Easily publish your QGIS projects on the web with QWC2

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Sourcepole

- QGIS
  - 4 C++ Core Developers
  - QGIS Enterprise (Maintenance und Support)
  - KADAS Albireo

- Web-GIS
  - QGIS Web Client 2

  - QGIS Cloud SDI - qgiscloud.com

QGIS
QGIS Cloud | qgiscloud.com

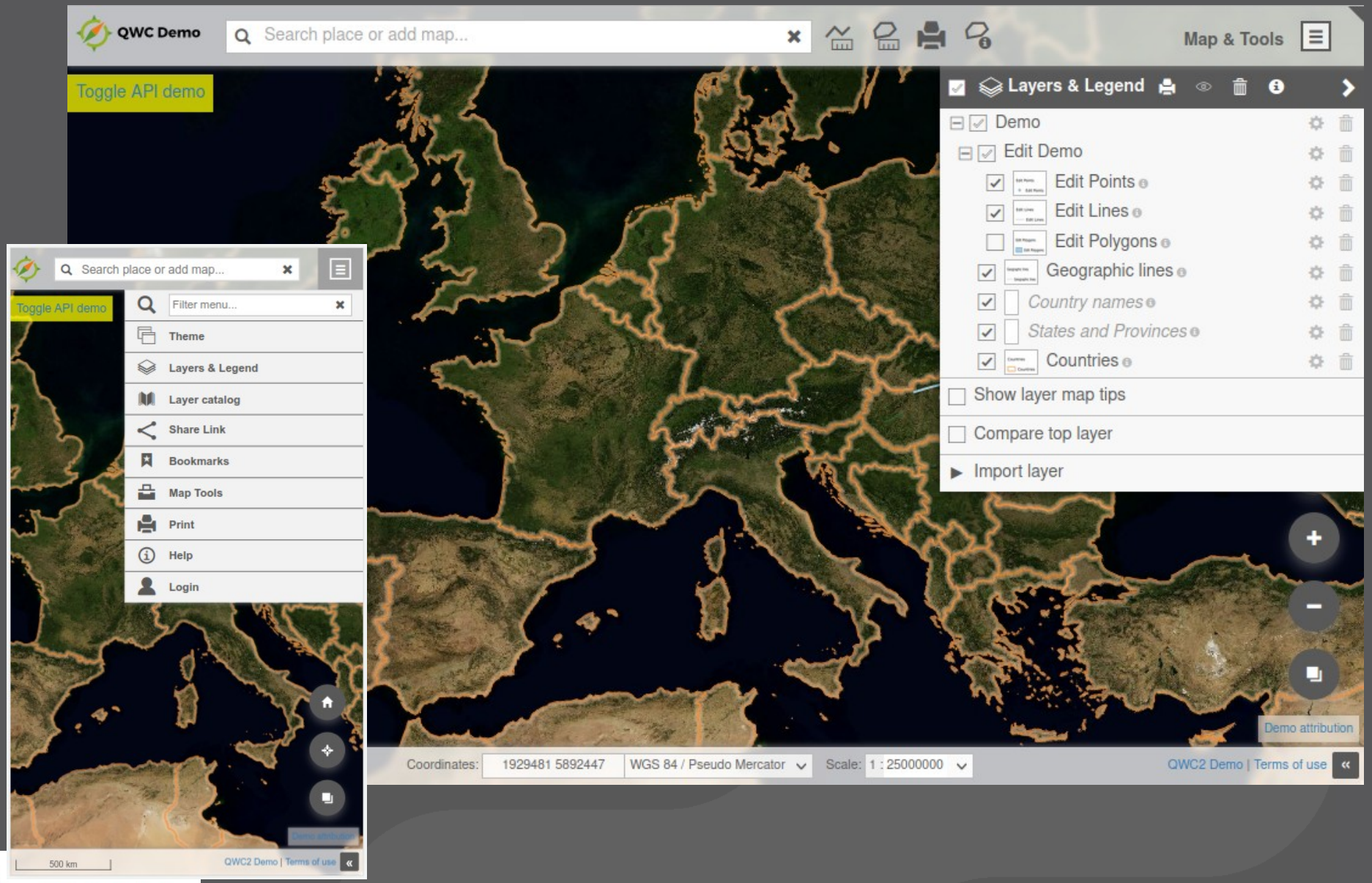
Outline

- Introduction to QWC2
- Introduction to qwc-services
- Feature showcase
- News from the project

QGIS Web Client 2

- **QWC2 is the official web application for publishing QGIS projects on the web**
  - First public release in 2016
  - Modern, responsive UI
  - Plugin architecture, easily extensible
  - State of the art techologies: ReactJS, OpenLayers 7

QGIS Web Client 2



QGIS Web Client 2 · Core features

- Theme switcher (QGIS projects)
- Layertree
- Feature Info
- Search with configurable providers
- Measurement tools
- Redlining (sketching)
- Permalink sharing
- Geolocation
- PDF printing
- Map compare
- Importing external layers (WMS, WFS, WMTS, KML)
- Javascript API

QGIS Web Client 2

- QWC2 as simple WMS Client on top of QGIS Server
  - Static JS/HTML/CSS application
  - Limited to functionality provided by QGIS Server

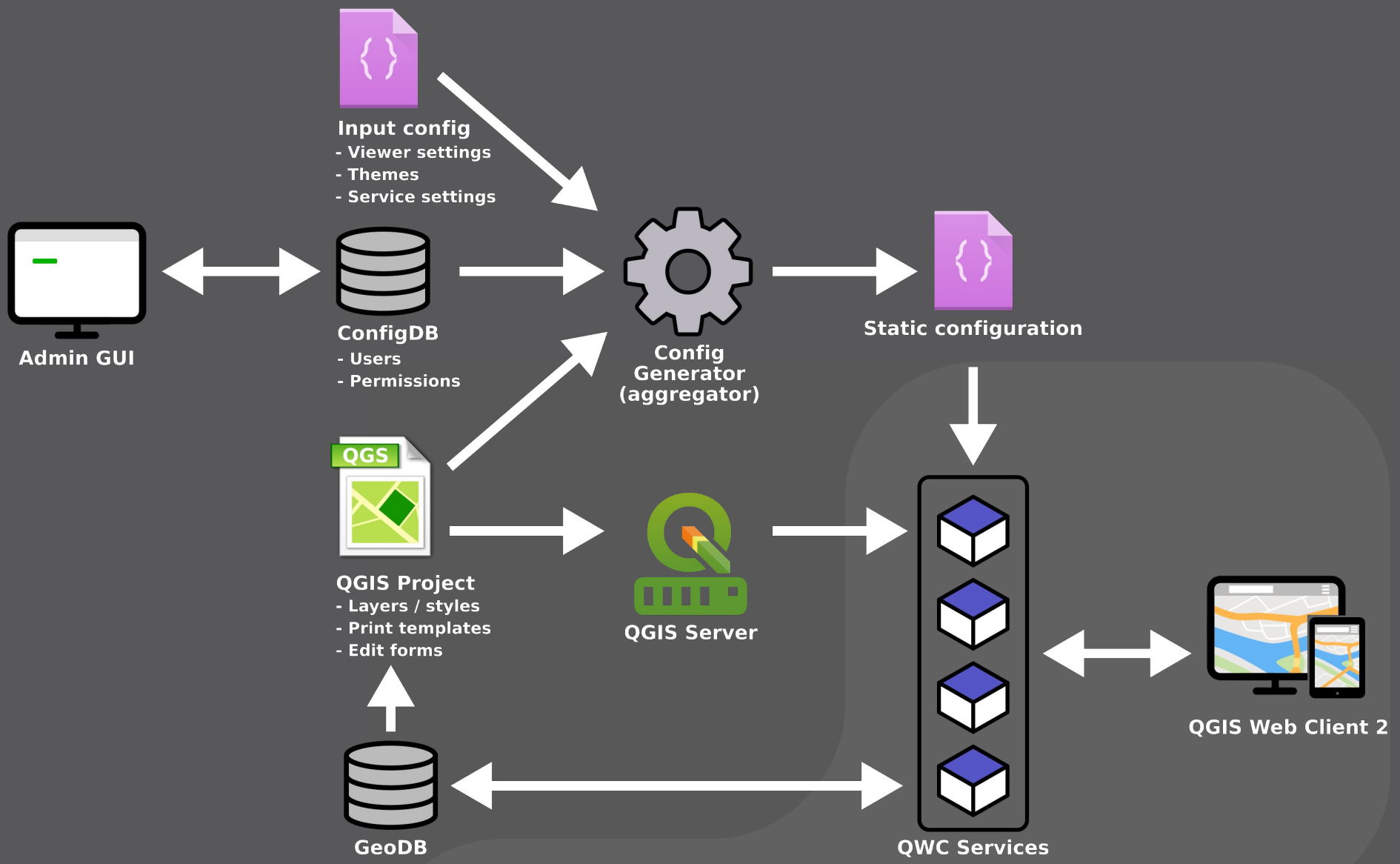
qwc-services

- **Microservices for extending QWC2**
  - Collection of loosely-coupled services
  - Communication over HTTP/REST
  - Mostly Python-Flask services
- **Easily deployed as Docker containers**
  - https://github.com/qwc-services/qwc-docker
- **Or custom setup, I.e. via Apache + mod WSGI**

qwc-services · Extended features

- **Functionalities available by extending QWC2 with qwc-services**
  - User and resource management
  - Multi-tenancy
  - Authentication
  - Fulltext search
  - Editing
  - Compact permalinks, user bookmarks
  - Height profile
  - Custom feature-info templates
  - Reporting (Jasper)
  - Mapinfo popup

qwc-services · Architecture



qwc-services · Core services

- **QWC OGC service**
  - Forwards requests to QGIS server enforcing permissions
- **QWC map viewer**
  - Enforces permissions to the QWC2 themes and viewer configuration
- **QWC Admin GUI**
  - Backend for managing users and resource permissions (maps, layers, edit datasets, …)
- **QWC Config Generator**
  - Aggregates theme config and permissions into static service configuration files

qwc-services · Some additional services

- **QWC Data Service**
  - Allows read/write access to configured datasets in a PostGIS DB
  - Backend for the QWC2 editing functionality
- **QWC Permalink Service**
  - Stores and resolves compact permalinks
- **QWC Fulltext Search Service**
  - Faceted fulltext search with Apache Solr

qwc-services · Authetication

- **Modular authentication services**
  - Issue JWT tokens
- **QWC DB Auth**
  - Authentication against user DB
- **QWC LDAP Auth**
  - Authentication with LDAP/Active Directory
- **and others (i.e. Kerberos, SAML)**

Docker / Kubernetes

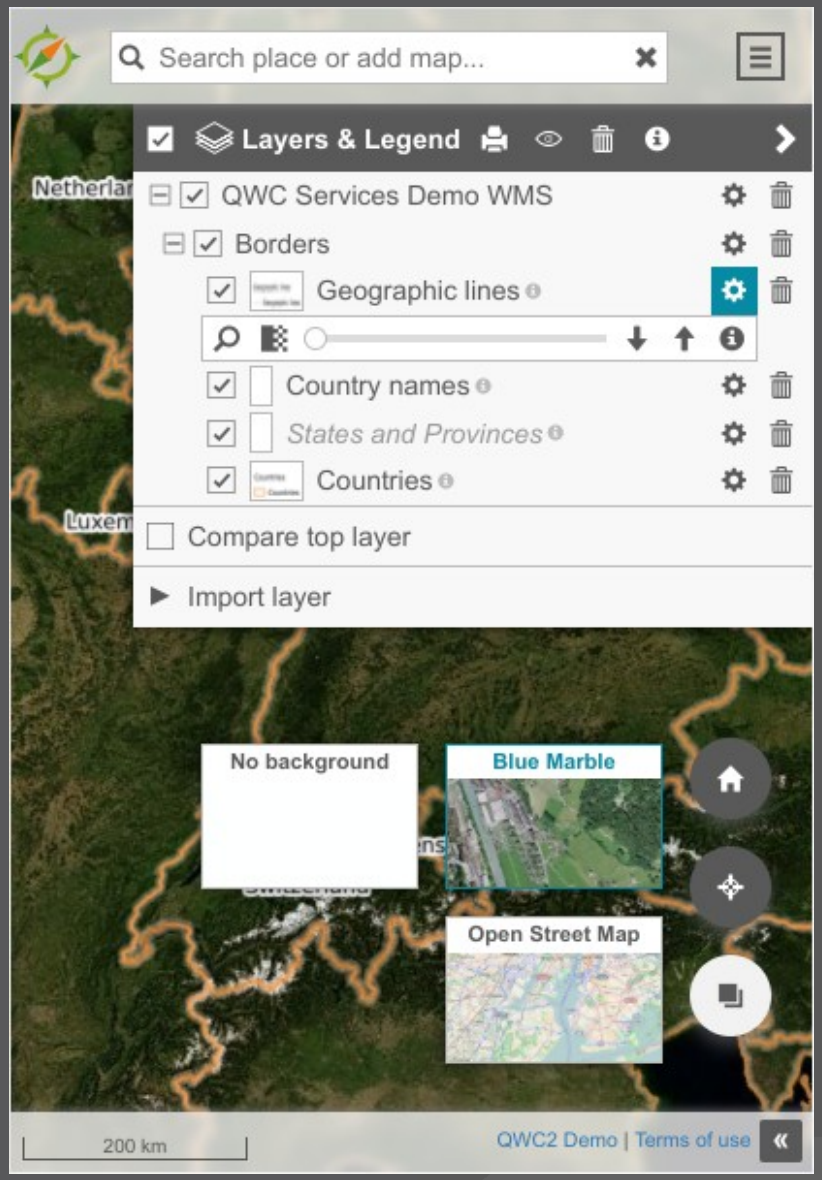
- **Docker**
  - One service per container
  - Execution in controlled environment
  - Easy to create and manage
  - Distribution over centralized registry
  - https://www.docker.com/
- **Kubernetes**
  - System for automating the deployment, scaling and management of container applications
  - https://kubernetes.io/

QWC2 feature showcase

QWC2 Features · Theme Switcher

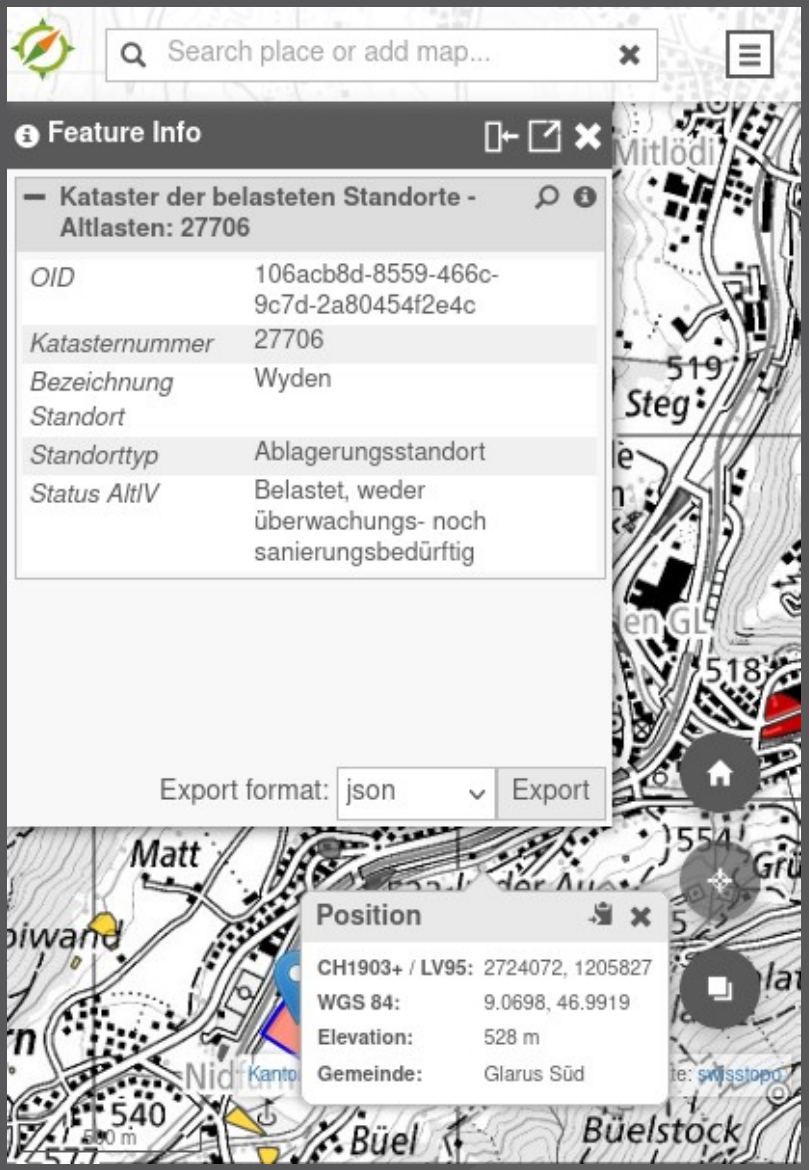
- A theme corresponds to a published QGIS Project

QWC2 Features · Layer Tree



- Visibility / transparency
- Reorder layers
- Import external layers
  - WMS/WMTS/WFS/ KML/GeoJSON
- Compare top layer
- Background layer switcher

QWC2 Features · Feature & Map Info



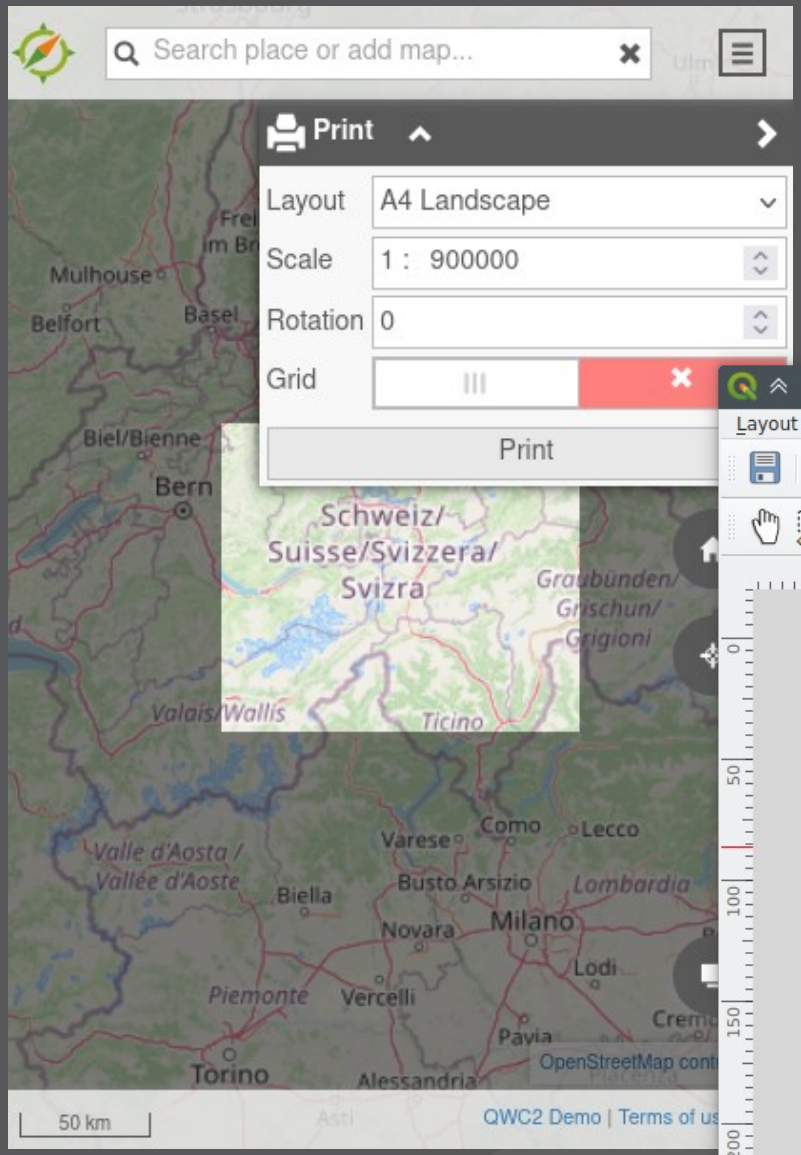
- **Info for selected feature**
  - WMS GetFeatureInfo
- **Info for selected position**
  - Position, elevation
  - Custom information

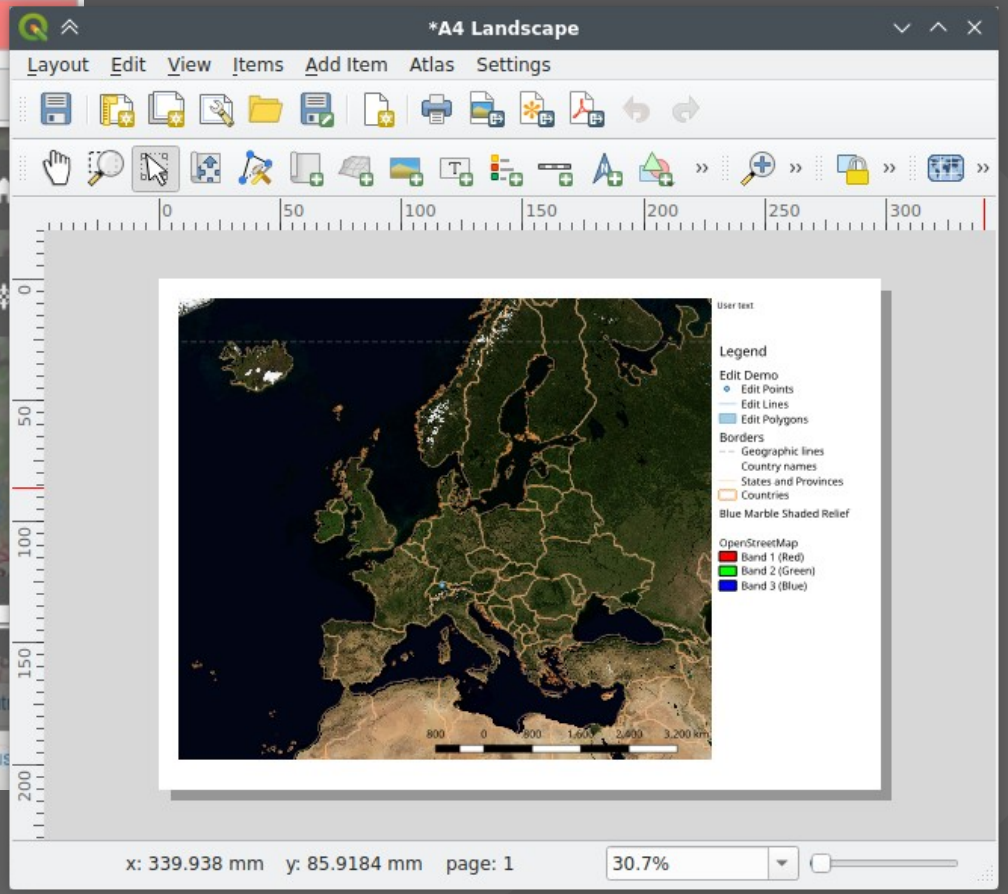
QWC2 Features · Search

- **Search with configurable providers**
  - Places
  - Layers/Map
  - Themes

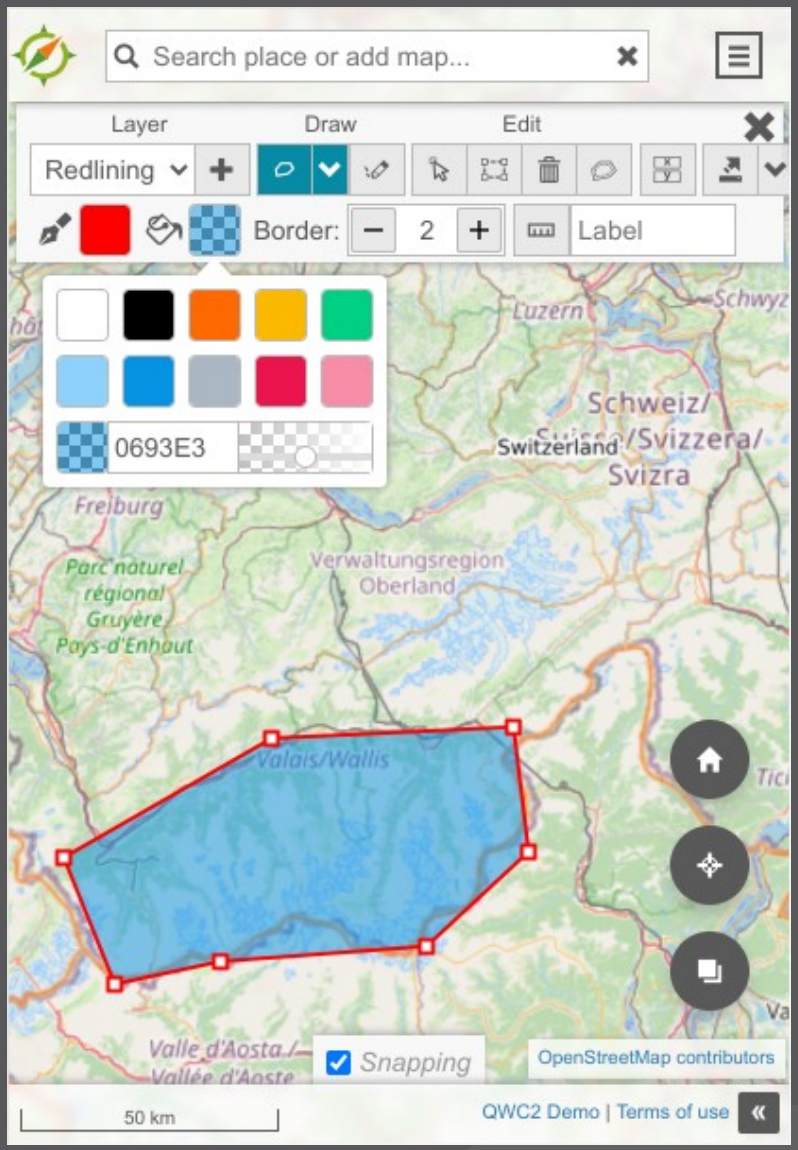
QWC2 Features · Printing

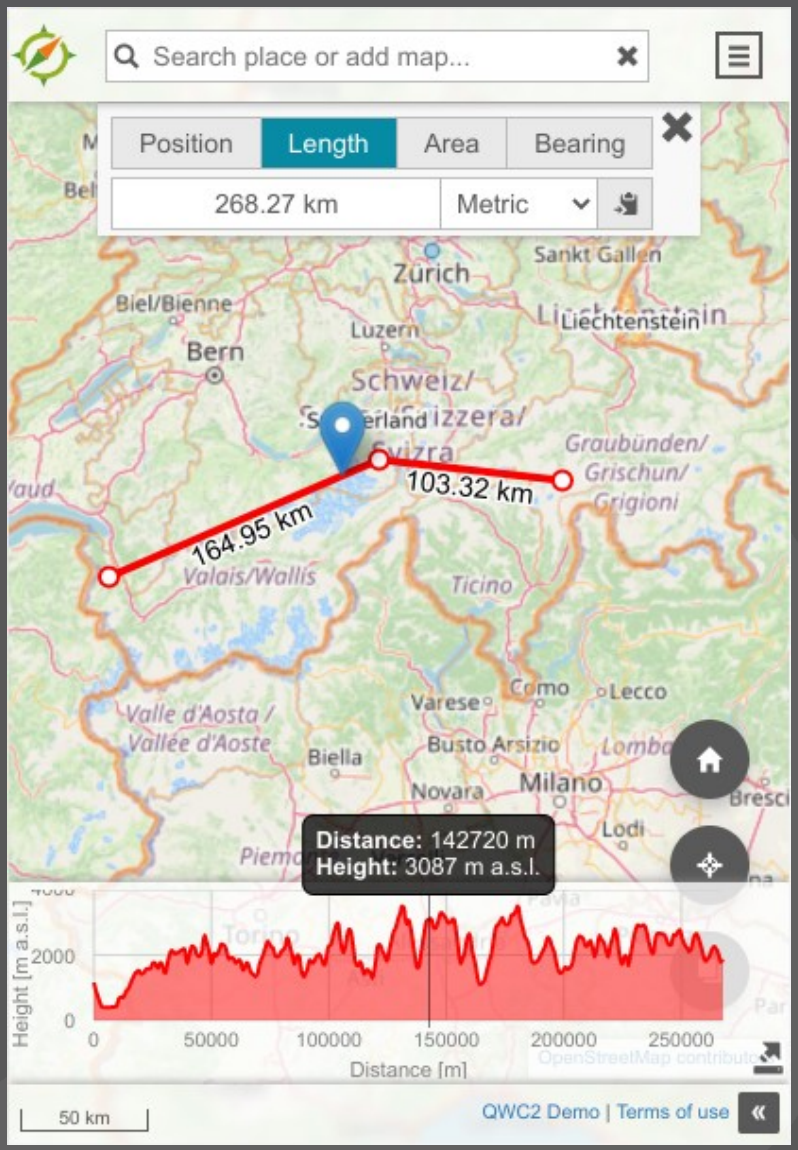
- QGIS Server WMS GetPrint
  - QGIS Print Layouts



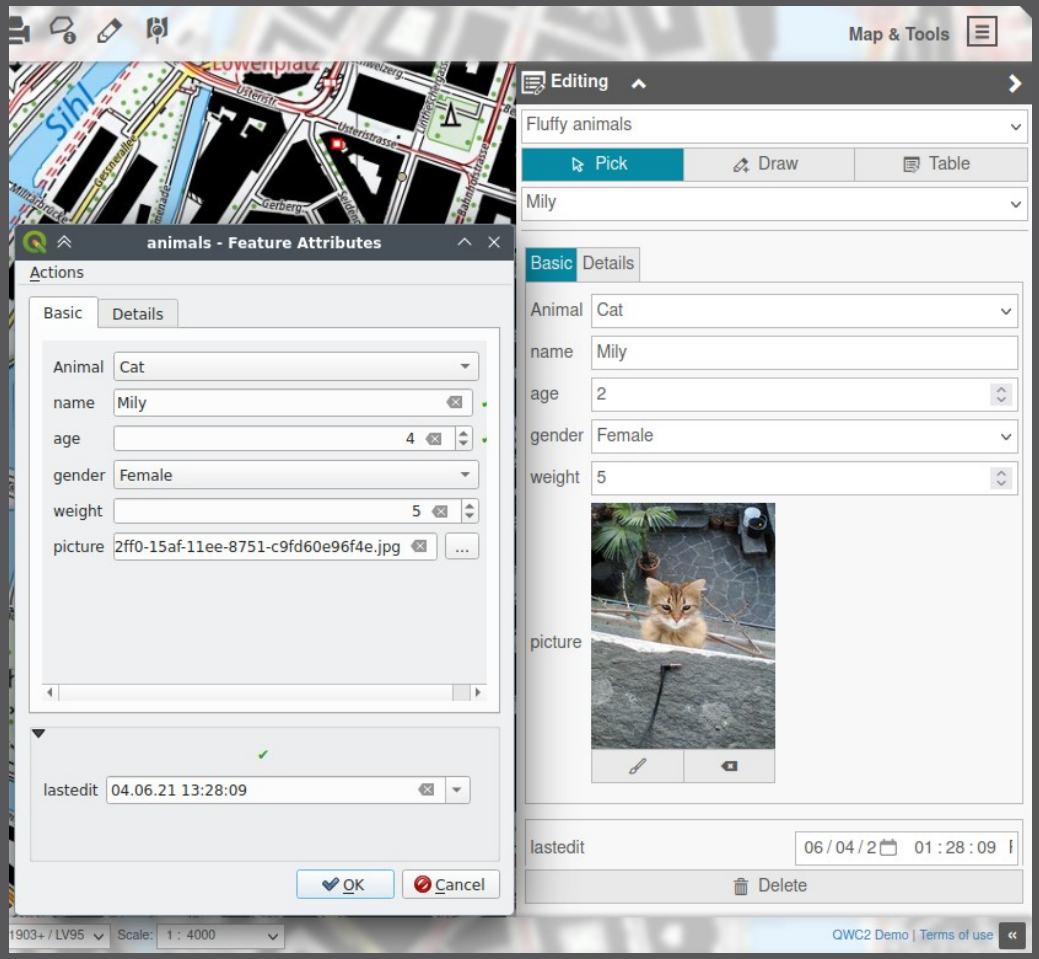


QWC2 Features · Redlining & Measure

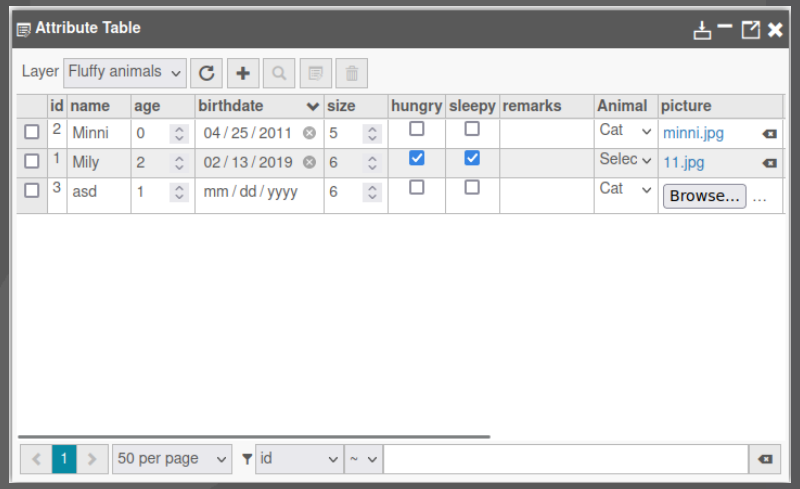




QWC2 Features · Editing



- **Edit geometry and attributes**
  - QGIS edit forms
  - File uploads
  - Key-value relations
  - 1:N relations
- **Attribute table**
  - Geometryless datasets



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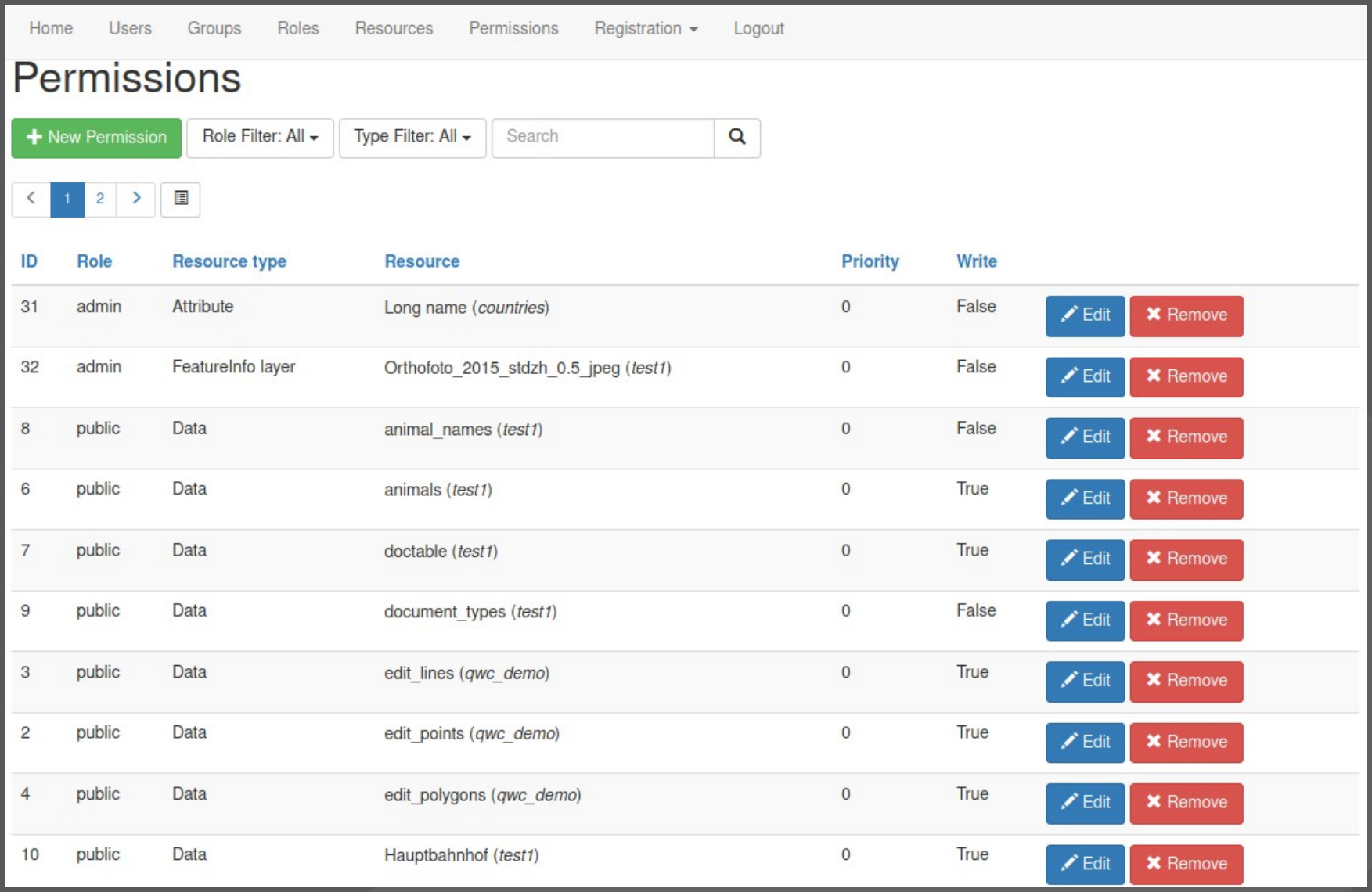
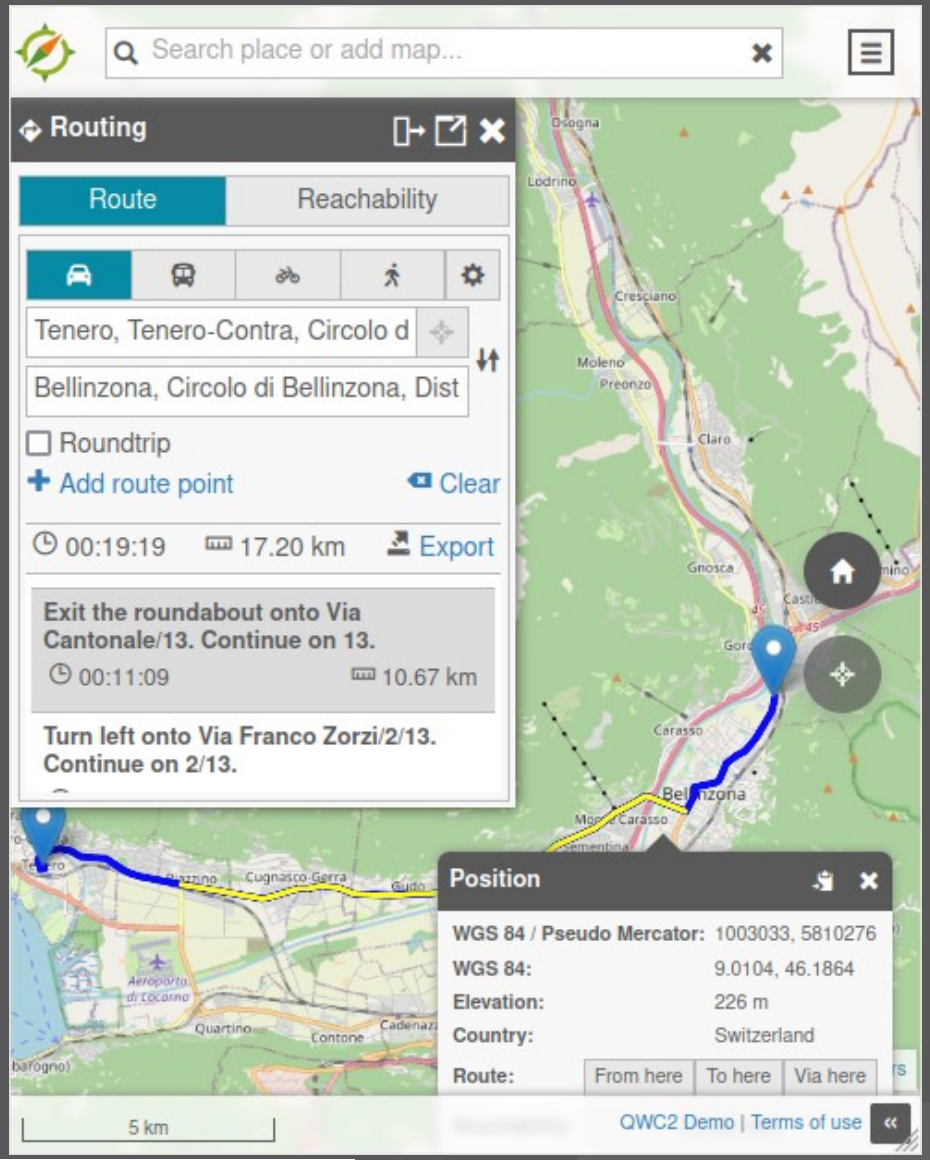
QWC2 Features - Admin backend

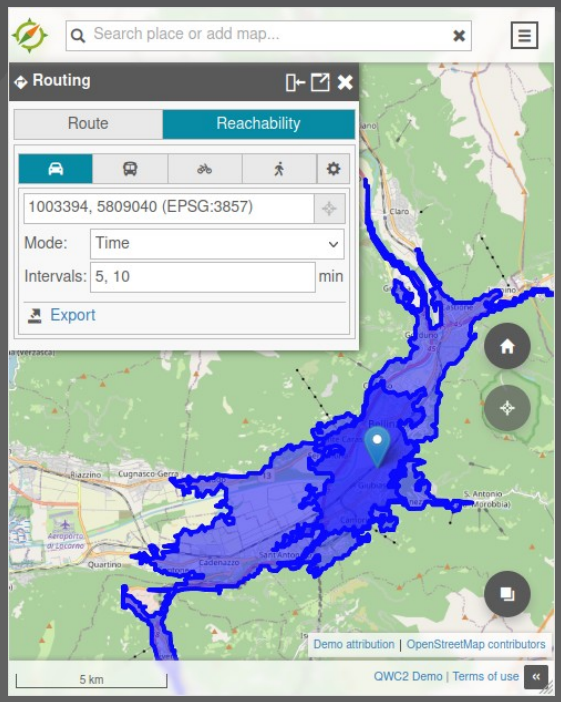


News from the project

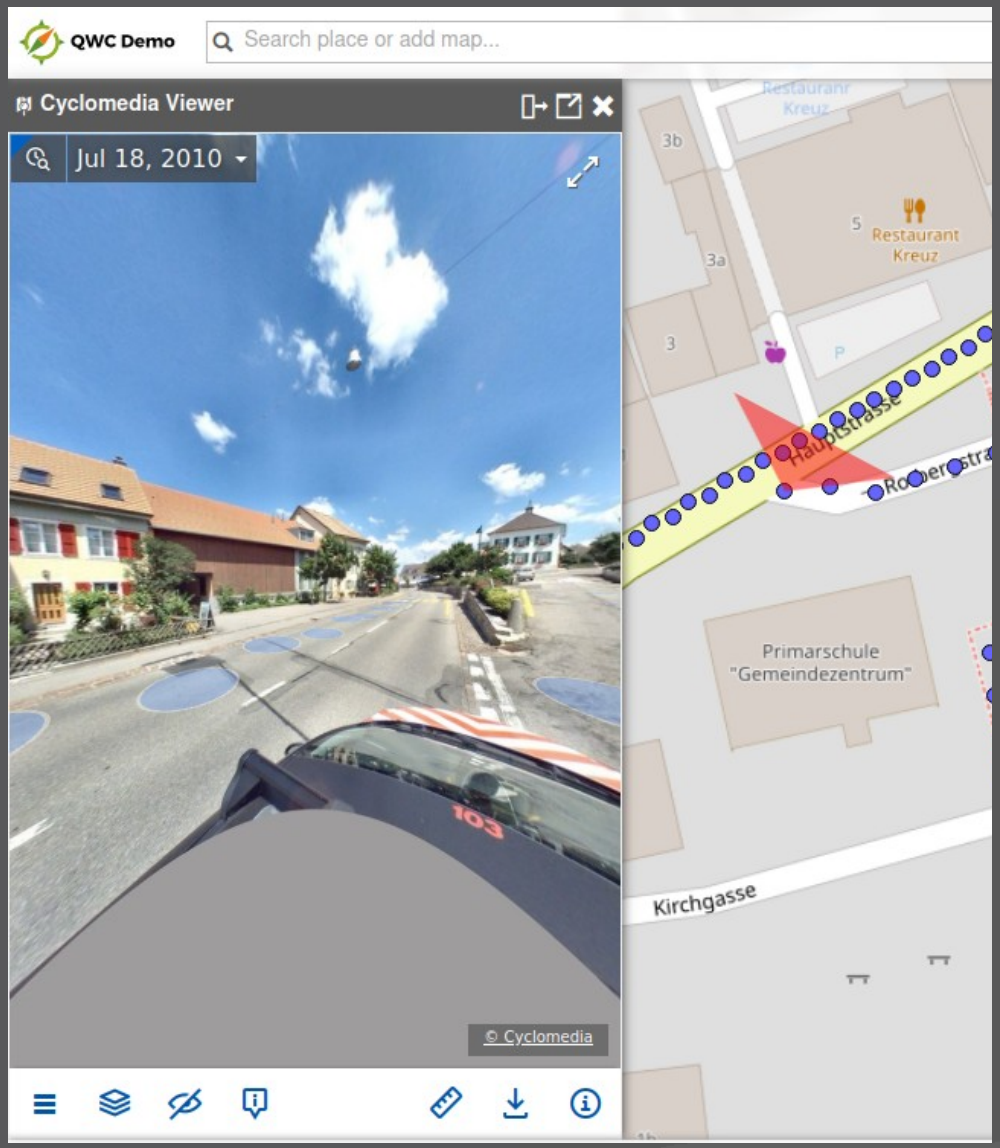
QWC2 News · Routing



- Routing & Isochrones
- Default Valhalla backend

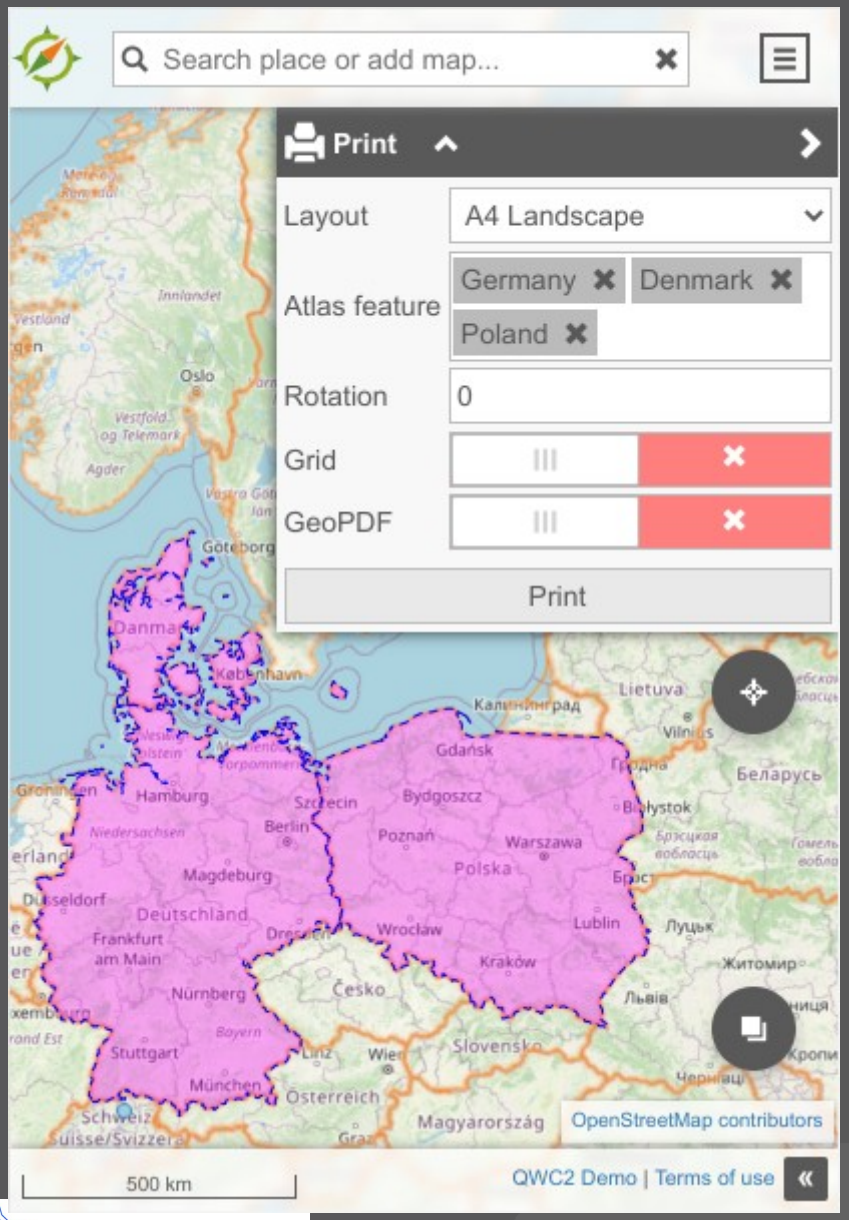


QWC2 News · Cyclomedia

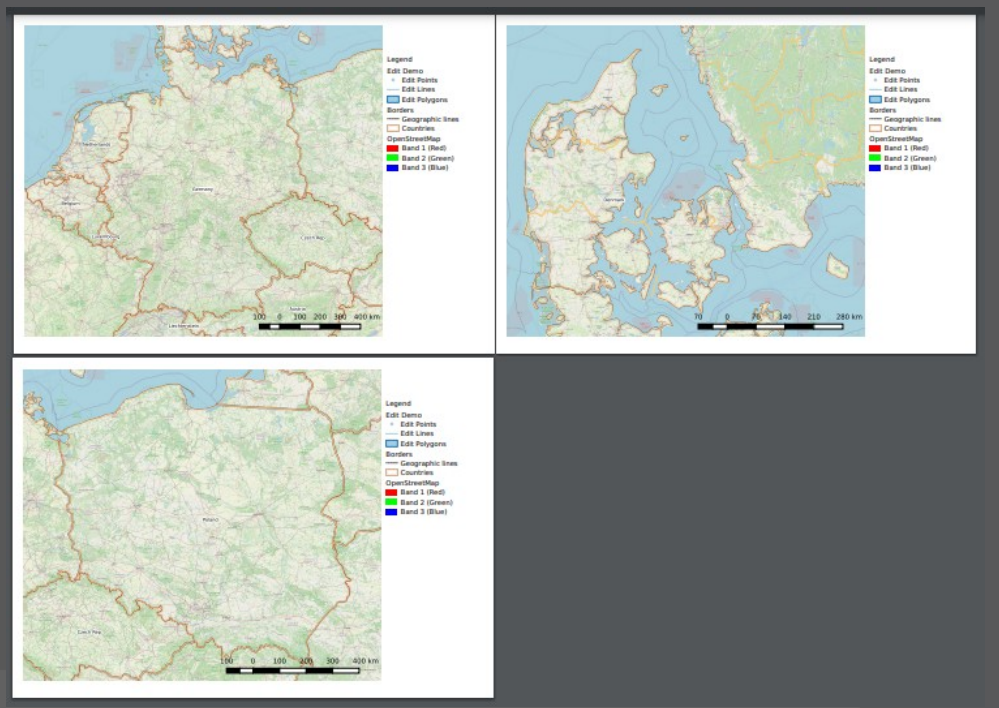


- Integration of Cyclomedia Panorama Viewer
  - Basis also for other Panorama Viewers

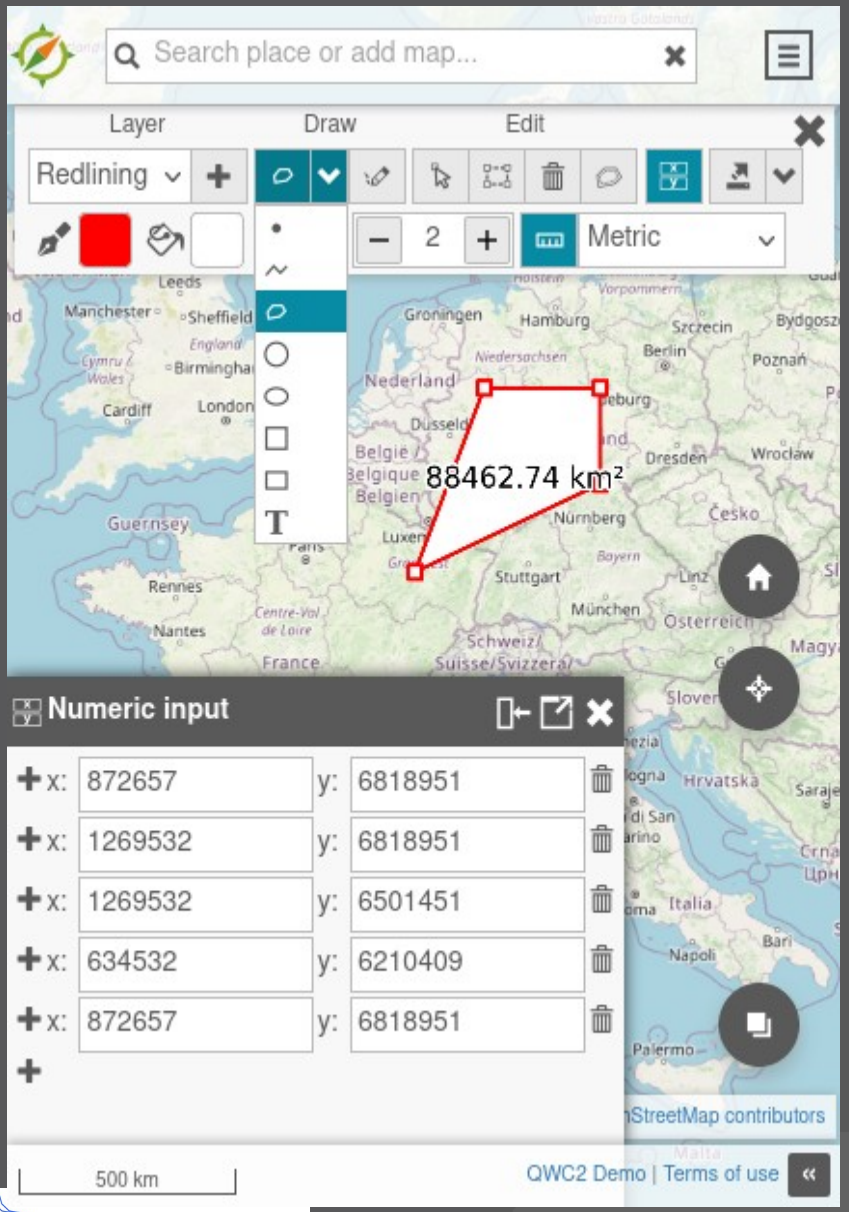
QWC2 News · Printing improvements



- Atlas Printing
- GeoPDF support
  - Requires QGIS 3.32



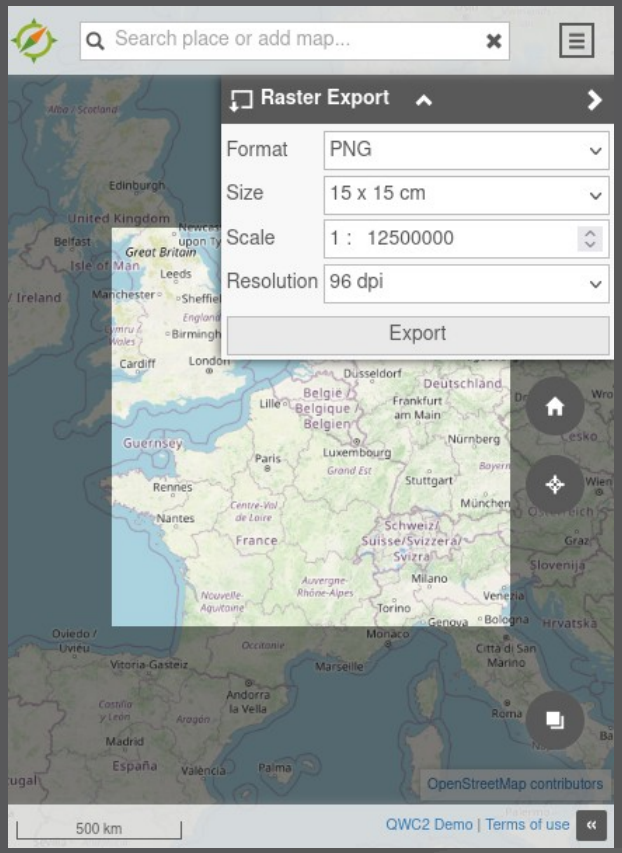
QWC2 News · Redlining



- **Additional shapes**
  - Rect/Square/Ellipse
- **Transform tool**
  - Scale/Rotate
- **Measurement labels**
- **Numeric input**
- **KML/GeoJSON export**

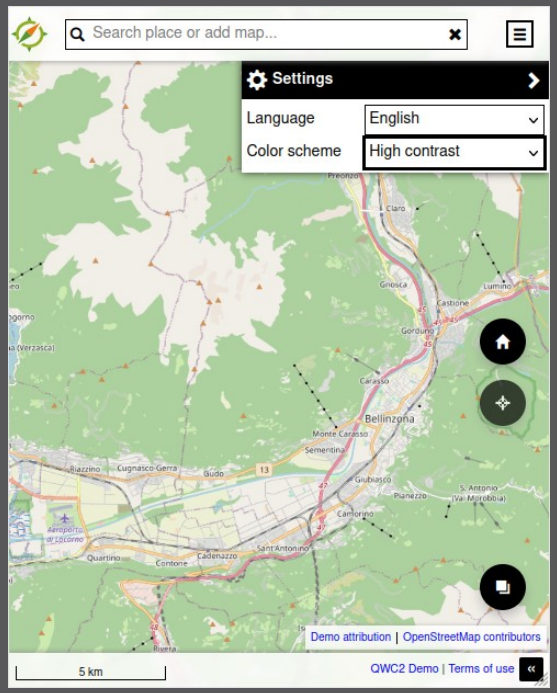
QWC2 News · New and improved plugins

- RasterExport: new fixed size mode
- NewsPopup



QWC2 News · Accessibility

- Colorschemes (CSS, freely configurable)
- Hotkeys




```
"name": "TopBar",
"cfg": {
  "menuItems": [
    {"key": "ThemeSwitcher", "icon": "themes", "shortcut": "alt+shift+t"},
    {"key": "LayerTree", "icon": "layers", "shortcut": "alt+shift+l"},
    {"key": "MapLegend", "icon": "list-alt"},
    {"key": "LayerCatalog", "icon": "catalog", "shortcut": "alt+shift+c"},
    {"key": "Share", "icon": "share", "shortcut": "alt+shift+s"},
    {"key": "Bookmark", "icon": "bookmark", "shortcut": "alt+shift+b"},
    {"key": "Tools", "icon": "tools", "subitems": [
      {"key": "Identify", "icon": "identify_region", "mode": "Region"},
```

QWC2 News · Viewer Configuration

- Simplified viewer configuration with common plugin configuration section

QWC2 News · Tenant Configuration

- Simplified multi-tenant configuration with base template

`config-in/tenantConfig.template.json`

```
    },
    "config": {
      "qwc2_path": "/qwc2/",
      "auth_service_url": "/$tenant$/auth/",
      "data_service_url": "/$tenant$/api/v1/data/",
      "#document_service_url": "/$tenant$/api/v1/document/",
      "elevation_service_url": "/$tenant$/elevation/",
      "info_service_url": "/$tenant$/api/v1/featureinfo/",
      "legend_service_url": "/$tenant$/api/v1/legend/",
      "mapinfo_service_url": "/$tenant$/api/v1/mapinfo/",
      "ogc_service_url": "/$tenant$/ows/",
      "permalink_service_url": "/$tenant$/api/v1/permalink/",
      "print_service_url": "/$tenant$/api/v1/print/",
      "search_service_url": "/$tenant$/api/v2/search/",
      "search_data_service_url": "/$tenant$/api/v2/search/geom/"
    }
  },
  {
    "name": "featureInfo",
    "config": {
      "default_qgis_server_url": "http://qwc-qgis-server/ows/",
      "skip_empty_attributes": true
    }
  },
```

`config-in/example/tenantConfig.json`

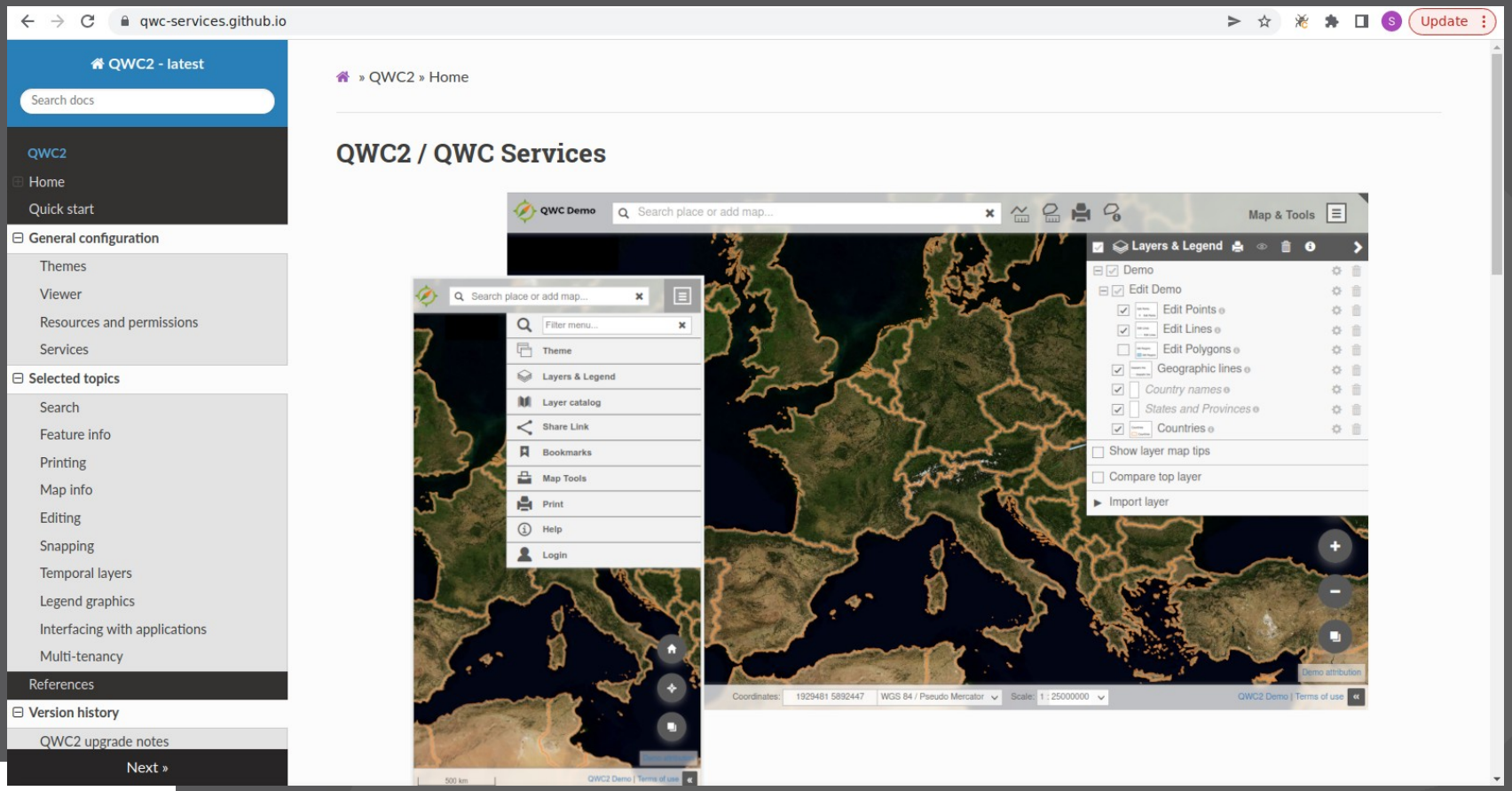
```
{
  "template": "../tenantConfig.template.json",
  "config": {
    "tenant": "example"
  },
  "themesConfig": "./themesConfig.json"
}
```

QWC2 News · Long-Term Release

- **Stable release with one-year maintenance**
  - No new features
  - Bugfix only
- **Tags: v2023.x-lts**
- **Docker images available on dockerhub**
- **Newest releases still available as usual**
  - Tags: vYYYY-MM-DD

QWC2 News · Documentation

- qwc-services.github.io



References

- Homepage / Documentation
  - https://qwc-services.github.io/
- Main repositories
  - https://github.com/qgis/qwc2-demo-app
  - https://github.com/qwc-services/qwc-docker
- Try it out
  - https://qwc2.sourcepole.ch
  - https://qgiscloud.com
  - https://map.geo.gl.ch
  - https://geo.so.ch/map/

Thank you!

Sandro Mani