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Using GIS with GST - OGC API
GST User Meeting 2024

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What is the OGC API

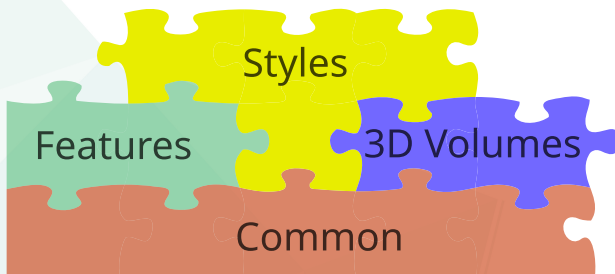


- ▶ Standard for providing spatial data via HTTP
- ▶ Successor of WMS, WFS, WCS, WPS API's with modern technology
- ▶ Consists of modular building blocks that extend each other
- ▶ Enables to reuse the same interface to communicate with different data providers and consumers
 - ▶ Providers:
 - ▶ GeoServer
 - ▶ ArcGIS Pro
 - ▶ Many more
 - ▶ Consumers:
 - ▶ ArcGIS
 - ▶ QGIS
 - ▶ Different WebGis systems
 - ▶ Many more

OGC API Parts



- ▶ The OGC API consists of many different building blocks
- ▶ Parts:
 - ▶ Common [Everything builds on top of this]
 - ▶ Features [Successor of WFS]
 - ▶ Tiles [Successor of WMS]
 - ▶ Coverages [Successor of WCS]
 - ▶ Processes [Successor of WPS]
 - ▶ Styles
 - ▶ 3d Geovolumes
 - ▶ Many more
- ▶ Includes authentication in the specification





- ▶ Idea: Provide data stored in GST via a defined open API for consumption
- ▶ Allows to easily work with the stored data in any compatible application
- ▶ Share data based on the MoMa structure from GST Web

OGC API and GST

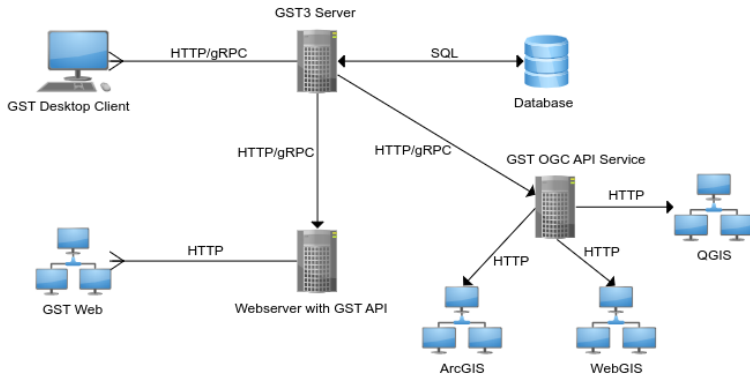


Figure 2: Experimental incomplete implementation of the OGC Features API for GST



The screenshot shows the 'Modify WFS Connection' dialog box with the following settings:

- Connection Details:**
 - Name: GST to OGC
 - URL: http://127.0.0.1:8000/
- Authentication:**
 - Configurations: Basic
 - Choose or create an authentication configuration: No Authentication
 - Configurations store encrypted credentials in the QGIS authentication database.
- WFS Options:**
 - Version: OGC API - Features (Detect button)
 - Max. number of features: (empty field)
 - Enable feature paging
 - Page size: 5
 - Ignore axis orientation (WFS 1.1/WFS 2.0)
 - Invert axis orientation
 - Use GML2 encoding for transactions

Buttons at the bottom: Help, Cancel, OK.

Figure 3: Setup the Connection in QGIS

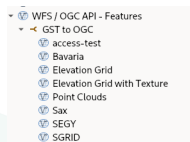


Figure 4: Show the tree in QGIS

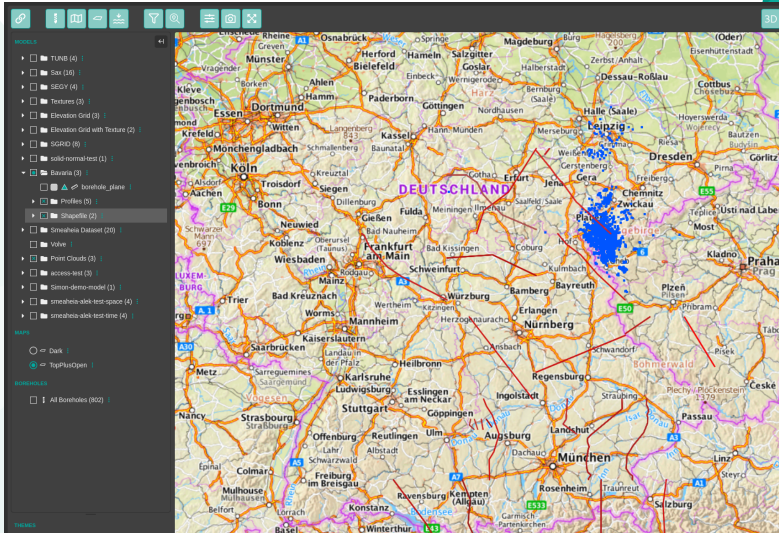


Figure 5: Points/Lines in GST Web

Demo with QGIS

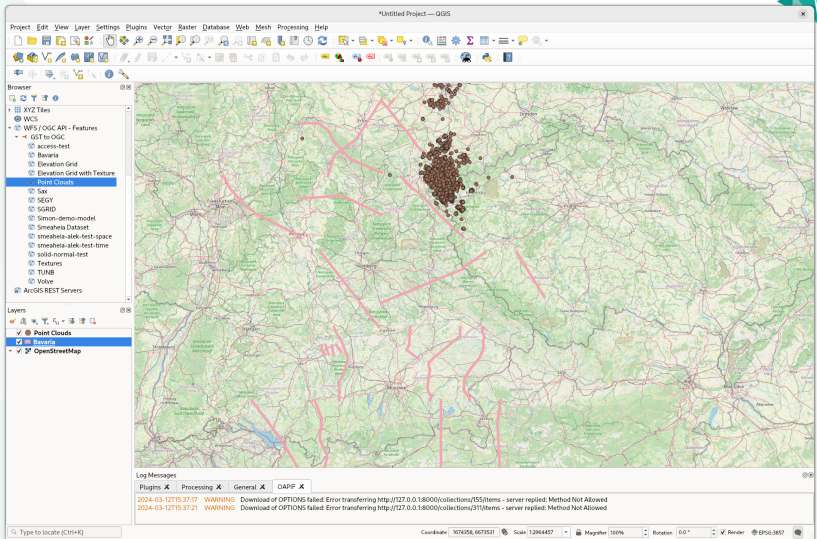


Figure 6: Points/Lines in QGIS

Demo with QGIS

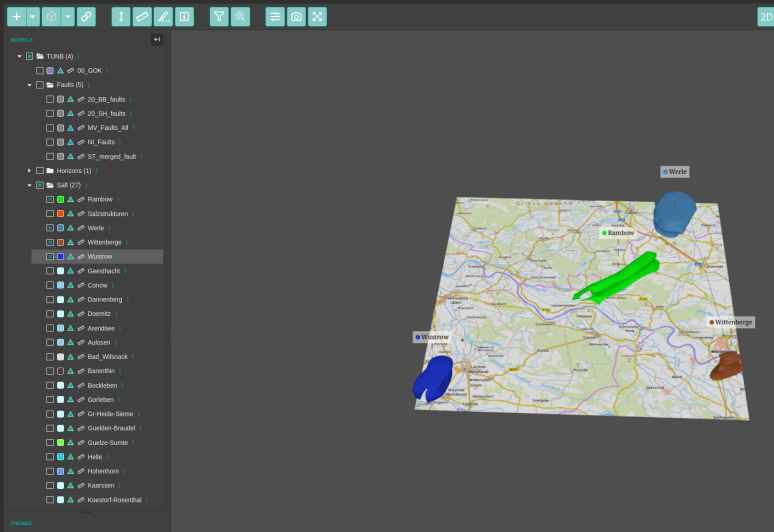


Figure 7: Surfaces in GST Web

Demo with QGIS

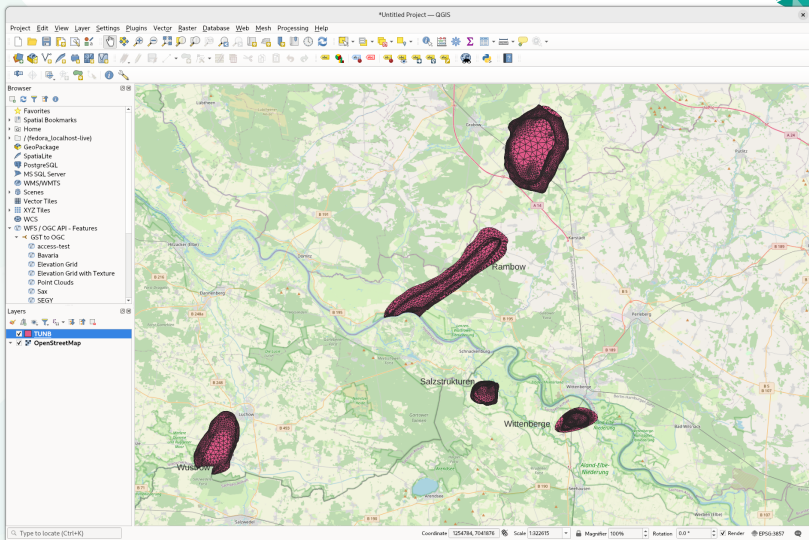


Figure 8: Surfaces in QGIS



The screenshot shows the QGIS desktop application. The main map area displays a satellite-style map of Bavaria, Germany. A red polygon is drawn on the map, and several black points are scattered across the region. The 'Layers' panel on the left shows the following layers: TUNB (checked), Bavaria (checked), Point Clouds (unchecked), and OpenStreetMap (checked). The 'Identify Results' panel on the right is open, showing the following table:

Feature	Value
oname	Rainbow
+ Deriv...	
+ Actio...	
id	Rainbow
Color	a: 1, b: 0.875, g: 0.875, r: 0.875
m_gid	2525
modf...	4
oname	Rainbow

At the bottom of the QGIS window, the status bar shows the following information: Coordinate: 12.632, 54.075; Scale: 1:322304; Mapfilter: 100%; Rotation: 0.0°; Render: OGC:CRS4.

Figure 9: Attributes in QGIS

Potential Problems



- ▶ How to represent non-native geometry types [SGrid, Voxet, TIN]
- ▶ Large Datasizes
- ▶ Mixed feature classes
- ▶ Spatial distributed properties

Roadmap



- ▶ Implementation of 3d Geovolumes API and Styles API with HLNUG [Hesse]
- ▶ Allows to expose stored geometries as 3D tiles for visualisation purposes
- ▶ Looking for partners to implement other API parts
- ▶ Great potential for:
 - ▶ Exposing data as stored in the database
 - ▶ Exposing data transformed in a more fitting representation
 - ▶ Write back modifications from consumer to GST [Requires draft extensions to standardised parts of the API]