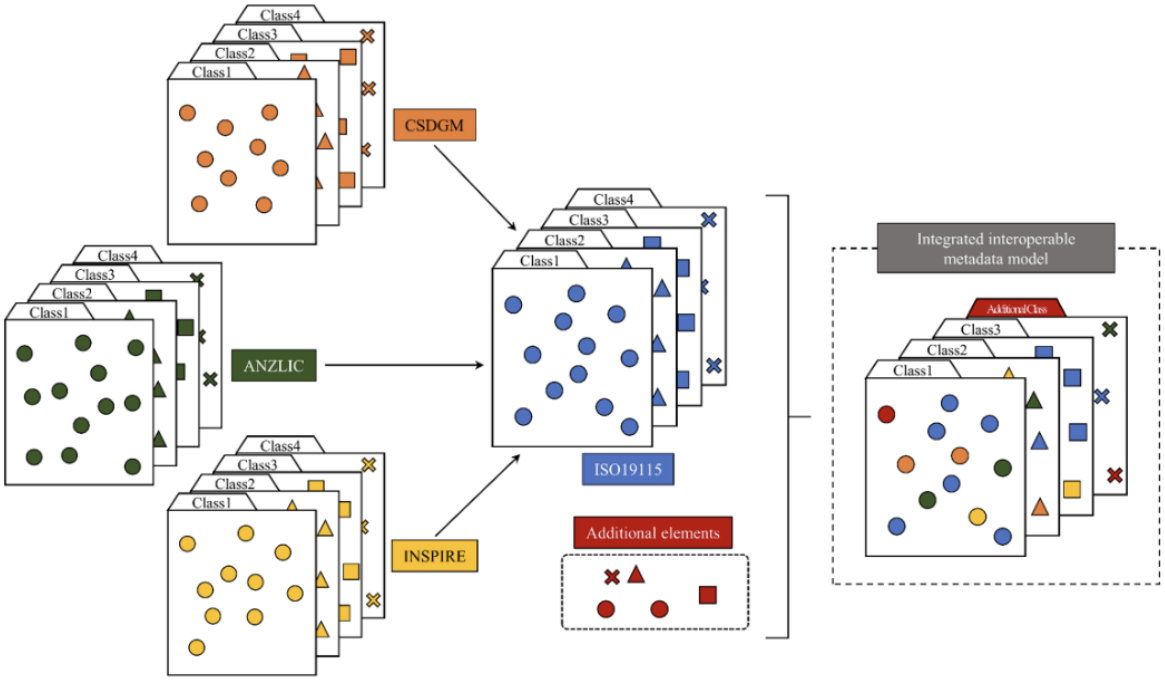


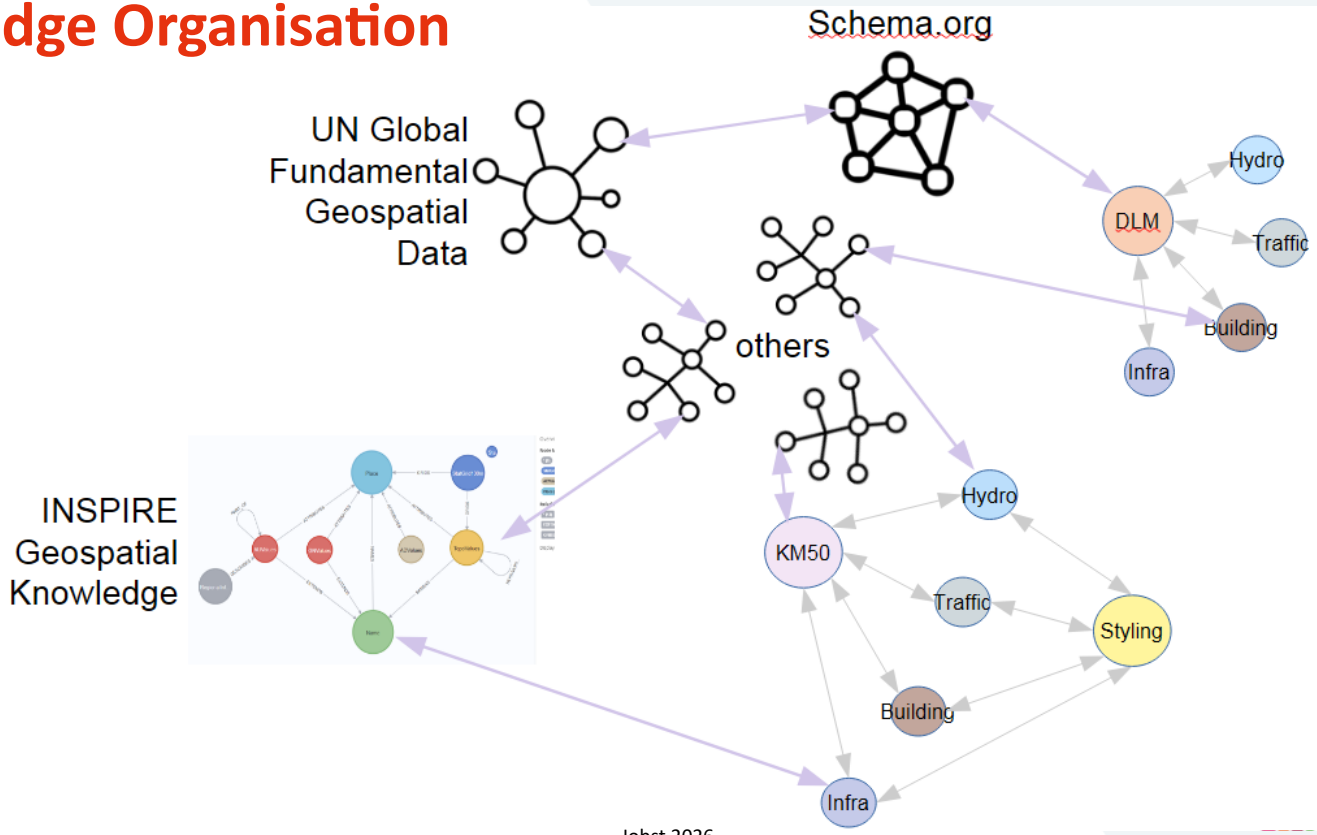
FIGURE 1 Schematic concept of the newly created metadata schema by different types of metadata standards (Adapted from Chan & Zeng, 2006)

- Case study on an integrated interoperable metadata model for geoscience information resources

Geoscience Data Journal Volume 9, Issue 2.Nov 2022 Pages 205-399
https://rmets.onlinelibrary.wiley.com/doi/epdf/10.1002/gdj3.150

Geospatial Knowledge Organisation

Hierarchical Knowledge Network Model



Agenda

- Future Geospatial Knowledge Ecosystem
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Geospatial Knowledge: Sectoral Value Chains & Productivity

Sector	*Primary Economic Driver*	*Productivity Impact*
Agriculture	Precision Farming	Reduced input costs (fertilizer/water) and optimized crop yield through field-level monitoring.
Utilities & Energy	Asset Management	Minimized downtime via predictive maintenance of grids and optimized routing for infrastructure.
Real Estate & Finance	Risk Mitigation	Accurate valuation of assets, flood risk assessment, and secure property rights (essential for credit markets).
Logistics & Mobility	Network Optimization	Real-time efficiency gains, reduced fuel consumption, and optimized multi-modal transport planning.











GKI: Economic Pillars of Trust in GI

- The **economic value** of geospatial information is not derived solely from the data itself, but from the **trust placed in that data**.
- In the digital economy, trust **acts as a lubricant** that reduces transaction costs, accelerates decision-making, and enables the scaling of complex systems

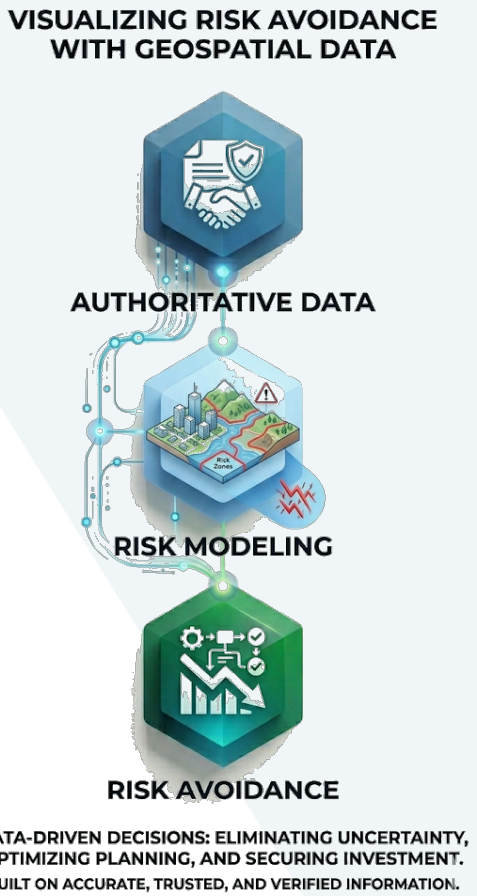
[Who owns Geospatial Data?, https://www.techuk.org/]



Created by Gemini

GKI: Trustworthiness as a Risk Reducer

- Trustworthy data—data that is documented, transparent, and maintained by recognized entities (like national mapping agencies)—significantly **lowers operational risk**.
- Economic Impact: In sectors like insurance, real estate, and utility management, relying on "authoritative" data **mitigates the risk** of flawed modeling.



Created by Gemini

Agenda

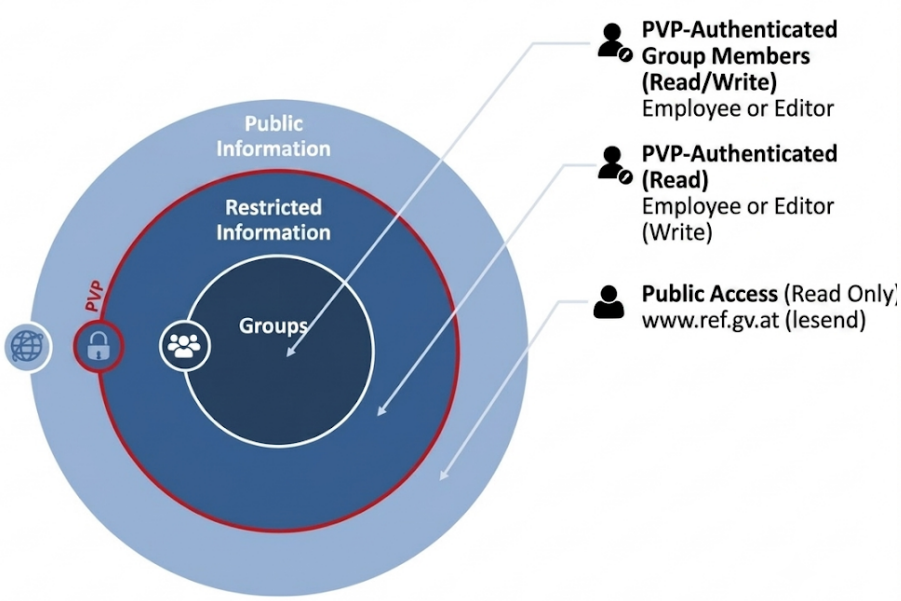
- Future Geospatial Knowledge Ecosystem
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Portal Federation – GovIX

- Across Austria, public administration institutions have an **increasing need** for a shared, high-performance, and reliable information and telecommunications infrastructure.
- Since communication between these institutions is based on the Internet Protocol (IP), an **agency-specific Internet Exchange** can provide an efficient foundation and facilitate the targeted optimization of this data traffic.
- GovIX stands for **Government Internet Exchange** and represents a shared, complementary, and **distributed peering infrastructure** for the Austrian public sector.

Portal Federation – Reference Structure

Reference Server: Structure



Reference Server: Content & Roles

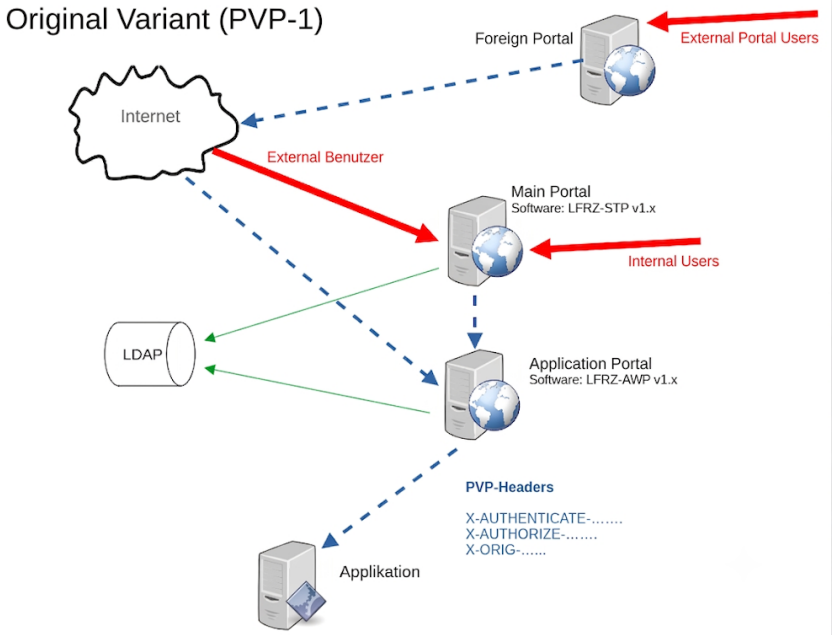
Public Access
- PVP Role: NONE
- Public Information
- Binding and Supplementary Documents
- Conventions

PVP-Authenticated
- PVP Roles:
  - EMPLOYEE: Read
  - EDITOR: Editing of public and restricted information
- Restricted Information:
  - Protocols
  - Protocol Attachments

Group Members
- Groups: BLSG, LAG, AG-II, AG-PS, AG-RS, AG-IZ, Project and Sub-working groups
- Role: PVP-Authenticated (Employee, Editor) and Group Member
- Documents:
  - Meeting Materials (Agenda/Documents on Agenda)
  - Work Materials
- WIKI: Information exchange between group members
- Blog: Surveys and brief questions within the group

Portal Federation – Trusted Network

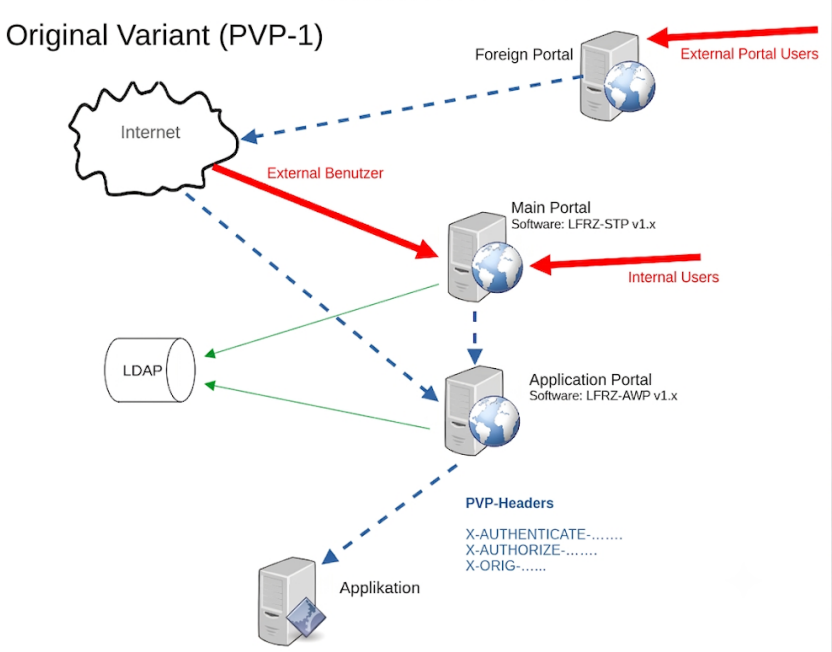
- The **portal network** provides a unified framework for accessing cross-agency web applications and **managing the associated rights**.
- **Single point of administration**
  This allows users and their rights to be managed in one place – where the user is located – regardless of the number of applications used.
- **Single Sign On**
  A single login process allows access to all applications within the portal network.



Portal Federation – Depositary of the Portal Network Agreement

The depositary of the **portal network agreement** (abbreviated: depositary) assumes organizational **tasks** within the portal network, such as...

- **Handling of accessions** to the portal network
- Review and **approval** of application messages
- Publication of external applications
- Publication of portals
- **Coordination of central services** necessary for operation within the portal network
- **Handling of exits** from the portal network



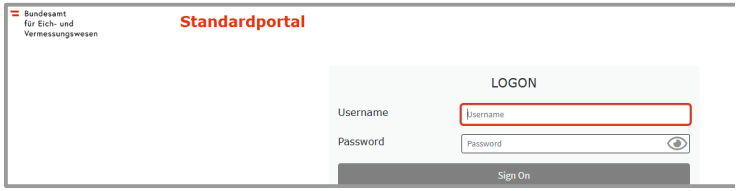
Portal Federation – Header Information

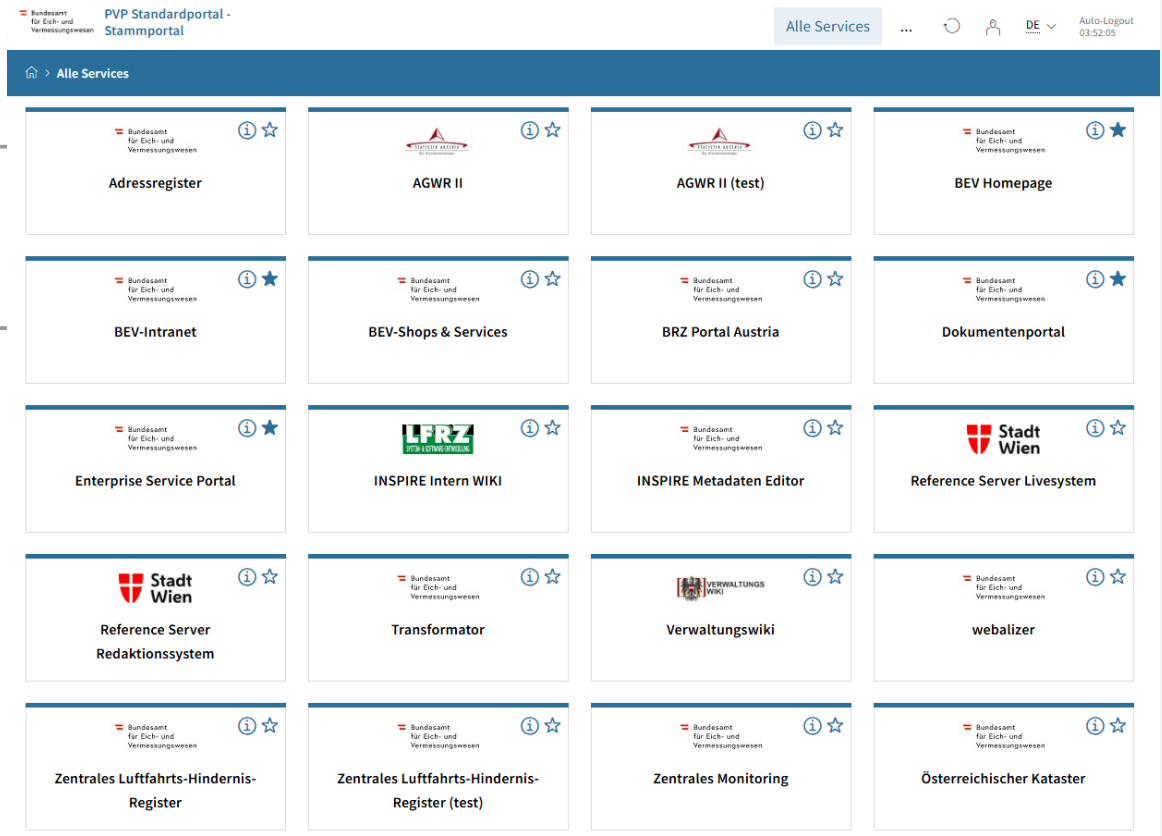
```
/** PVP-v2-Header-Identfier for 'user first name' */
static final String PVP_2_HEADER_GIVEN_NAME = "X-PVP-GIVEN-NAME";
/** PVP-v2-Header-Identfier for 'user last name' */
static final String PVP_2_HEADER_PRINCIPAL_NAME = "X-PVP-PRINCIPAL-NAME";
/** PVP-v2-Header-Identfier for 'portal user identification' */
static final String PVP_2_HEADER_GVGID = "X-PVP-GVGID";
/** PVP-v2-Header-Identfier for 'portal organizational unit identification' */
static final String PVP_2_HEADER_GVOUID = "X-PVP-OU-GV-OU-ID";
/** PVP-v2-Header-Identfier for 'user security class' */
static final String PVP_2_HEADER_SECCLASS = "X-PVP-SECCLASS";
/** PVP-v2-Header-Identfier for 'user mail address' */
static final String PVP_2_HEADER_MAIL = "X-PVP-MAIL";
/** PVP-v2-Header-Identfier for 'user organizational unit' */
static final String PVP_2_HEADER_OU = "X-PVP-OU";
/** PVP-v2-Header-Identfier for 'portal participiant identification' */
static final String PVP_2_HEADER_PARTICIPANTID = "X-PVP-PARTICIPANT-ID";
/** PVP-v2-Header-Identfier for 'portal participiant organization' */
static final String PVP_2_HEADER_PARTICIPANTOKZ = "X-PVP-PARTICIPANT-OKZ";
/** PVP-v2-Header-Identfier for 'user telephone numer' */
static final String PVP_1_HEADER_AUTHENTICATE_TEL = "X-PVP-TEL";
/** PVP-v2-Header-Identfier for 'user identification' */
static final String PVP_2_HEADER_USERID = "X-PVP-USERID";
/** PVP-v2-Header-Identfier for 'user authorized roles and restrictions' */
static final String PVP_2_HEADER_ROLES = "X-PVP-ROLES";
/** PVP-v2-Header-Identfier for 'original http host address' */
static final String PVP_2_HEADER_ORIGINAL_HOSTINFO = "X-PVP-Orig-Host";
/** PVP-v2-Header-Identfier for 'original http scheme' */
static final String PVP_2_HEADER_ORIGINAL_SCHEME = "X-PVP-Orig-Scheme";
/** PVP-v2-Header-Identfier for 'original http uri' */
static final String PVP_2_HEADER_ORIGINAL_URI = "X-PVP-Orig-Uri";
/** PVP-v2-Header-Identfier for 'portal version' */
static final String PVP_2_HEADER_VERSION = "X-PVP-VERSION";
```

Agenda

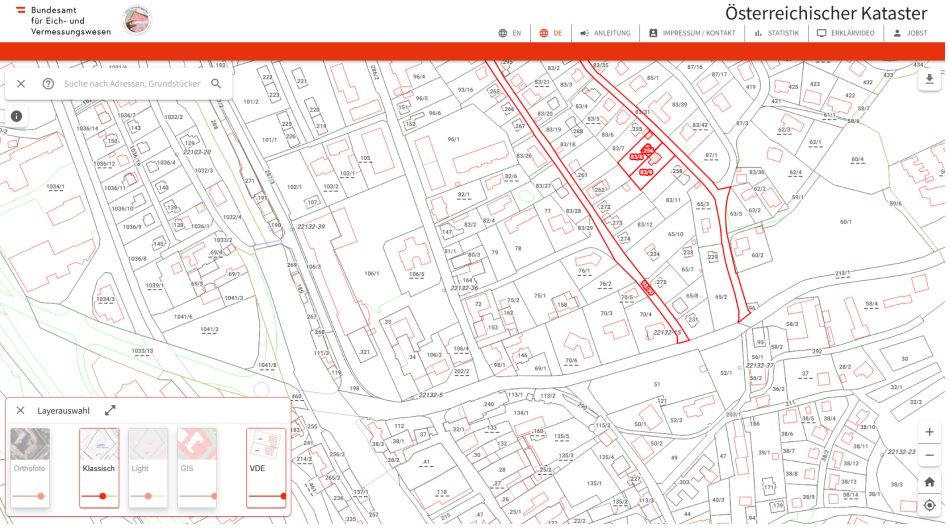
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Portal Federation – Trusted

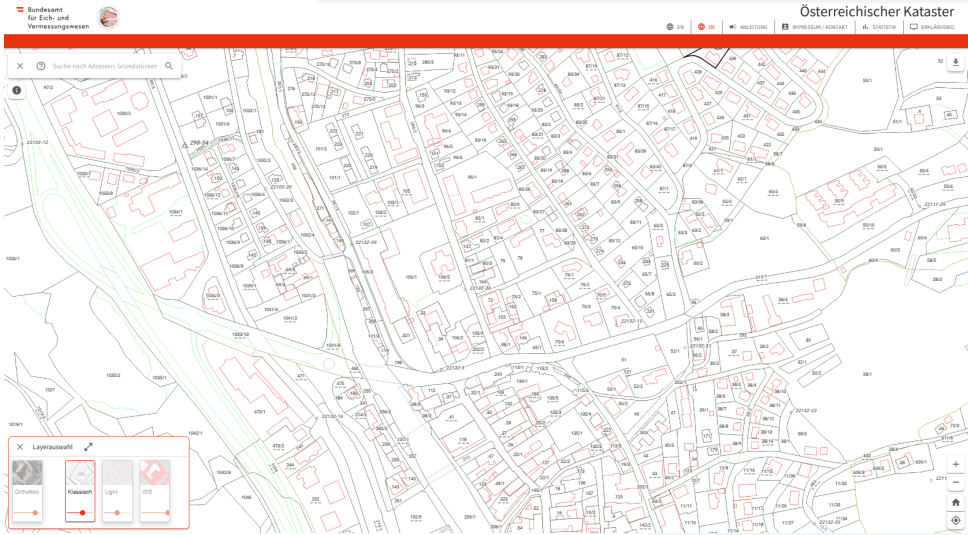




Portal Federation – kataster.bev.gv.at

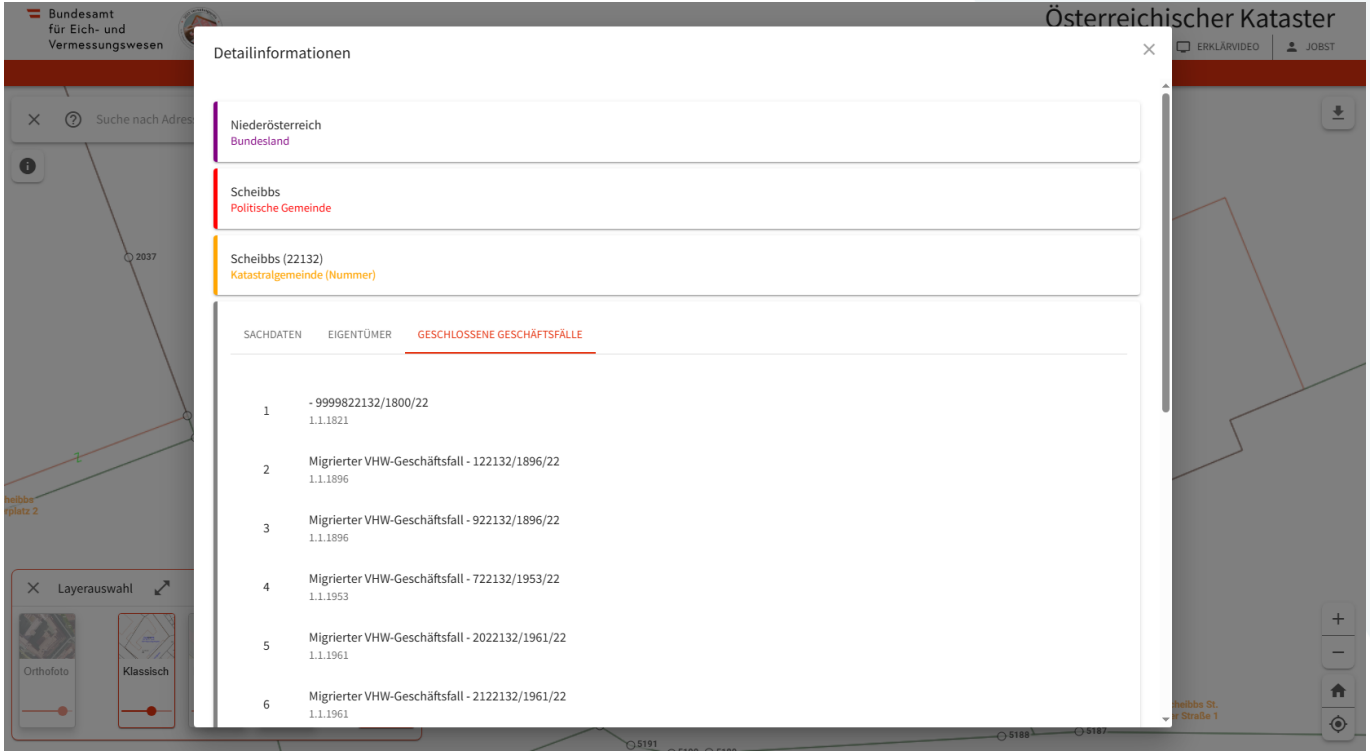


version of the trusted federation network



public version

Portal Federation – kataster.bev.gv.at



Portal Federation – geoservice.bev.gv.at

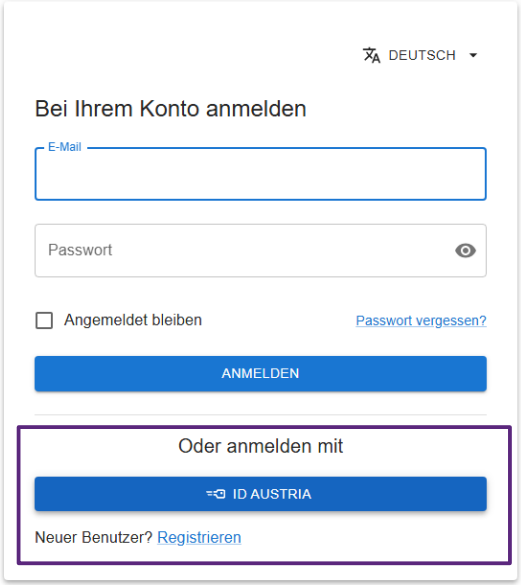
trusted spatial data services

Portal Federation – geoservice.bev.gv.at – trusted spatial data services

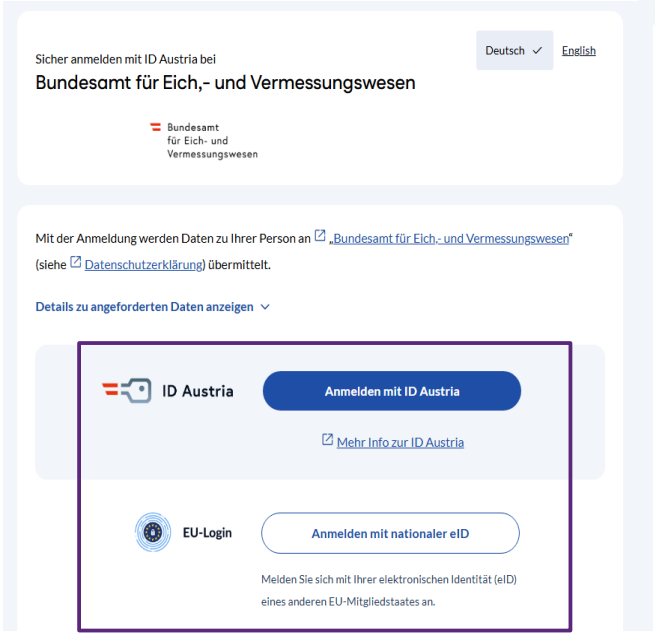


Portal Federation – geoservice.bev.gv.at – trusted spatial data services

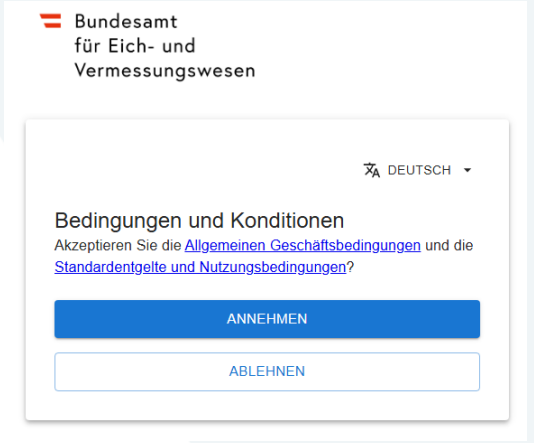
Bundesamt
für Eich- und
Vermessungswesen



1



2



Portal Federation – geoservice.bev.gv.at – trusted spatial data services

Bundesamt
für Eich- und
Vermessungswesen

Geoservice

Dienste

Verfügbare Layer

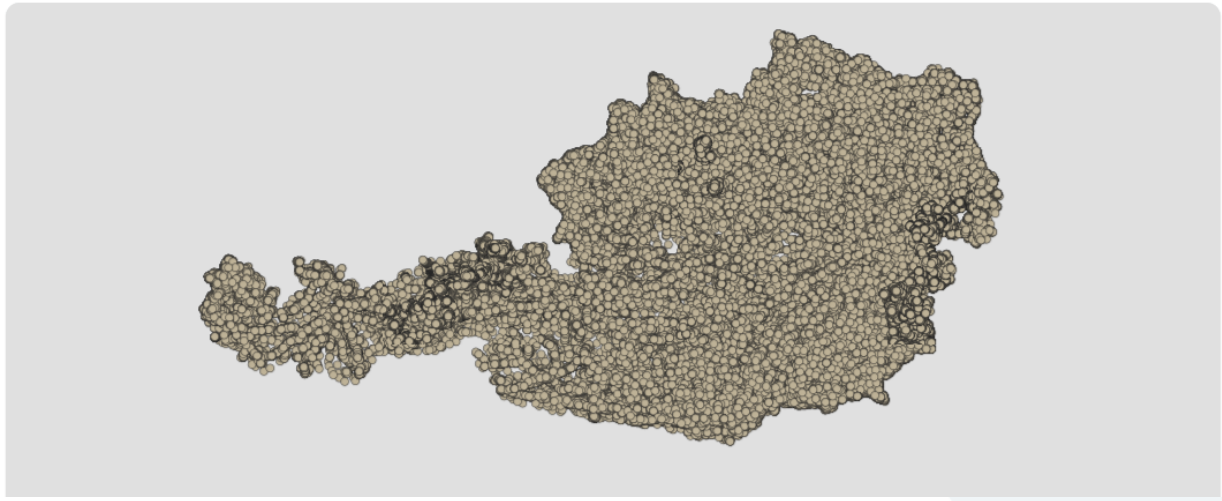
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WMS GetCapabilities

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WMS GetMap

https://geoservice.bev.gv.at/data/v1/wqTRsv_lxMjmL-287UtDZg/hvv/wms?service=WMS&version=1.3.0&request=GetMap&layers=hvv:AD_AddressGeometry&width=768&height=330&crs=EPSG:4326&format=image/png&transparent=true&bbox=9.5,46.4,17.2,49.0



Markus Jobst
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markus.jobst@bev.gv.at

For your interest: https://data.bev.gv.at