



GiGa
infosystems

GST User Meeting 2026



Webex Meetings

- * Everyone is muted by default
- * We welcome to see your face, but it is not a must
- * Raise your hand if you want to ask an immediate questions
- * Use “Questions & Answers” or “Chat” to ask a general question; will be answered later
- * Easy chat/Further questions during break



Disclaimer

- * We are not geologists/geoscientists, we may use wrong terms
- * We demonstrate with possibly wrong examples here and there
- * We are happy if you correct us or provide us with real data we can use and show [even publicly]
- * We can provide guidance to achieve nice results with your data, don't hesitate to ask



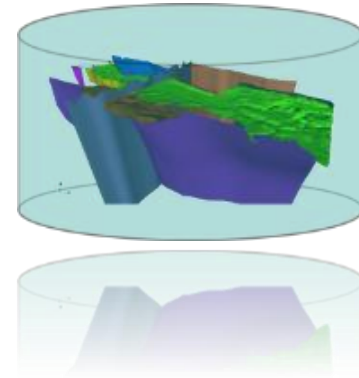
Agenda

- * 9.00 – 11.00 Developments of 2025, Paul Gabriel



GiGa infosystems

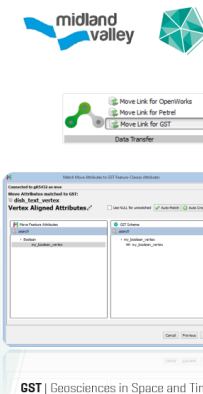
- * Team of 10
[3 Backend, 1.5 Desktop, 4 Web, 0.5 DevOps]
- * **Oracle Partner, GIS Award**
- * Cooperation with
 - * TU Bergakademie Freiberg
 - * Petex [MOVE]



In [app plugin](#)

Move link to GST

- * Direct save/load models to GST
- * define Project Extents to be used for the current session
- * work with features from GST (retrieve, lock/unlock, save edits, upload and delete)
- * view a summary of work undertaken during the session





Developments in 2025

- * 336 Bugs fixed
- * 297 Improvements/Tasks
- * 146 New Features
- * 2 GST Releases



Developments in 2025

- * Geotest, SaaS
- * Schweizer Salinen AG, SaaS in Switzerland
- * Schleswig-Holstein, via LBEG
- * Hamburg, via LBEG
- * LBGR, SaaS

SCHWEIZER
SALINEN
SALINES
SUISSES

GEOTEST

SH 
Schleswig-Holstein
Der echte Norden





Developments in 2025

- * Main developments with HLNUG, nagra and Saline:
 - * **OGC API Features**
 - * **Borehole rights, Borehole log rights**
 - * **Boreholes as 3d Tiles and GeoJSON**
 - * **SEGY Upload improvements**
 - * **Regular SGrid slicing**

SCHWEIZER
SALINEN
SALINES
SUISSES

nagra

HLNUG
Für eine lebenswerte Zukunft



Developments in 2025

- * Main developments with swisstopo:
 - * **“Polygon” support**
 - * **“Polygon” triangulation**
 - * **Profile export in paper space**
 - * **Profile export formats**
 - * **Profile filtering**
 - * **Ribbon style faults in 3d exports**
 - * **GST Desktop improvements**
 - * **GTT revamp**
 - * **OGC API Processes**
 - * **Kubernetes support**



Developments in 2025

- * Main developments with LfU Bavaria and LBGR Brandenburg:
 - * **Improved Error messages**
 - * **Borehole download as CSV and LAS**
 - * **Borehole log download as LAS**
 - * **Proxy capabilities when connecting to GST**

Bayerisches Landesamt für
Umwelt





Developments in 2025

- * Main developments with LBEG Niedersachsen and LAGB Sachsen-Anhalt:
 - * **Improvements with display of solids**
 - * **Download of arbitrary additional data**
 - * **Download of linked features**
 - * **Dynamic Coloring of Voxets and SGrids**
 - * **Use of Regions for Voxets and SGrids**





Developments in 2025

* GiGa:

- * **Move to Gitlab as source management**
- * **Releases will be at new location**
- * **Working in 3 week sprints**
- * **Performance improvements for less RAM use**
- * **Faster loading times of GST Web**
- * **Better loading of larger geometries (100s MB – 2 GB)**
- * **More general approach to Shape collections**
- * **2865 Web Tests, 31% Coverage**
- * **9039 Backend Tests, 80% Cov**
- * **148 Desktop Tests**

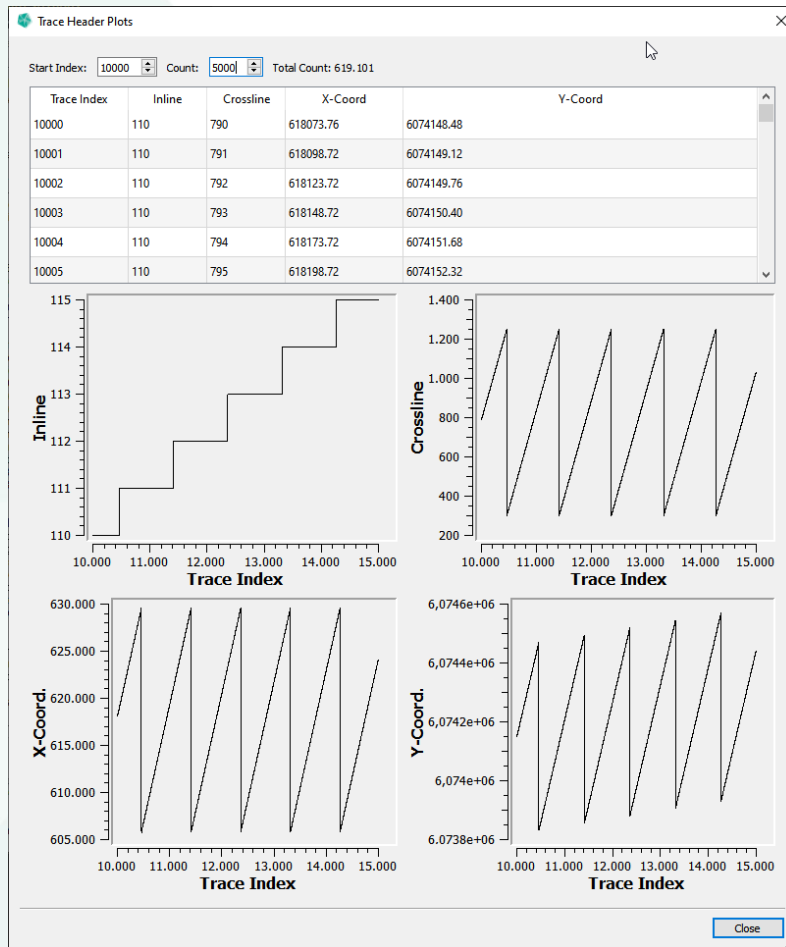


Developments in 2025 – GST[AR]

- * Improvements QR Code support
- * AppClips for iOS
 - * Allow for scanning QR codes and view models without installing GST[AR] prior only (iOS)
- * Treasure hunt at Geo4Göttingen 2025



Improved SEGY Upload



- * Detailed geometric information per trace
- * Plots allowing to visually correlate geometry
- * Provides hint if SEGY import options have been set correctly



Distinct column for owners

GST Desktop 3.16.3 - Test - paul

Connect Feature Selection Models Commits Logs

Sel	Feature Class Owner	Feature Class Name	Geometry Type	SRS	Feature Count	
7	<input type="checkbox"/> EVERYBODY	seg3d_smeaheia	Segy3D	EPSG:25831 (ETRS8...	1	trace_data: float 4 bytes
8	<input type="checkbox"/> EVERYBODY	silly-lines	Line	EPSG:31469 (DHDN...	1063	-
9	<input type="checkbox"/> EVERYBODY	silly-textures	TIN	EPSG:31469 (DHDN...	4	tex_u: float 8 bytes, tex_v: float 8 bytes
10	<input type="checkbox"/> EVERYBODY	smeaheia_surfaces	TIN	EPSG:25831 (ETRS8...	10	-
11	<input type="checkbox"/> EVERYBODY	solid-normals	Solid	EPSG:31469 (DHDN...	1	liag_temperatur_max_ergebnis: float 8 bytes, liag_temperatur_me...
12	<input type="checkbox"/> EVERYBODY	test-theme	TIN	EPSG:4647 (ETRS89 ...	5	-
13	<input type="checkbox"/> paul	access-test-class	TIN	EPSG:4647 (ETRS89 ...	5	-
14	<input type="checkbox"/> paul	belgien	TIN	EPSG:31370 (BD72 / ...	39	-
15	<input type="checkbox"/> paul	belgien_vo	Grid	EPSG:31370 (BD72 / ...	1	litho_code: float 4 bytes
16	<input type="checkbox"/> paul	belgien-vo-2	Grid	EPSG:31370 (BD72 / ...	1	basisgrind_aanw: float 4 bytes, dst: float 4 bytes, dst_zand: float 4
17	<input type="checkbox"/> paul	boreholes_plane	TIN	EPSG:31468 (DHDN...	1	-
18	<input type="checkbox"/> paul	el_text	Elevation Grid	EPSG:4326 (WGS 84)	3	tex_u: float 8 bytes, tex_v: float 8 bytes
19	<input type="checkbox"/> paul	faulted_sgrid	Structured Grid	EPSG:4647 (ETRS89 ...	1	cell_volume_correction_factor: float 8 bytes, fault_blocks: float 8 b
20	<input type="checkbox"/> paul	grid_for_tests	Grid	EPSG:31469 (DHDN...	1	cooper: float 8 bytes, gold: float 8 bytes, lead: float 8 bytes, silver:
21	<input type="checkbox"/> paul	gs	Elevation Grid	EPSG:4647 (ETRS89 ...	2	prop_u: float 8 bytes, prop_v: float 8 bytes
22	<input type="checkbox"/> paul	gs_tex	Elevation Grid	EPSG:4647 (ETRS89 ...	2	tex_u: float 8 bytes, tex_v: float 8 bytes
23	<input type="checkbox"/> paul	gstr-910-bavaria	Segy2D	EPSG:31468 (DHDN...	12	trace_data: float 4 bytes vector
24	<input type="checkbox"/> paul	gstr-910-lgb	Segy2D	EPSG:31467 (DHDN...	3	trace_data: float 4 bytes vector
25	<input type="checkbox"/> paul	gstr-910-smeheia	Segy2D	EPSG:23031 (ED50 / ...	3	trace_data: float 4 bytes vector
26	<input type="checkbox"/> paul	gtsup-557	Segy2D	EPSG:25831 (ETRS8...	2	trace_data: float 4 bytes vector
27	<input type="checkbox"/> paul	gtsup-646	Structured Grid	EPSG:25832 (ETRS8...	1	cell_volume_correction_factor: float 4 bytes, dens1: float 4 bytes, r

Add Feature Class ... Update Feature (key required) Theme [Native] Refresh

Ready.



Commit search

GST Desktop 3.16.3 - Test - paul

Connect Feature Selection Models **Commits** Logs

Message: After: 08.07.2020 17:13 Before: 06.03.2026 09:03

Case Sensitive ? for a single, * for a 0..n character wildcard

Active	Commit date	Message	Commit Key	User
<input checked="" type="checkbox"/>	2023-03-15T09:...	mass profile im...	118	paul
<input type="checkbox"/>	2023-03-15T09:...	mass profile im...	117	paul
<input type="checkbox"/>	2023-03-15T09:...	mass profile im...	116	paul
<input type="checkbox"/>	2022-11-03T14:...	mass profile im...	95	paul
<input type="checkbox"/>	2022-11-03T10:...	mass profile im...	94	paul
<input type="checkbox"/>	2022-11-03T10:...	mass profile im...	93	paul
<input type="checkbox"/>	2022-10-27T08:...	mass profile im...	84	paul
<input type="checkbox"/>	2022-10-27T07:...	mass profile im...	83	paul
<input type="checkbox"/>	2022-10-27T07:...	mass profile im...	82	paul
<input type="checkbox"/>	2022-10-27T07:...	mass profile im...	81	paul
<input type="checkbox"/>	2022-10-27T07:...	mass profile im...	80	paul
<input type="checkbox"/>	2022-10-27T07:...	mass profile im...	79	paul

```
ps5526cc_cd class profile200_fixed_exagg (309)
ps5534cc_ab class profile200_fixed_exagg (310)
ps5534cc_cd class profile200_fixed_exagg (311)
ps6318cc_ab class profile200_fixed_exagg (312)
ps6326cc_ab class profile200_fixed_exagg (313)
ps7134cc_ab class profile200_fixed_exagg (314)
ps7142cc_ab class profile200_fixed_exagg (315)
ps7142cc_cd class profile200_fixed_exagg (316)
ps7934cc_ab class profile200_fixed_exagg (317)
ps7934cc_cd class profile200_fixed_exagg (318)
ps7942cc_ab class profile200_fixed_exagg (319)
ps8718cc_ab class profile200_fixed_exagg (320)
```

Commit: 118
mass profile import

Edit Message

Ready.



Commit search

GST Desktop 3.16.3 - Test - paul

Connect Feature Selection Models **Commits** Logs

Message: After: Before:

mass [X] 02.11.2022 17:13 30.12.2022 09:03

Case Sensitive | ? for a single, * for a 0..n character wildcard

Active	Commit date	Message	Commit Key	User
<input checked="" type="checkbox"/>	2022-11-03T14:...	mass profile im...	95	paul
<input type="checkbox"/>	2022-11-03T10:...	mass profile im...	94	paul
<input type="checkbox"/>	2022-11-03T10:...	mass profile im...	93	paul

ps7942cc_ab_lin class profiles200_fixed_bbox (218)
ps8726cc_ab_lin class profiles200_fixed_bbox (219)
ps8734cc_ab_lin class profiles200_fixed_bbox (220)
ps8718cc_ab_lin class profiles200_fixed_bbox (221)
ps7934cc_ab_lin class profiles200_fixed_bbox (222)
ps7934cc_cd_lin class profiles200_fixed_bbox (223)
ps7142cc_ab_lin class profiles200_fixed_bbox (224)
ps7134cc_ab_lin class profiles200_fixed_bbox (225)
ps6326cc_ab_lin class profiles200_fixed_bbox (226)
ps6318cc_ab_lin class profiles200_fixed_bbox (227)
ps5534cc_ab_lin class profiles200_fixed_bbox (228)
ps5534cc_cd_lin class profiles200_fixed_bbox (229)

Commit: 95
mass profile import

Edit Message

Ready. [System Icons]



Commit filter

GST Desktop 3.16.3 - Test - paul

Connect Feature Selection Models Commits Logs

Sel	Feature Class Owner	Feature Class Name	Geometry Type	SRS	Feature Count
<input type="checkbox"/>	paul	lgb-segy	Segy2D	EPSG:31467 (DHDN...	13
<input type="checkbox"/>	paul	line_with_prop	Line	EPSG:31469 (DHDN...	1
<input type="checkbox"/>	paul	line-collection	Line	EPSG:31468 (DHDN...	1
<input type="checkbox"/>	paul	microseismics	Point	EPSG:4326 (WGS 84)	3
<input type="checkbox"/>	paul	microseismics-2	Point	EPSG:4326 (WGS 84)	2
<input type="checkbox"/>	paul	nagra-time-pl	Line	EPSG:21781 (CH190...	0
<input type="checkbox"/>	paul	nagra-time-ts	TIN	EPSG:21781 (CH190...	0
<input type="checkbox"/>	paul	objtin_sgrid	TIN	EPSG:4647 (ETRS89 ...)	0
<input type="checkbox"/>	paul	orte	Point	EPSG:31469 (DHDN...	1
<input type="checkbox"/>	paul	orte2	Line	EPSG:31469 (DHDN...	1
<input type="checkbox"/>	paul	pointclouds	Point	EPSG:4326 (WGS 84)	1
<input type="checkbox"/>	paul	point-collection	Point	EPSG:31469 (DHDN...	1
<input checked="" type="checkbox"/>	paul	profile200_fixed_exagg	Profile	EPSG:31468 (DHDN...	14
<input type="checkbox"/>	paul	profiles	Profile	EPSG:25832 (ETRS8...	7
<input type="checkbox"/>	paul	profiles2	Profile	EPSG:31468 (DHDN...	2
<input checked="" type="checkbox"/>	paul	profiles200	Profile	EPSG:31468 (DHDN...	14
<input checked="" type="checkbox"/>	paul	profiles200_fixed_bbox	Profile	EPSG:31468 (DHDN...	14
<input type="checkbox"/>	paul	pt-cloud2	Point	EPSG:4326 (WGS 84)	2
<input type="checkbox"/>	paul	radon	Structured Grid	EPSG:25832 (ETRS8...	1
<input type="checkbox"/>	paul	resqmltest	Structured Grid	EPSG:25831 (ETRS8...	2
<input type="checkbox"/>	paul	sax	TIN	EPSG:31469 (DHDN...	14
<input type="checkbox"/>	paul	sax_constrained_color	TIN	EPSG:31469 (DHDN...	14
<input type="checkbox"/>	paul	sax_f	TIN	EPSG:31469 (DHDN...	14
<input type="checkbox"/>	paul	segy_nag	Segy3D	EPSG:21781 (CH190...	1

Global Selection

- ps5526cc_cd
- ps5534cc_ab
- ps5534cc_cd
- ps6318cc_ab
- ps6326cc_ab
- ps7134cc_ab
- ps7142cc_ab
- ps7142cc_cd
- ps7934cc_ab
- ps7934cc_cd
- ps7942cc_ab
- ps8718cc_ab
- ps8726cc_ab
- ps8734cc_ab

Selected Features: 42

GOCAD ASCII (.vs,.pl,.ts,.so,.vo,.sg)

Options

Feature Query

Feature Class Filter

Feature Attribute Filter

Commit Filter (active)

mass

Case Sensitive

? for a single, * for a 0..n character wildcard

Select only the features that belong to commits whose messages match the entered value.

Spatial Filter

Filter Features

Manage Filters

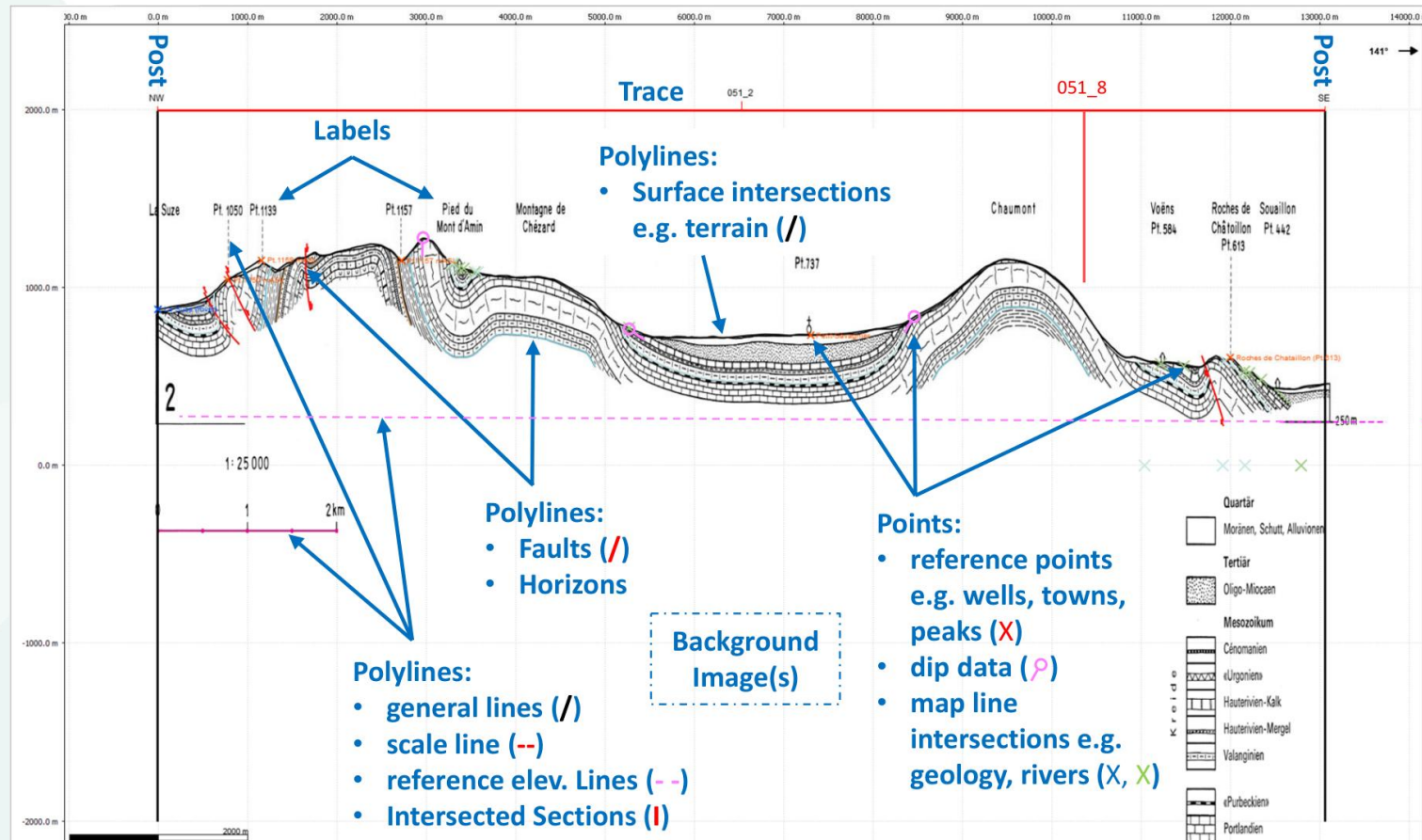
Ready.

Variable Geometry Types for Profiles



- * **GST** can manage Geological Profiles
- * Profiles are a distinct feature type in **GST**
- * Assign arbitrarily sub-types
- * Current sub-types are
 - * Points
 - * Lines
- * Store images on Profiles
- * Can be set as required

Variable Geometry Types for Profiles



Created by Lance Reynolds, swisstopo

Variable Geometry Types for Profiles



gstsup-650 Add Feature class

Manage Subfeatures

Name	Type	Image	Required
1 Position Line	Lineset	true	true
2 Horizon	Lineset	false	false
3 Faults	Lineset	false	false
4 Citites	Pointset	false	false

Define Subfeature

Name: original_image

Type: Lineset

Image:

Required:

OK Cancel

remove add remove add

Restore from template ... Save as template ... OK Cancel

“Polygon” Support

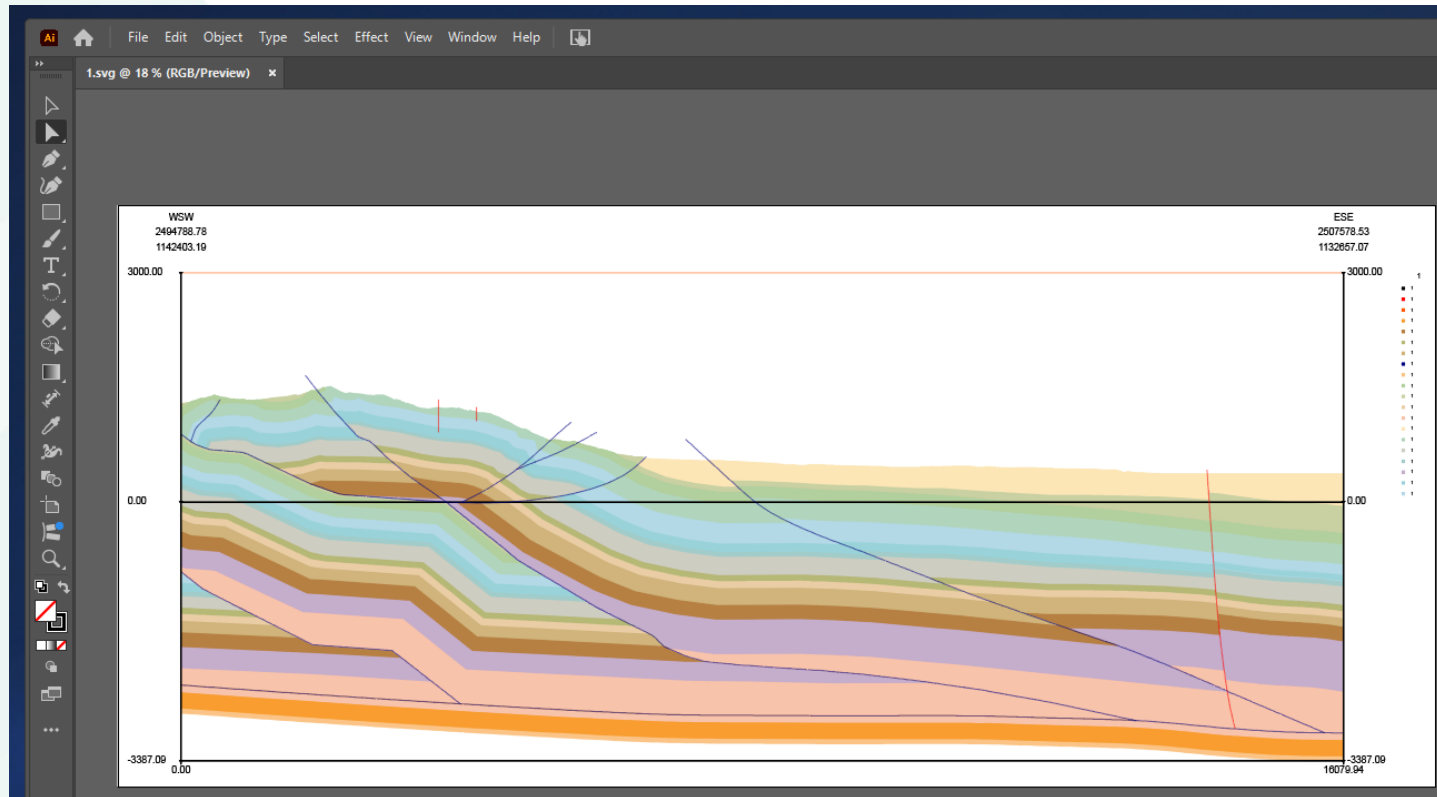


- * Closed Lines with Feature Attribute `shapetype` and value `polygon`
- * Need some triangulation for 3d export formats, especially 3d tiles
- * Closed surfaces in 2d export: SVG



Profile Export – 2d

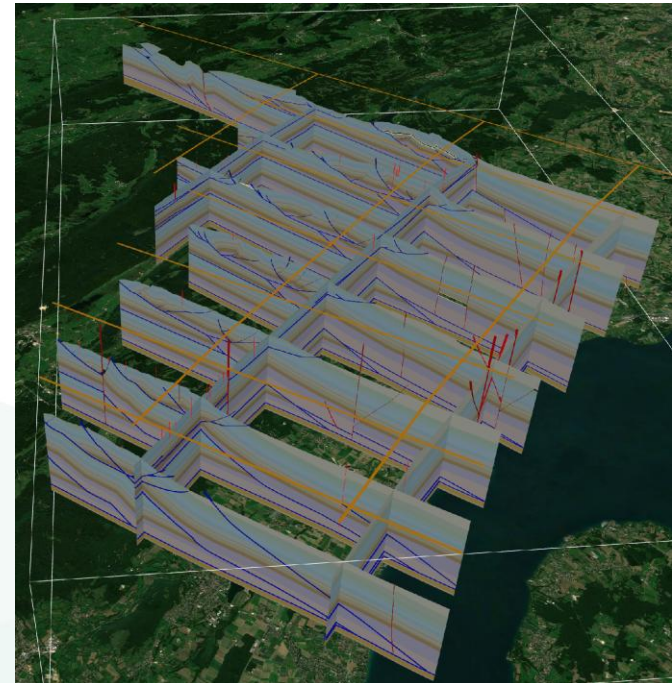
- * Respect special lines
- * Respect `shapestyle`, e.g. Dashed lines



Profile Export – 3d



- * Triangulation in for 3d formats
- * Faults as Ribbons
- * New formats: 3dtiles, 3d geopackage

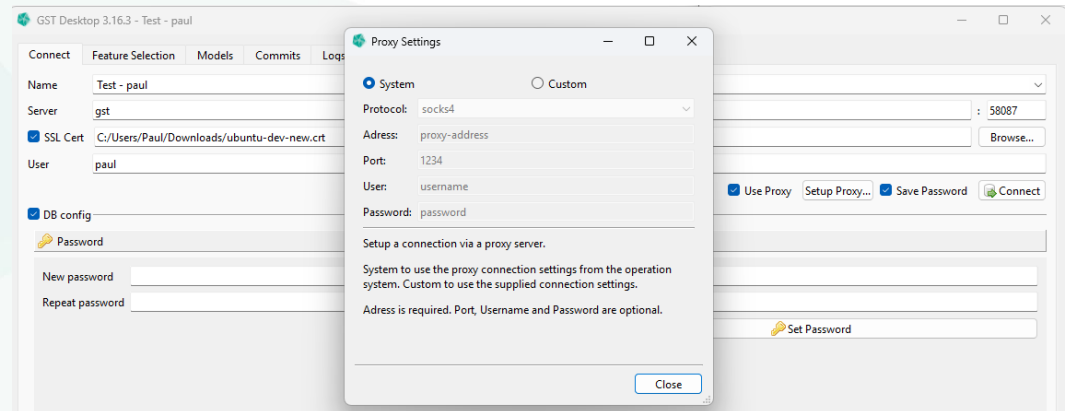


Created by Lance Reynolds, swisstopo



Proxy Settings for GST

- * Can use system proxies
- * Can use custom proxy settings
- * Tunnels GST Desktop traffic
- * Easier in some corporate environments
- * Supports socks4, socks5, http and https
- * Supports credentials



Borehole rights and downloads



- * Boreholes can be restricted to GST users, GST Groups, GST Webusers
- * Borehole logs can be restricted too
- * Allows for visible borehole but hidden [e.g. confidential] borehole logs
- * Boreholes and Borehole Logs can be downloaded as LAS and CSV
- * Borehole Download right has to be granted on GST Webusers



Borehole rights and downloads

Download Boreholes

SELECT BOREHOLES (4231650)

LOG FILES (1194)

Select the borehole logs to be included in the download files.

CAL

Do you want to download the measurements from the original LAS files?

Include original log files

DOWNLOAD

Your file was created and can be downloaded [here](#).

Prepare ZIP File

```
strat-litho.las
Datei Bearbeiten Ansicht
~VERSION INFORMATION
#NMN. DATA : DESCRIPTION
#-----
VERS. 2.0 : CHLS LOG ASCII STANDARD -VERSION 2.0
WRAP. NO : ONE LINE PER DEPTH SEP
~WELL INFORMATION
#NMN.UNIT DATA : DESCRIPTION
#-----
STRT.M 0 : START DEPTH
STOP.M 876.7 : STOP DEPTH
STEP.M 0.1 : STEP
NULL. -999.25 : NULL VALUE
COMP. : COMPANY
WELL. CHANTRY_WOOD_(WARKS)_BH : WELL
FLD. : FIELD
LOC. EPSG:27700 425803,283703, elevation 171.3 : LOCATION
CNTY. : COUNTY
STAT. : STATE
CTRY. : COUNTRY
SRVC. : SERVICE COMPANY
DATE. : DATE
UNIT. 4806 : UNIQUE WELL ID
~CURVE INFORMATION
#NMN .UNIT : DESCRIPTION
#-----
```

GTT Revamp



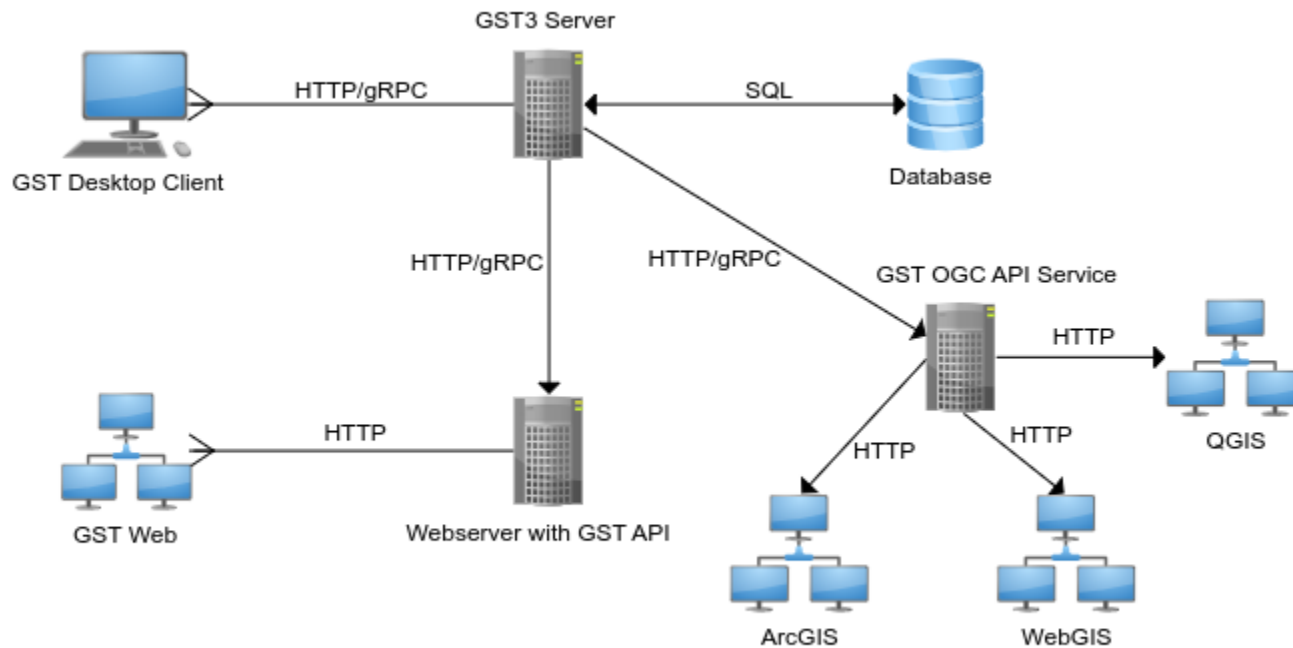
- * Old GTT did not work on all systems, was not reproducible
- * New GTT with more Rust and better frontend framework
- * Removal of unneeded functionality
- * Comes with Stable API, thus backwards compatible from 3.17 on
- * Integration of new feature types:
 - * SEGY
 - * Grids
 - * Profiles

OGC API



- * Allows providing standard way to access 3d data
- * Multiple Modules
 - * Features
 - * Styles
 - * Volumes
 - * Processes
- * Tested in Cesium environments with Kassel and Darmstadt

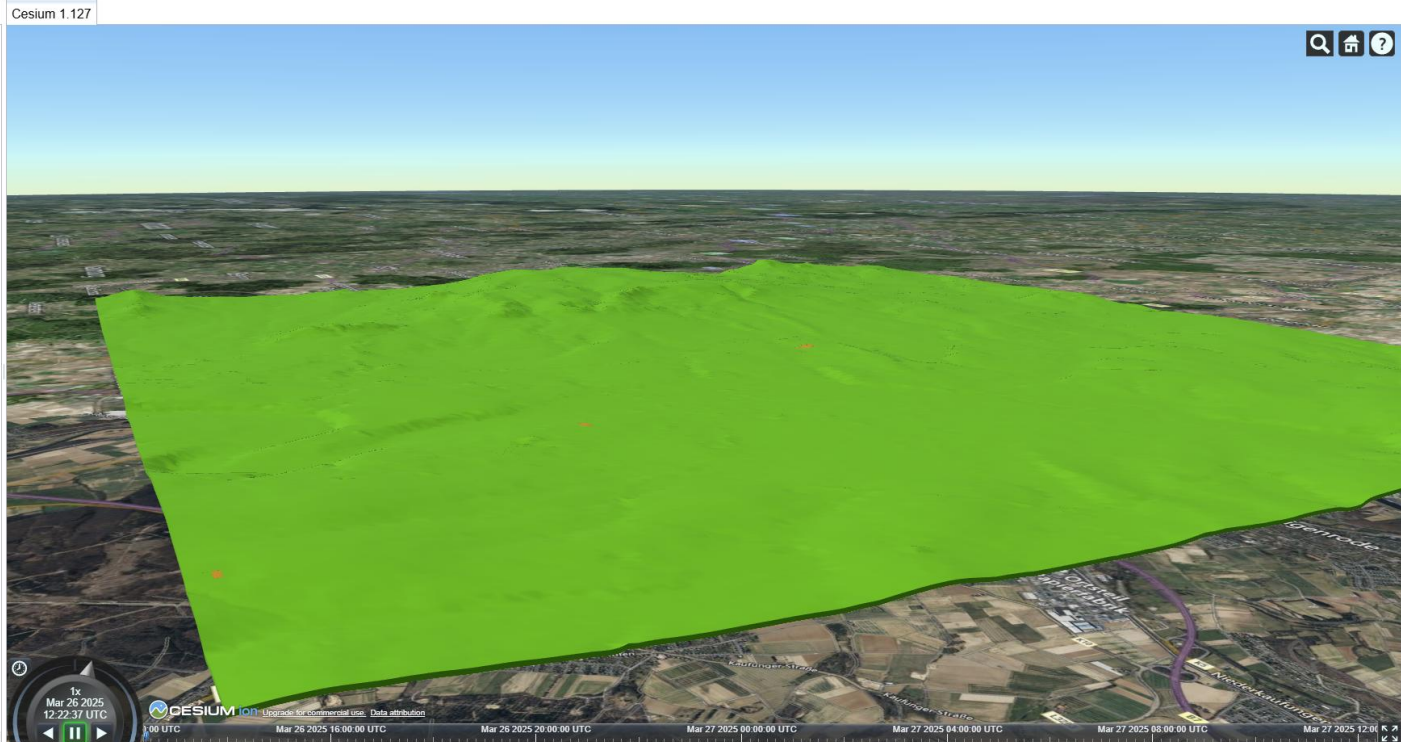
OGC API



OGC API Volumes



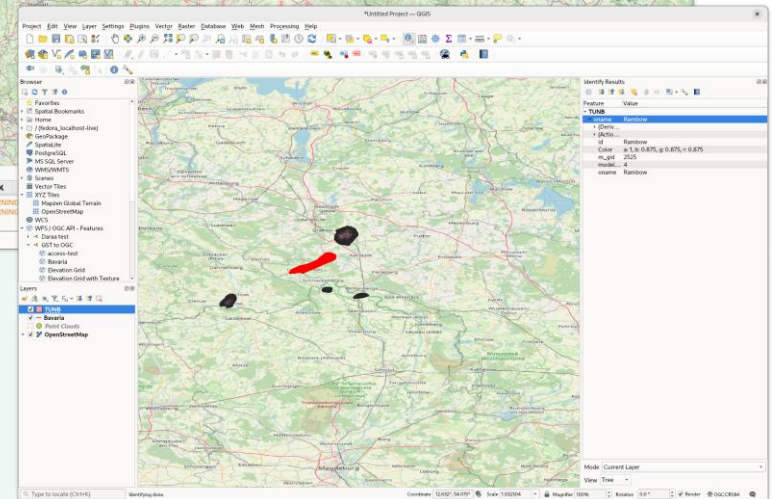
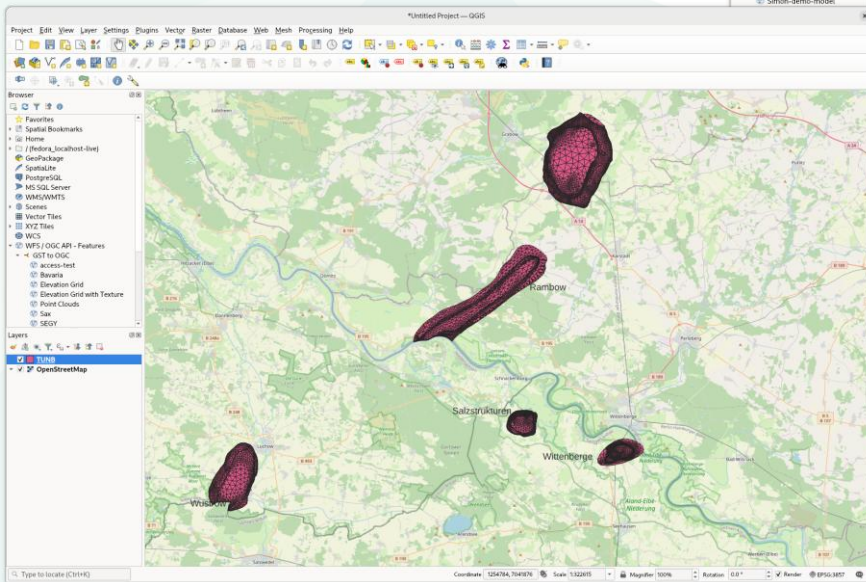
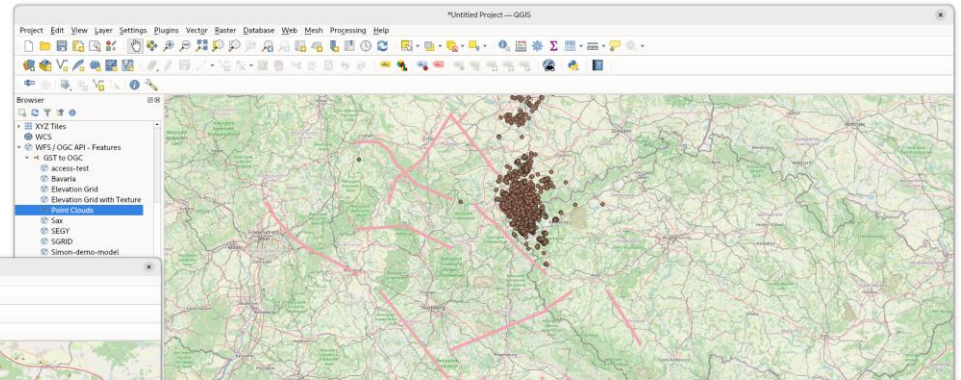
```
JavaScript code HTML body & CSS
1
2
3
4 const viewer = new Cesium.Viewer("cesiumContainer", {
5 // This is a global 3D Tiles tileset so disable the
6 // globe to prevent it from interfering with the data
7 //globe: false,
8 // Disabling the globe means we need to manually
9 // re-enable the atmosphere
10 skyAtmosphere: new Cesium.SkyAtmosphere(),
11 // 2D and Columbus View are not currently supported
12 // for global 3D Tiles tilesets
13 sceneModePicker: false,
14 // Imagery layers are not currently supported for
15 // global 3D Tiles tilesets
16 baseLayerPicker: false,
17 // Use the Google geocoder instead of Bing
18 //geocoder: Cesium.IonGeocoderProviderType.GOOGL,
19 });
20
21 try {
22 //const tileset = await Cesium.Cesium3DTileset.fromIonAssetId(2275207);
23 //viewer.scene.primitives.add(tileset);
24
25 const layer = viewer.imageryLayers.addImageryProvider(
26   await Cesium.IonImageryProvider.fromAssetId(3),
27 );
28
29 console.log("before 3d tiles load");
30 const tileset_giga = await Cesium.Cesium3DTileset.fromUrl(
31   "https://tiles.cesium.com/collections/762/styles/11"
32 );
33 console.log("after 3d tiles load");
34 viewer.scene.primitives.add(tileset_giga);
35
36 } catch (error) {
37   console.log(error);
38 }
39
```





OGC API Features

- WFS / OGC API - Features
 - GST to OGC
 - access-test
 - Bavaria
 - Elevation Grid
 - Elevation Grid with Texture
 - Point Clouds
 - Sax
 - SEGY
 - SGRID



OGC API Processes



- * First Process: Features Within Bounds - Download features from various sources inside the requested bounds
 - * GST
 - * STAC [SpatioTemporal Asset Catalog]
 - * WMS
 - * WMTS
 - * External Files
 - * FDSN1.2
- * Allows to create a dataset with auxiliary data without the need to duplicate data in GST
- * More Processes to come, e.g. Virtual Boreholes and Cross Sections

OGC API



- * Allows display Boreholes as 3d tiles and GeoJSON
- * Allows to create SGrid sections (intersections of the vertically shifted SGrid surface with the SGrid itself)

GST Web



- * More general approach to Shapefile collections -> general collections -> renaming in GST 3.18
- * Allows to create distinct features but only a single entry in the model tree
- * Increased Vertex count -> fewer requests -> faster visualization
- * Fast loading of GST Web in general
- * Improved performance especially for solids

GST Web



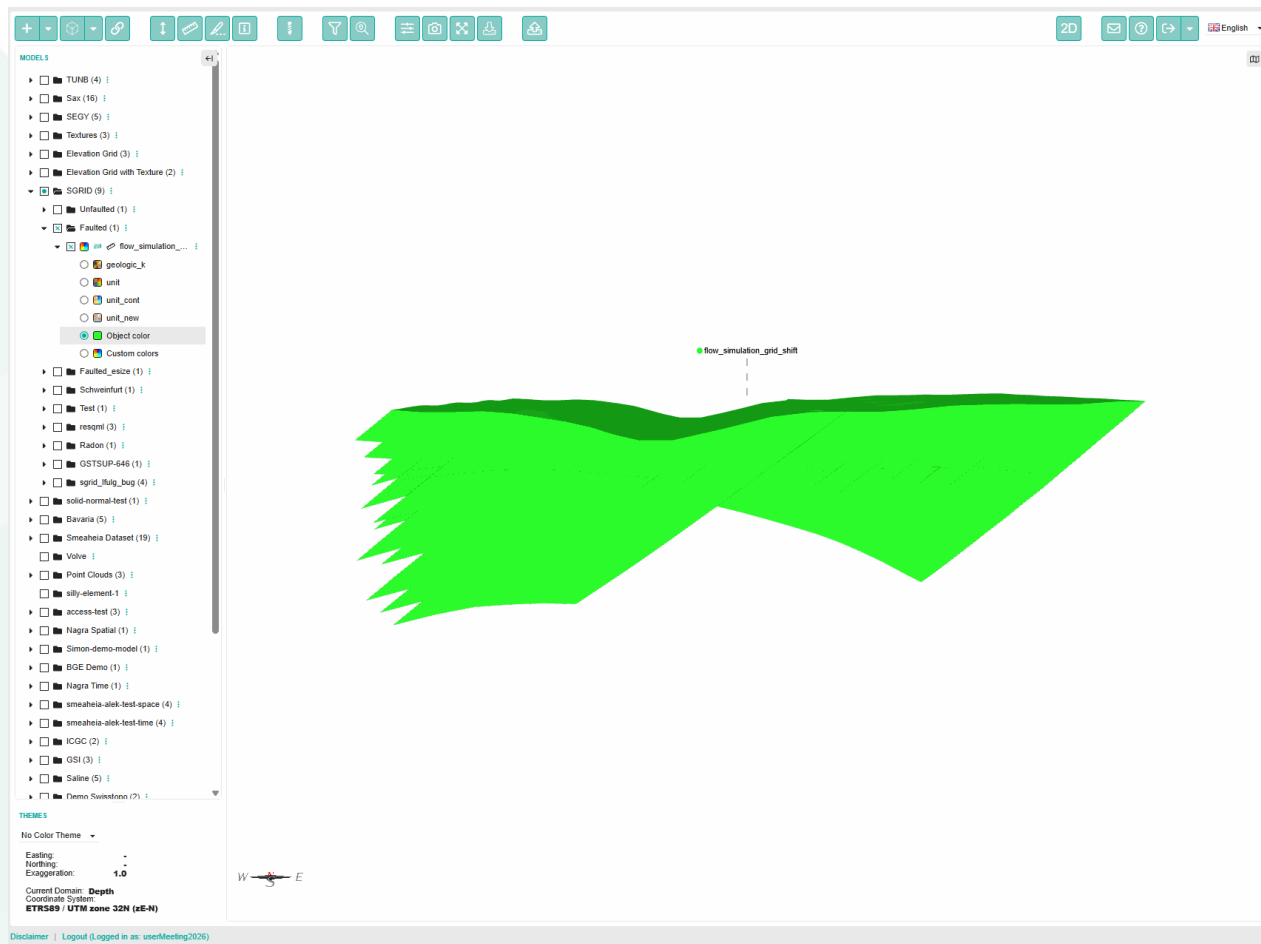
- * GST can link arbitrary data via `m_additional_download`, `m_replace_download` attributes
- * Data will be added to download file
- * Display less resolute geometry in GST web, make high resolution available for download
- * Allows for addition or replacement

GST Web – Regions and Dynamic Coloring



- * Dynamic coloring works with SGrids and Grids (Voxet)
- * Users can change colorization on the fly

GST Web – Regions and Dynamic Coloring





Questions?

Remarks?

Wishes?



Provisional Roadmap 2026

- * Desktop (pre)View tab (2D map±sections OR simple 3D)
- * Store colors on Points / Simplexes
- * SEG Y info Dialog
- * Multiple borehole classifications
- * More Dynamic coloring in GST Web
- * Predefined borehole filters



Provisional Roadmap 2026

- * Support of different borehole sets (shallow, deep, geothermal, etc pp)
- * Basic feature manipulation
 - * e.g. move 300m higher [$z = z + 300$]
- * Time slider for feature attributes
- * Time-Depth-Relation for boreholes
- * Option to display either depth or time domain models
- * Contourlines and colorization

- * Your input ...



Thank you!





Questions?

Remarks?

Wishes?

A decorative graphic in the top right corner consisting of several overlapping teal-colored triangles and polygons, creating a layered, geometric effect.

Thank you!

@ www.giga-infosystems.com

✉ info@giga-infosystems.com