



Easily publish your QGIS projects on the web with QWC2

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› QGIS

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

› Web-GIS

- › QGIS Web Client 2



- › QGIS Cloud SDI - qgiscloud.com





Outline

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



OGIS Web Client 2

- **OWC2 is the official web application for publishing OGIS projects on the web**
 - First public release in 2016
 - Modern, responsive UI
 - Plugin architecture, easily extensible
 - State of the art technologies: ReactJS, OpenLayers 7





OGIS Web Client 2

The screenshot displays the QWC Demo web client interface. At the top, there is a search bar with the text "Search place or add map..." and a "Toggle API demo" button. The main map area shows a satellite-style map of Europe with orange outlines. On the right side, a "Layers & Legend" panel is open, listing several layers: "Demo", "Edit Demo", "Edit Points", "Edit Lines", "Edit Polygons", "Geographic lines", "Country names", "States and Provinces", and "Countries". Below these layers are options for "Show layer map tips", "Compare top layer", and "Import layer". At the bottom of the map, there is a coordinate display showing "Coordinates: 1929481 5892447", a projection dropdown set to "WGS 84 / Pseudo Mercator", and a scale dropdown set to "1 : 25000000". A "Demo attribution" link is also visible.





OGIS Web Client 2 - Core features

- Theme switcher (OGIS 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





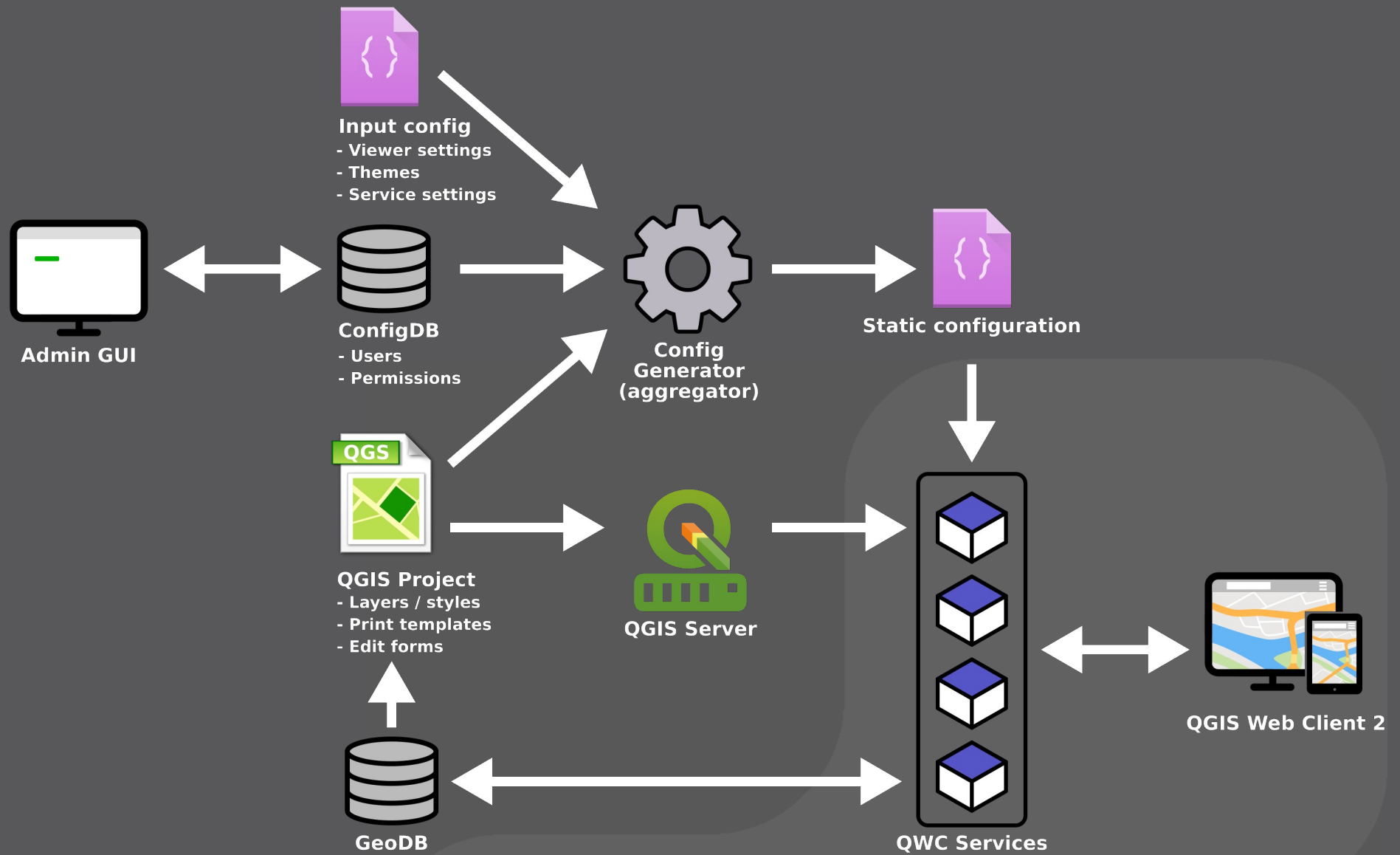
- **Microservices for extending QWC2**
 - Collection of loosely-coupled services
 - Communication over HTTP/REST
 - Mostly Python-Flask services
- **Easily deployed as Docker containers**
 - <https://github.com/qwc-services/qwc-docker>
- **Or custom setup, i.e. via Apache + mod WSGI**



- **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 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 · Authentication

- **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



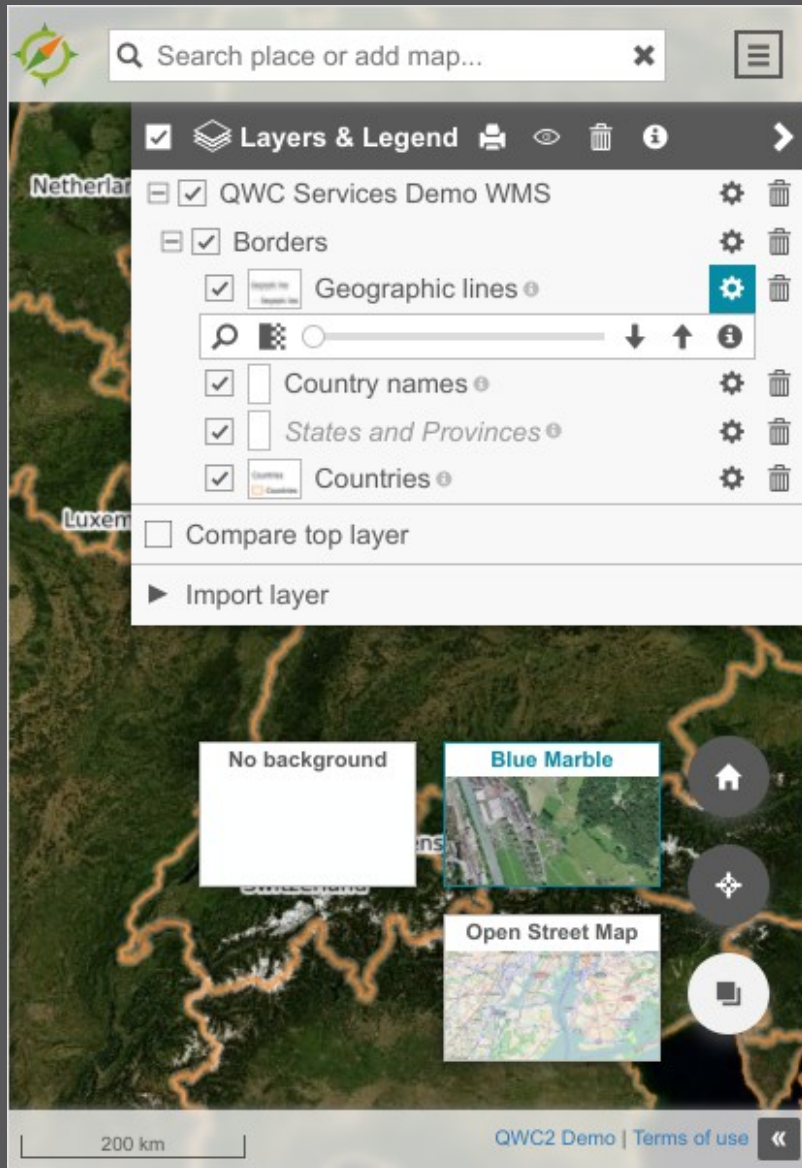
QWC2 Features - Theme Switcher



➤ 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



OWC2 Features - Feature & Map Info

The screenshot displays the OGC Web Client 2 interface. At the top, there is a search bar with the text "Search place or add map...". Below it, a "Feature Info" window is open, showing details for a selected feature. The feature is identified as "Kataster der belasteten Standorte - Altlasten: 27706". The information table includes:

OID	106acb8d-8559-466c-9c7d-2a80454f2e4c
Katasternummer	27706
Bezeichnung	Wyden
Standort	
Standorttyp	Ablagerungsstandort
Status AltIV	Belastet, weder überwachungs- noch sanierungsbedürftig

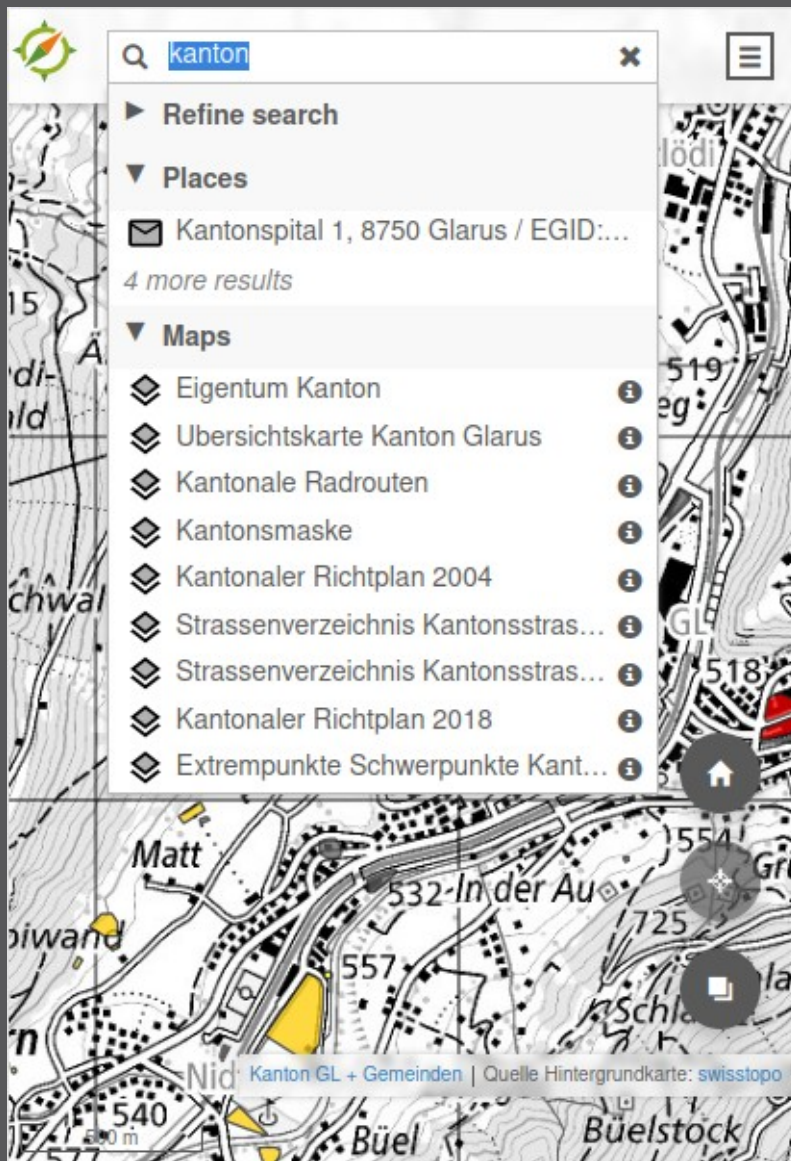
Below the table, there is an "Export format" dropdown menu set to "json" and an "Export" button. In the background, a topographic map is visible with a red location marker. A "Position" window is also open, displaying the following data:

CH1903+ / LV95:	2724072, 1205827
WGS 84:	9.0698, 46.9919
Elevation:	528 m
Gemeinde:	Glarus Süd

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



OWC2 Features - Search

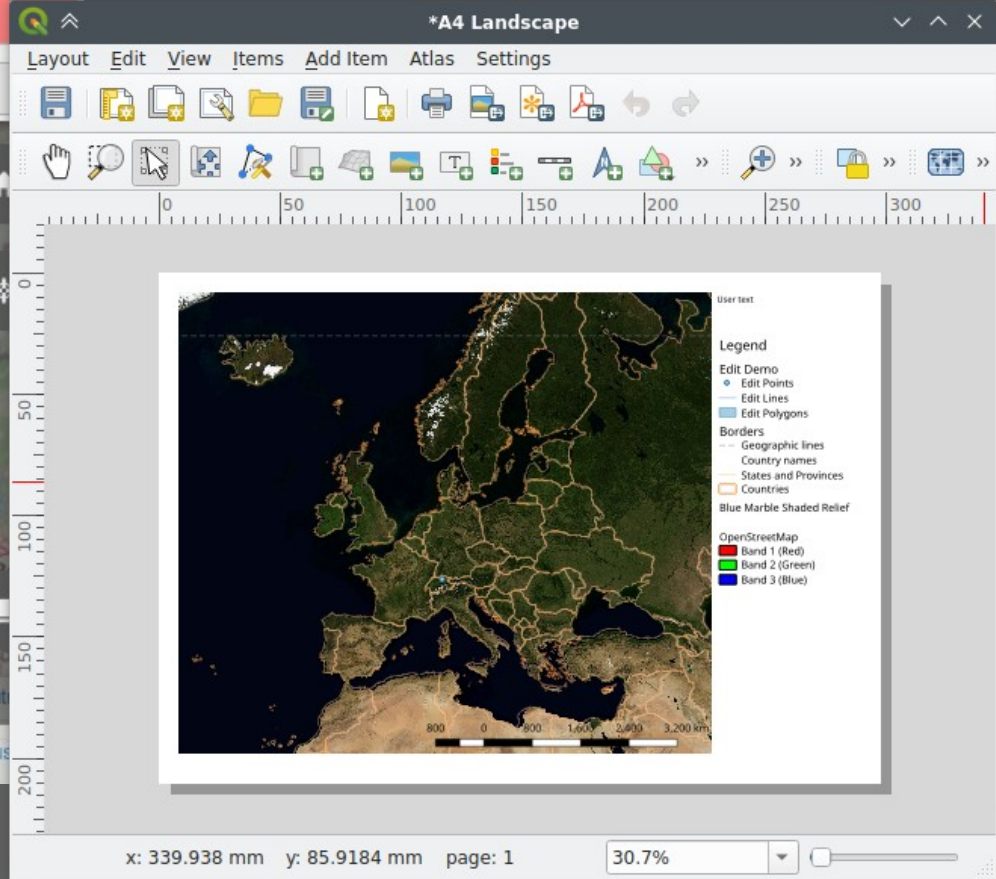
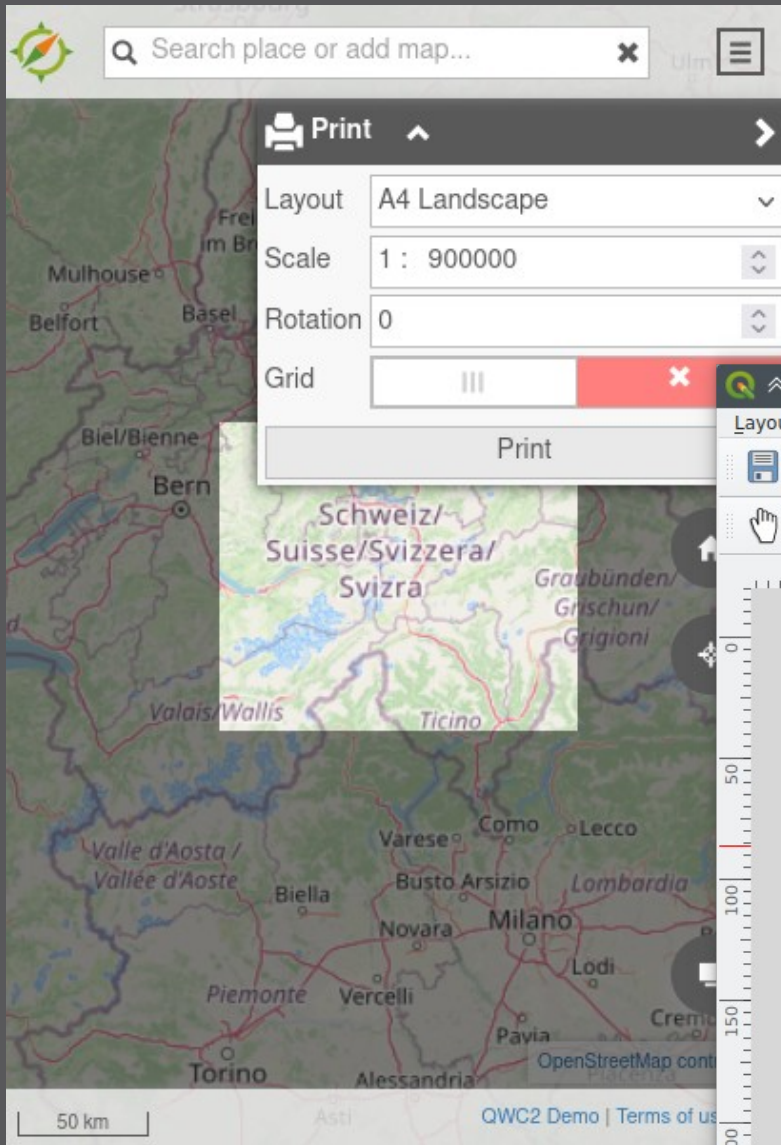


- Search with configurable providers
 - Places
 - Layers/Map
 - Themes

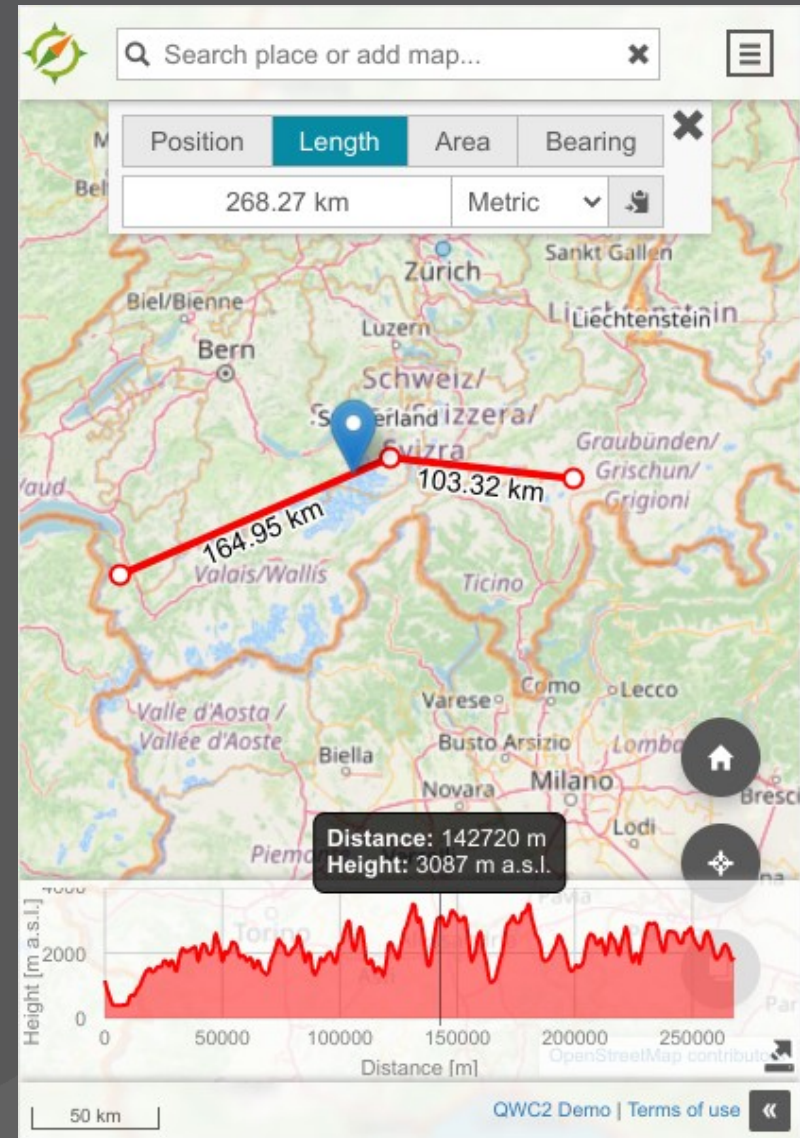
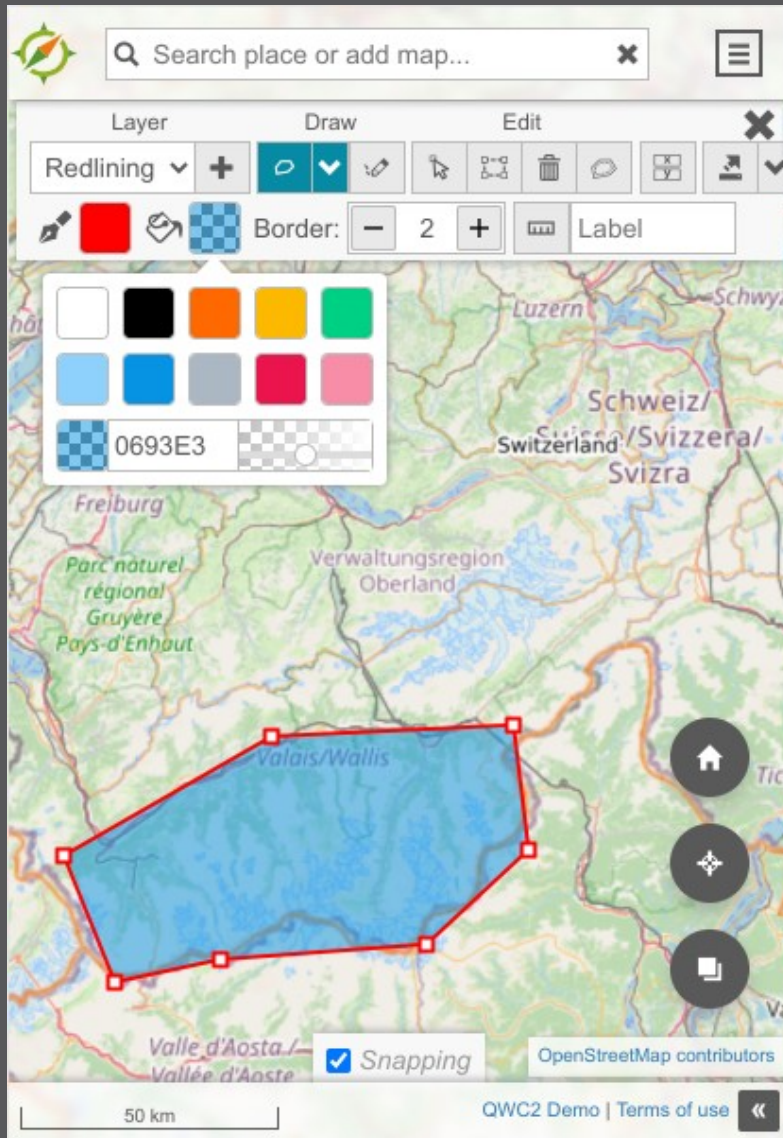


QWC2 Features - Printing

- QGIS Server WMS GetPrint
- QGIS Print Layouts



QWC2 Features - Redlining & Measure





QWC2 Features - Editing

animals - Feature Attributes

Basic Details

Animal: Cat

name: Mily

age: 4

gender: Female

weight: 5

picture: 2ff0-15af-11ee-8751-c9fd60e96f4e.jpg

lastedit: 04.06.21 13:28:09

OK Cancel

Editing

Fluffy animals

Pick Draw Table

Mily

Basic Details


Animal: Cat

name: Mily

age: 2

gender: Female

weight: 5

picture: 

lastedit: 06/04/2021 01:28:09

Delete

➤ Edit geometry and attributes

- QGIS edit forms
- File uploads
- Key-value relations
- 1:N relations

➤ Attribute table

- Geometryless datasets

Attribute Table

Layer: Fluffy animals

	id	name	age	birthdate	size	hungry	sleepy	remarks	Animal	picture
<input type="checkbox"/>	2	Minni	0	04/25/2011	5	<input type="checkbox"/>	<input type="checkbox"/>		Cat	minni.jpg
<input type="checkbox"/>	1	Mily	2	02/13/2019	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Selec	11.jpg
<input type="checkbox"/>	3	asd	1	mm/dd/yyyy	6	<input type="checkbox"/>	<input type="checkbox"/>		Cat	Browse...

1 50 per page id



QWC2 Features - Admin backend

Home Users Groups Roles Resources Permissions Registration Logout

Permissions

+ New Permission Role Filter: All Type Filter: All Search

< 1 2 > [List Icon]

ID	Role	Resource type	Resource	Priority	Write		
31	admin	Attribute	Long name (<i>countries</i>)	0	False	Edit	Remove
32	admin	FeatureInfo layer	Orthofoto_2015_stdzh_0.5_jpeg (<i>test1</i>)	0	False	Edit	Remove
8	public	Data	animal_names (<i>test1</i>)	0	False	Edit	Remove
6	public	Data	animals (<i>test1</i>)	0	True	Edit	Remove
7	public	Data	doctable (<i>test1</i>)	0	True	Edit	Remove
9	public	Data	document_types (<i>test1</i>)	0	False	Edit	Remove
3	public	Data	edit_lines (<i>qwc_demo</i>)	0	True	Edit	Remove
2	public	Data	edit_points (<i>qwc_demo</i>)	0	True	Edit	Remove
4	public	Data	edit_polygons (<i>qwc_demo</i>)	0	True	Edit	Remove
10	public	Data	Hauptbahnhof (<i>test1</i>)	0	True	Edit	Remove



News from the project





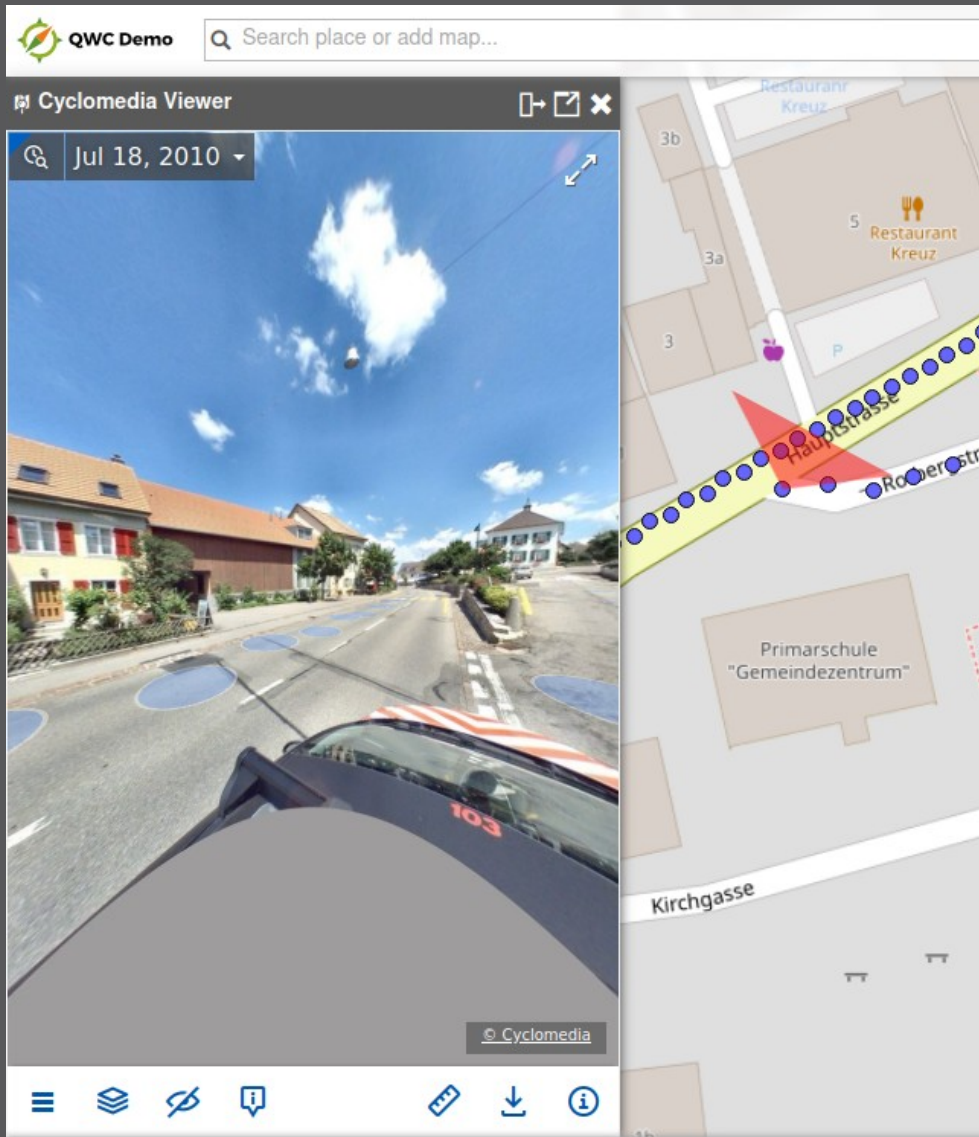
QWC2 News - Routing

- Routing & Isochrones
- Default Valhalla backend

The screenshot shows the QWC2 Routing interface. The search bar contains "Search place or add map...". The "Routing" panel is active, showing the "Route" tab. The mode is set to "Car". The start location is "Tenero, Tenero-Contra, Circolo d..." and the end location is "Bellinzona, Circolo di Bellinzona, Dist...". The estimated time is 00:19:19 and the distance is 17.20 km. A "Position" popup is visible, showing coordinates: WGS 84 / Pseudo Mercator: 1003033, 5810276; WGS 84: 9.0104, 46.1864; Elevation: 226 m; Country: Switzerland. The map shows a blue route through the region.

The screenshot shows the QWC2 Routing interface in "Reachability" mode. The search bar contains "Search place or add map...". The "Routing" panel is active, showing the "Reachability" tab. The mode is set to "Car". The start location is "1003394, 5809040 (EPSG:3857)". The mode is set to "Time" and the intervals are 5, 10 minutes. The map shows a blue shaded area representing the reachability of the point.

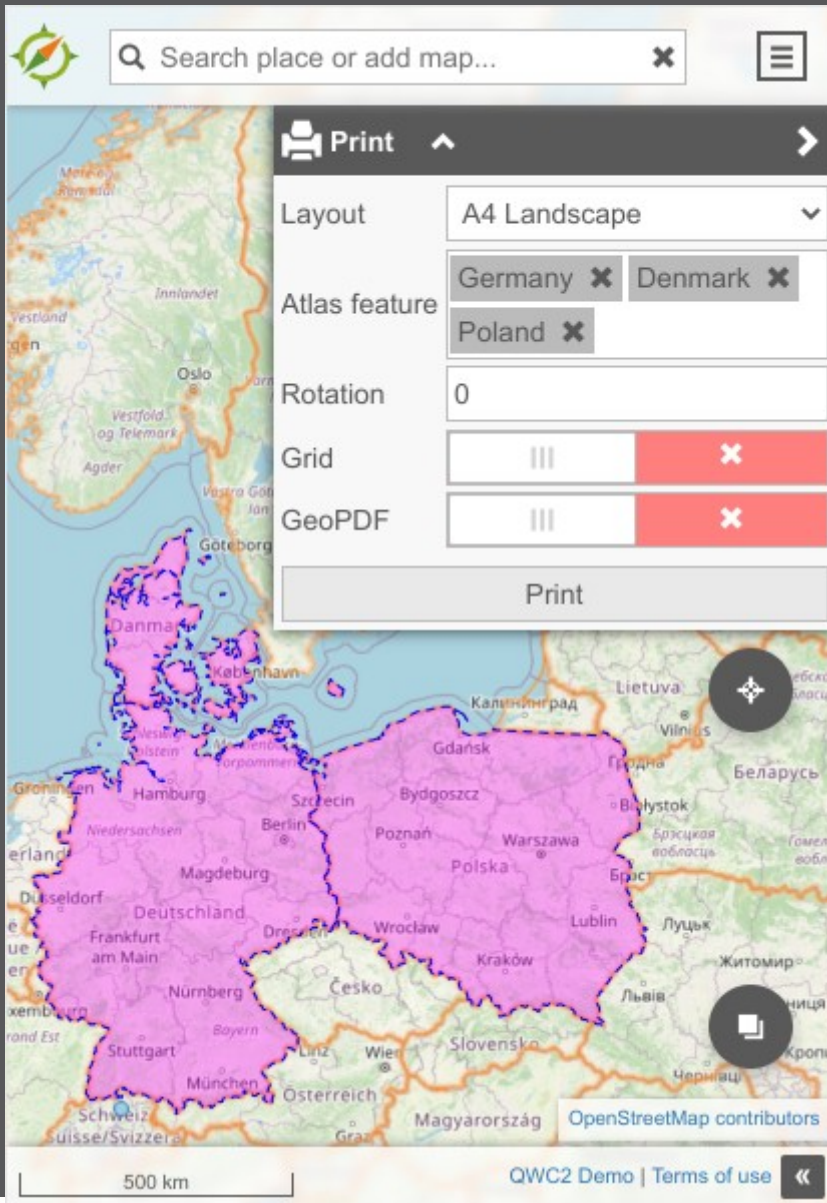




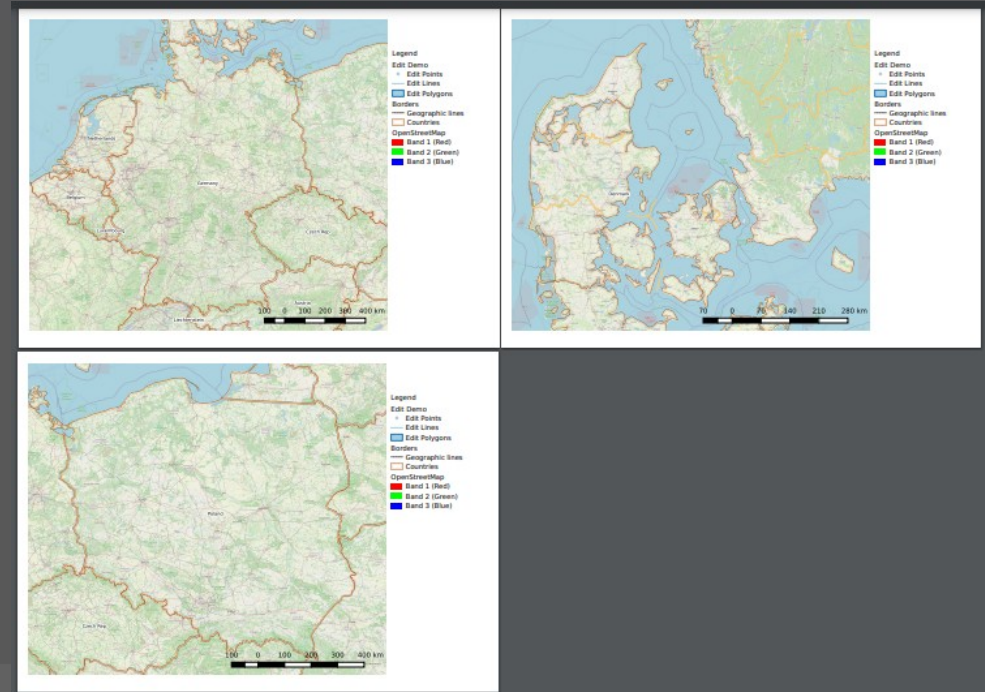
Integration of Cyclomedia Panorama Viewer

- Basis also for other Panorama Viewers

QWC2 News - Printing improvements

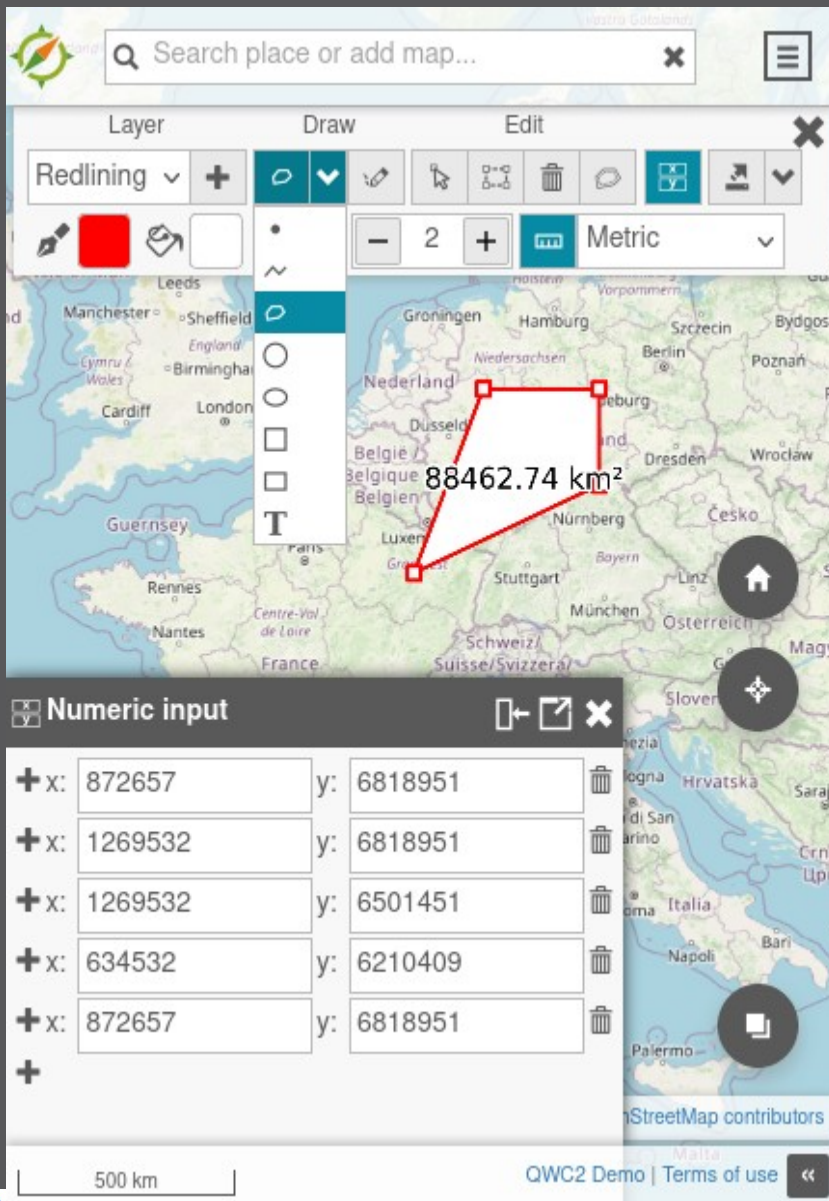


- Atlas Printing
- GeoPDF support
 - Requires QGIS 3.32





QWC2 News - Redlining

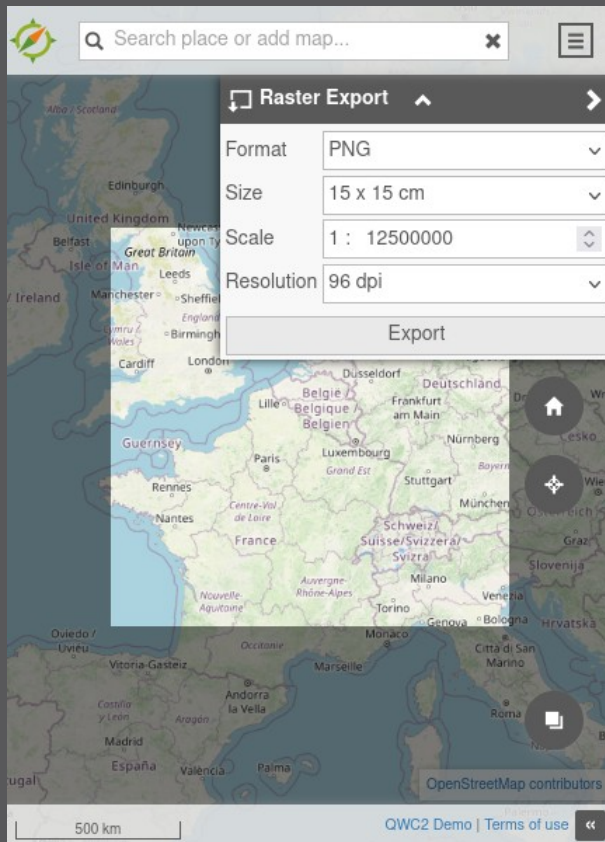


- Additional shapes
 - Rect/Square/Ellipse
- Transform tool
 - Scale/Rotate
- Measurement labels
- Numeric input
- KML/GeoJSON export



QWC2 News - New and improved plugins

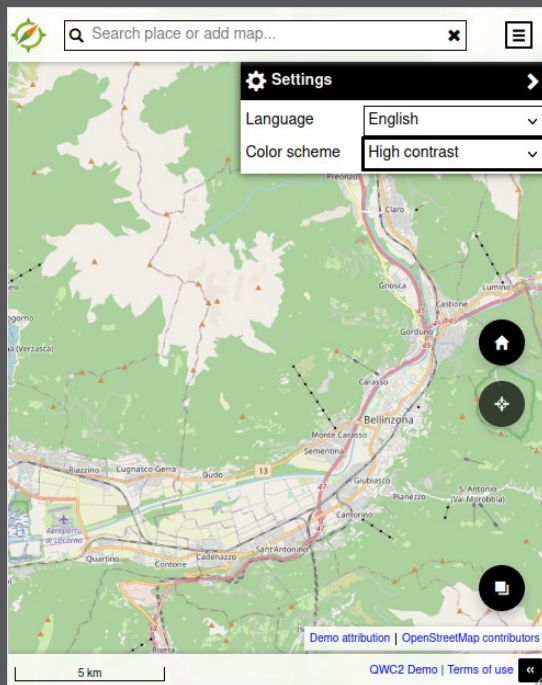
- RasterExport: new fixed size mode
- NewsPopup





OWC2 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"},
      {"key": "TimeManager", "icon": "clock"}
    ]
  ]
}
```



QWC2 News - Viewer Configuration

- Simplified viewer configuration with common plugin configuration section

```
],  
  "plugins": {  
    "common": [ ...  
  ],  
  "mobile": [  
    {  
      "name": "BottomBar",  
      "cfg": {  
        "displayCoordinates": false,  
        "displayScales": false  
      }  
    }  
  ],  
  "desktop": [ ...  
]  
}
```



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



» qwc-services.github.io

The screenshot shows the website qwc-services.github.io. The browser address bar shows the URL. The page has a blue header with "QWC2 - latest" and a search bar. A sidebar on the left contains a navigation menu with sections: "QWC2" (Home, Quick start), "General configuration" (Themes, Viewer, Resources and permissions, Services), "Selected topics" (Search, Feature info, Printing, Map info, Editing, Snapping, Temporal layers, Legend graphics, Interfacing with applications, Multi-tenancy), "References", and "Version history" (QWC2 upgrade notes). The main content area is titled "QWC2 / QWC Services" and features a large image of the QWC2 demo interface. The demo interface includes a search bar, a "Map & Tools" menu, a "Layers & Legend" panel with a list of layers (Demo, Edit Demo, Edit Points, Edit Lines, Edit Polygons, Geographic lines, Country names, States and Provinces, Countries), and a map of Europe with various editing tools and a coordinate display at the bottom.



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