GiGa infosystems

GST User Meeting 2023

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

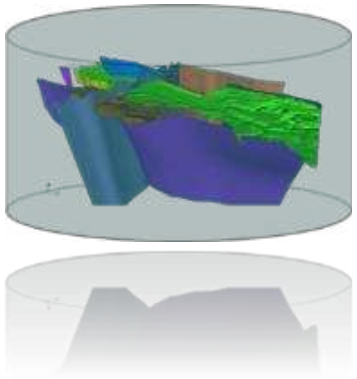
Disclaimer

* 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
* We can provide guidance to achieve nice results with your data, don't hesitate to ask

Agenda

* 9.00 – 10.15 Developments 2022, Paul Gabriel
* 10.20 – 10.35 Visualization of Earthquake focuses in GST Web, Sascha Görne, LfULG
* 10.40 – 11.00 GST [AR] for Android, Björn Wieczoreck
* 11.00 – 11.15 Break, Everyone
* 11.15 – 11.30 GST and geological profiles, Kathrin Dengler, Robert Pamer, BayLfU
* 11.35 – 12.30 Roadmap 2023/24, everyone

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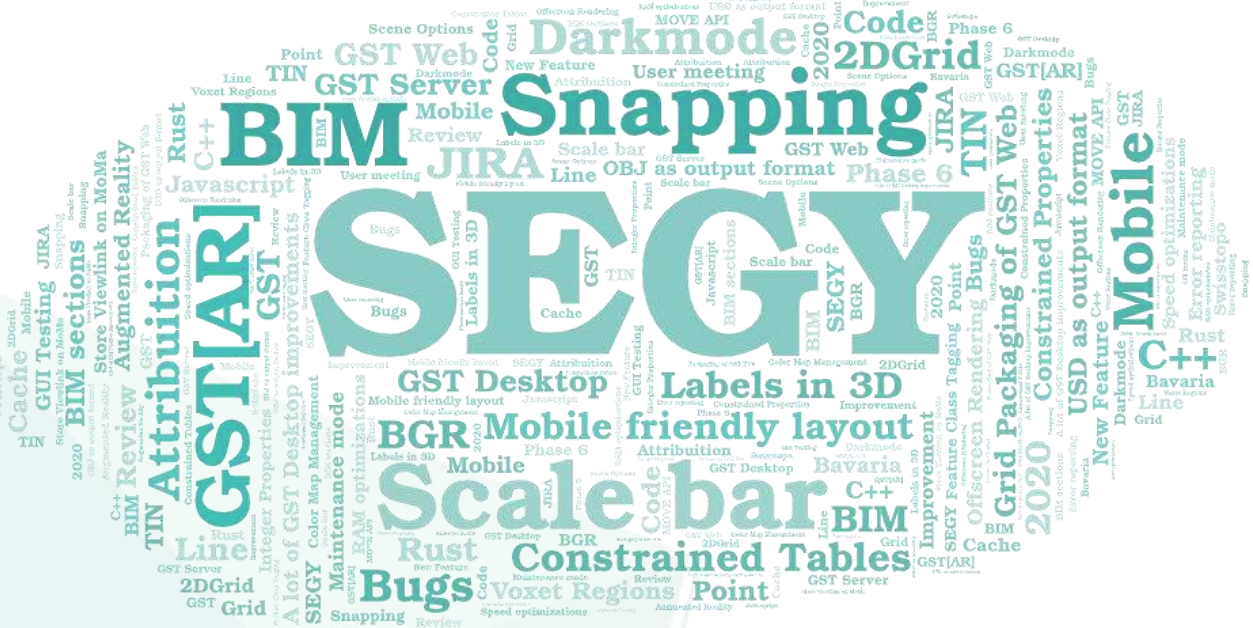


- Team of 8
  (3 Backend, 1.5 Desktop, 2 Web, 1 DevOps)
- **Oracle Partner, GIS Award**
- Cooperation with
  - TU Bergakademie Freiberg
  - Petex (MOVE)



Development GST 3 in 2022

* 629 Bugs fixed
* 374 Improvements
* 36 New Features
* 1.5 Releases



* 100 Issues closed in Servicedesk, 65 new ☹ (1 waiting for customer, 8 in progress)

Developments 2022

* Main developments with LfU Bavaria, swisstopo and LfULG Saxony:
  * **SEGY Writer**
  * **Extended Shapefile import**
  * **Display Boreholes in virtual cross sections**
  * **Correlation Plots**
  * **Use colors from joined tables**
  * **Pointcloud support**

Developments 2022

* Main developments with LfU Bavaria, swisstopo and LfULG Saxony:
  * **Improved OBJ export**
  * **Tiling options for exports**
  * **KML Export**
  * **Improved spatial queries**
  * **Discrete color legends**
  * **Overwrite feature colors from themes**

Developments 2022

- Main developments with LfU Bavaria, swisstopo and LfULG Saxony:
  - **glTF Export**
  - **GST[AR] on Android**
  - **Rewrite Webadmin**
  - **Performance improvements**
  - **Best SGrid Support in class**
  - **Penetration Test**



Developments 2022

* Main developments with LfU Bavaria, swisstopo and LfULG Saxony:
  * **Automatic audit of vulnerabilities**
  * **Speed up of a lot things under the hood**
  * **Open source contribution (actively maintaining three libraries for Rust)**
  * **Keeping up with Library Updates**

GST Desktop

* Improvements of the GUI
* Color Management
* New Download options and formats
* Improvements for spatial queries
* Transformation of non-constrained properties into a constrained property and vice versa

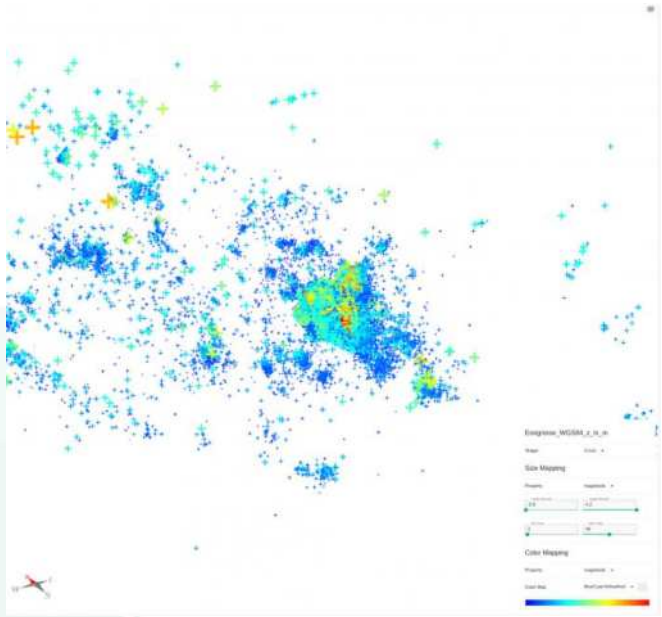
Speedup of common operations



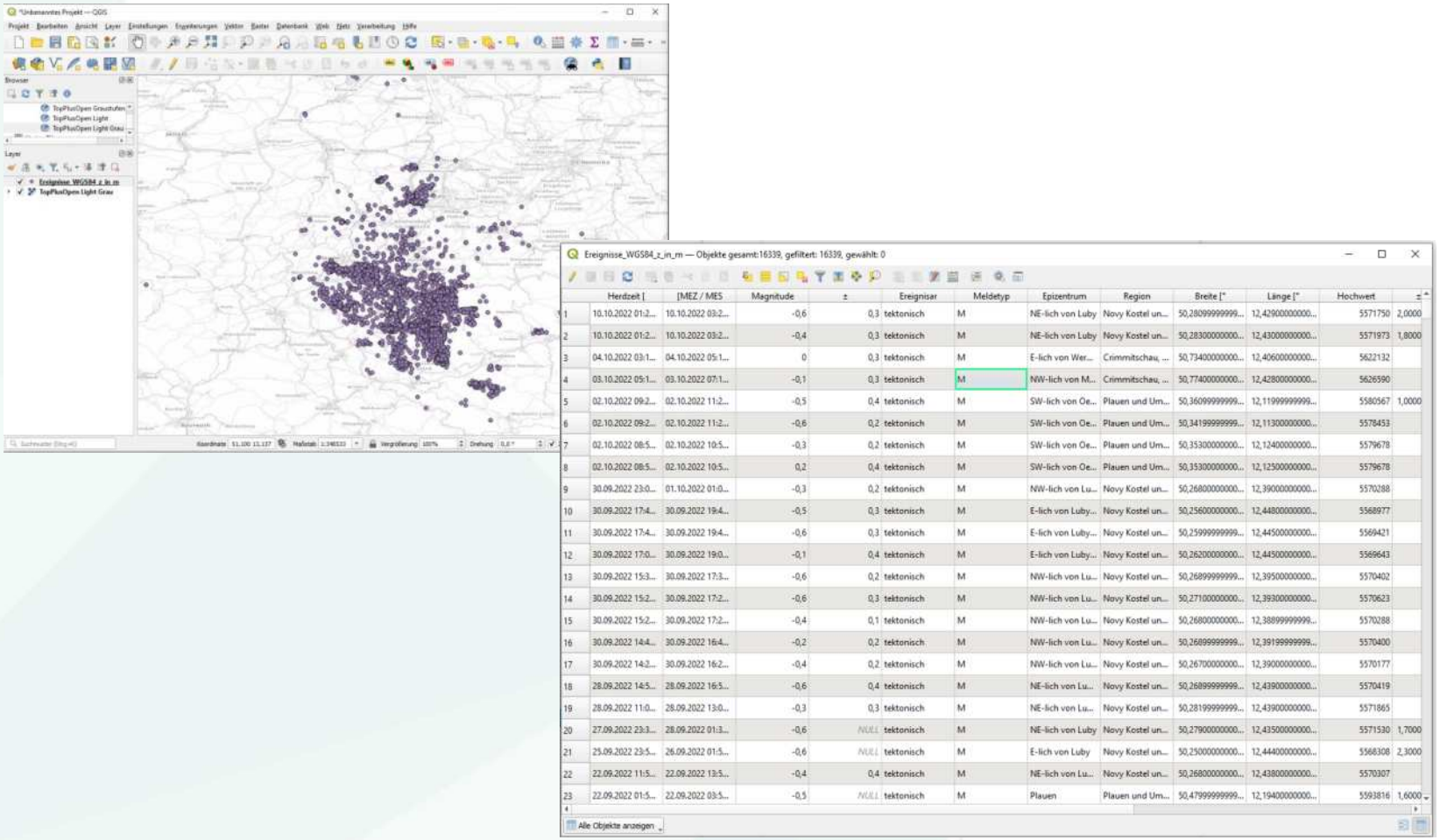
- We worked on improving the performance of some common operations:
  - Modeltree generation in GST Web
  - Feature Retrieval in GST Web
  - Network communication
- Furthermore, client- and serverside RAM usage has been optimized for certain operations (e.g. download of geometries).

Point cloud support

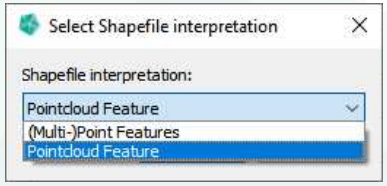
* Different interpretation of normal point sets
* Each point has attributes -> interpreted as simplex property
* On-the-fly colorization
* High performance in GST Web
* Sascha Görne will tell more about it
* Input can be Shapefile or Gocad ASCII

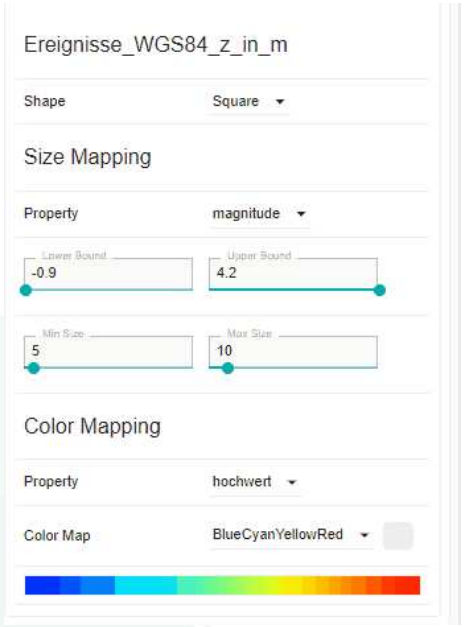


Point cloud support



Point cloud support





Color Management

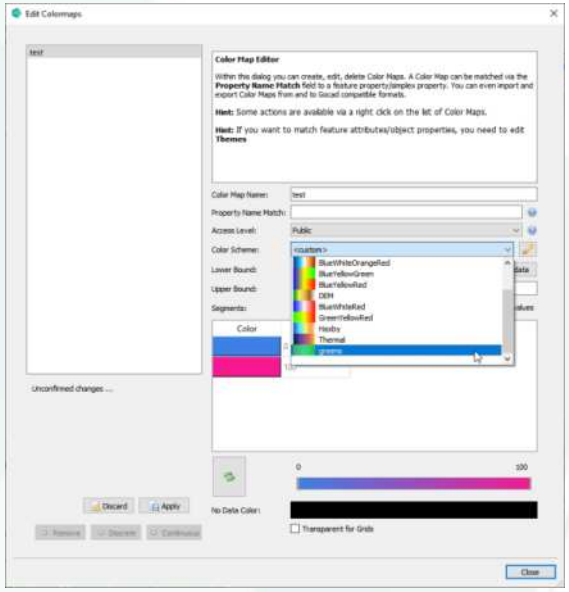


- More possibilities to manage colors and apply them to features
  - Color Schemes
  - Colors from joined tables
  - Improvements for Themes and Colormaps

Color Schemes

* Predefine discrete and continuous color schemes
* A template for actual color ramps
* Import and Export via Color Palette Table files (*.cpt)
* Allows for exchange with ESRI ArcGIS, Petex Move or QGIS and others







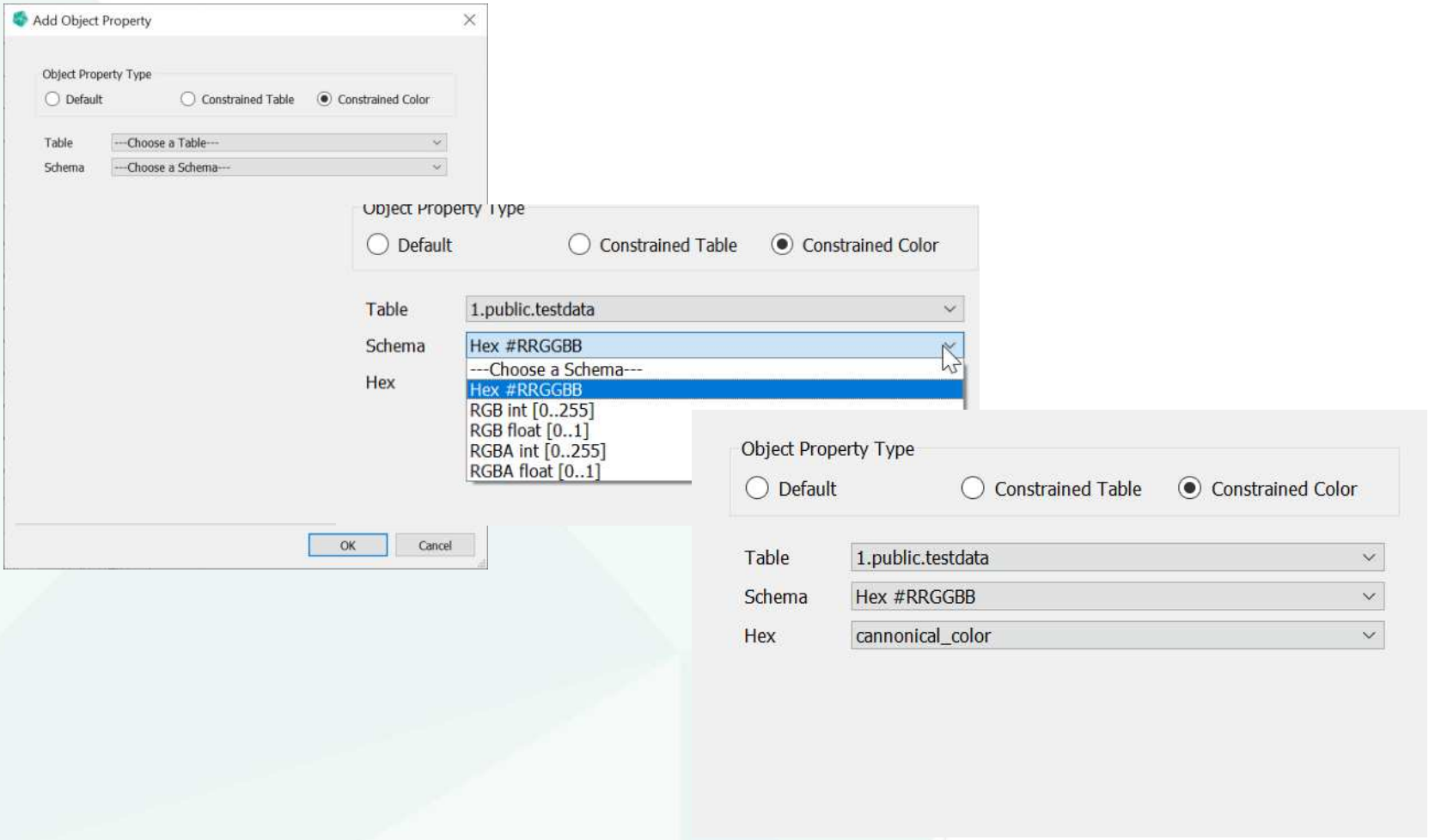
Colors from joined tables



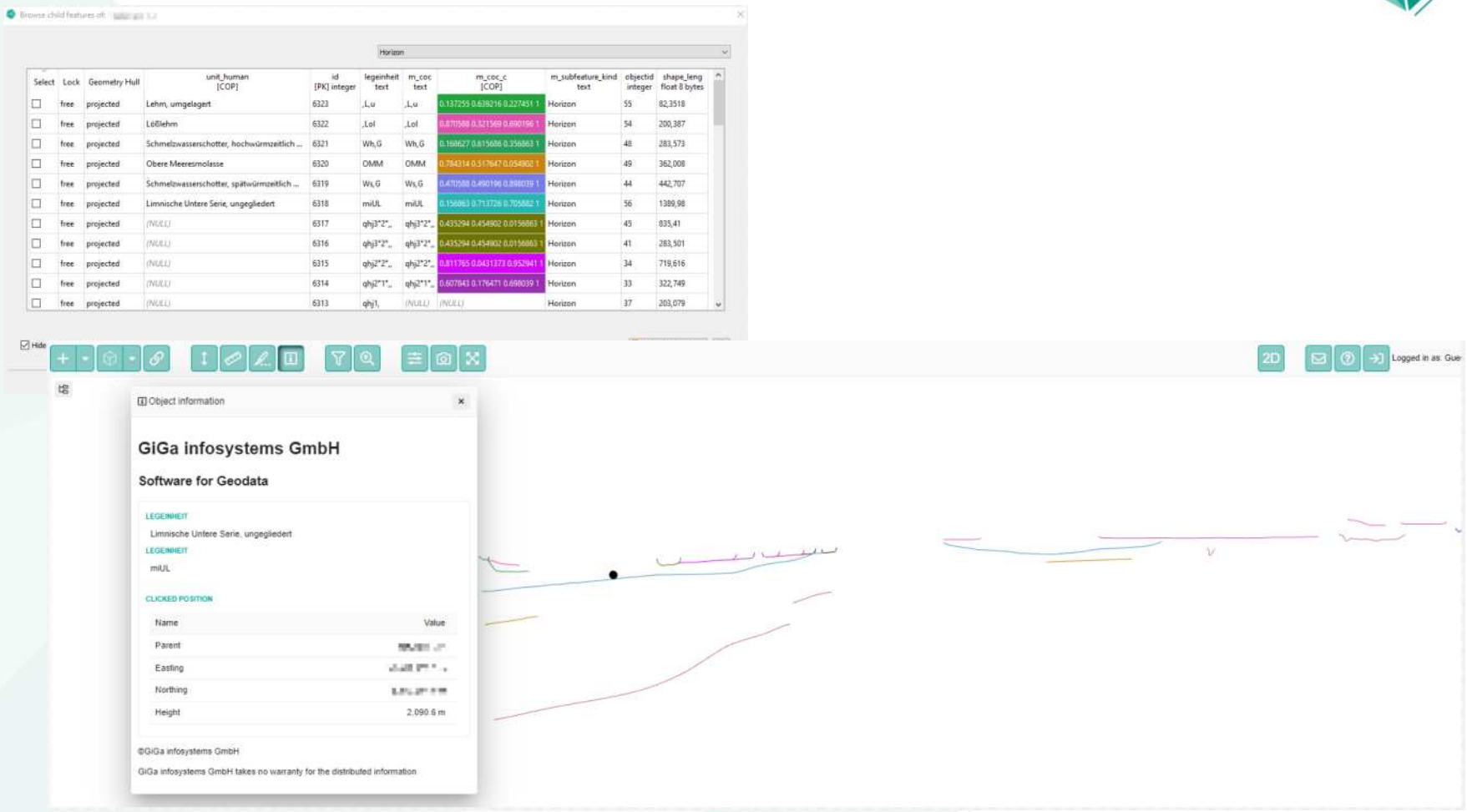
- Manage colors in other systems, not GST
- Reference colors in GST -> colorize according attribute
- Color format can be
  - Hexcode: #1bb1e
  - Three columns R, G, B in either
    - integers (0-255)
    - float (0-1)

	unit [PK] character varying (255)	rgb character varying (7)	unit_human character varying (255)
1	„f	#911DA7	Bach- oder Flussablagerung
2	„ta	#7A7DFE	Talfüllung, polygenetisch
3	‚L,u	#23A33A	Lehm, umgelagert
4	‚L.u	#47F15D	[null]
5	‚Lol	#DE52B0	Lößlehm
6	D,G	#1BBB1E	Flussschotter, donauzeitlich (Höherer Älterer Deckenschotter)
7	OMM	#C8840E	Obere Meeresmolasse
8	R2,G	#186D51	Schmelzwasserschotter, rißzeitlich (Hochterrasse 2)
9	USM	#C66BA0	[null]
10	Wf,G	#942CCA	[null]
11	Wh,G	#2B9D5B	Schmelzwasserschotter, hochwürmzeitlich (Niederterrasse)
12	Ws,G	#787DE5	Schmelzwasserschotter, spätwürmzeitlich (Spätglazialterrasse)
13	miA	#2CE9A6	[null]
14	miG	#A28B09	[null]

Colors from joined tables



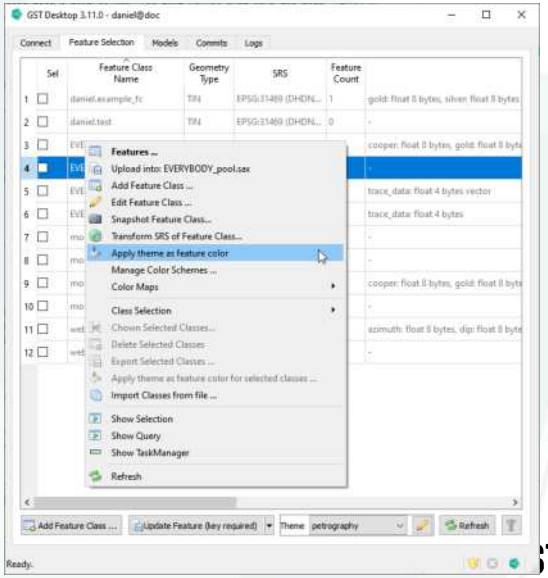
Colors from joined tables



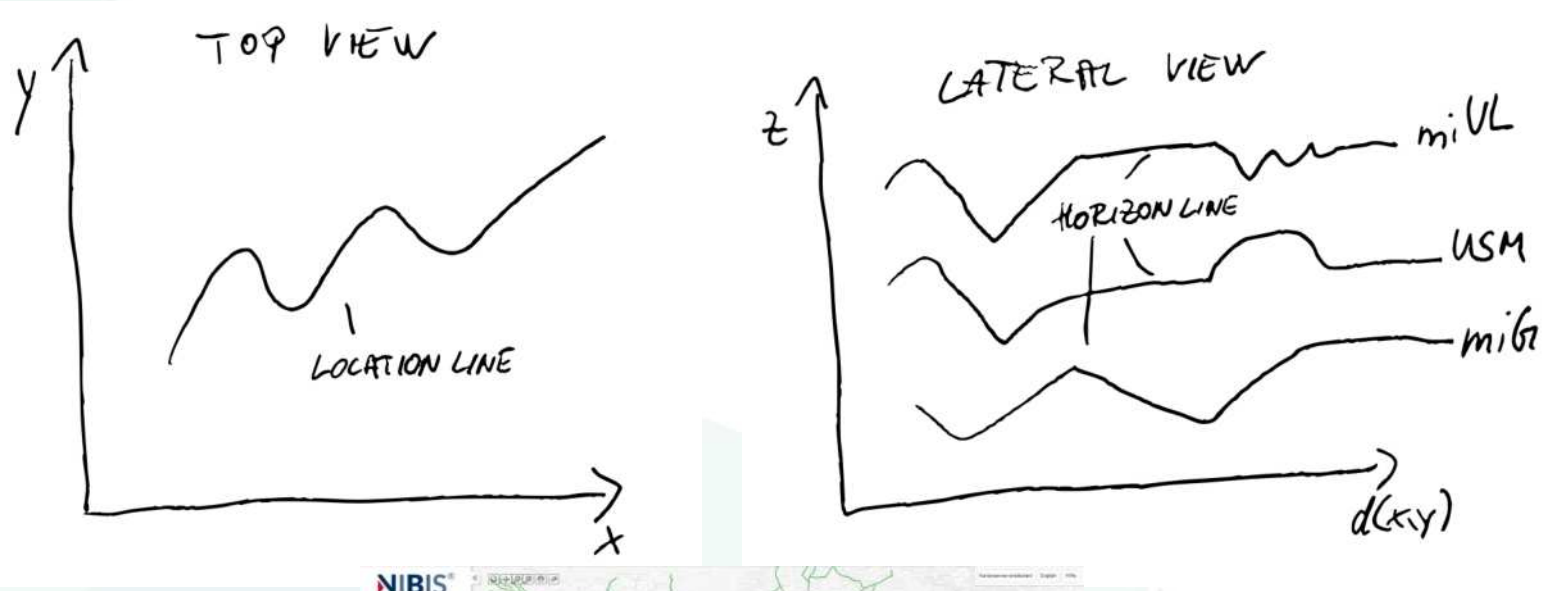
Improvements for Themes and Colormaps

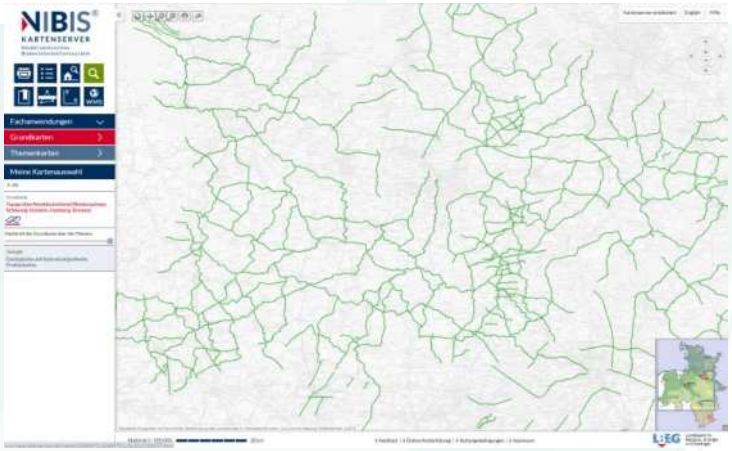


* Use joined colors also for themes and colormaps
* For discrete values with floating points less strict matching, e.g. “0.10000000149” will match “0.1”
* Smaller improvements in theme/colormaps dialog
* Overwrite all feature colors with one click



Management of Geological Profiles





https://nibis.lbeg.de/cardomap3/

Management of Geological Profiles

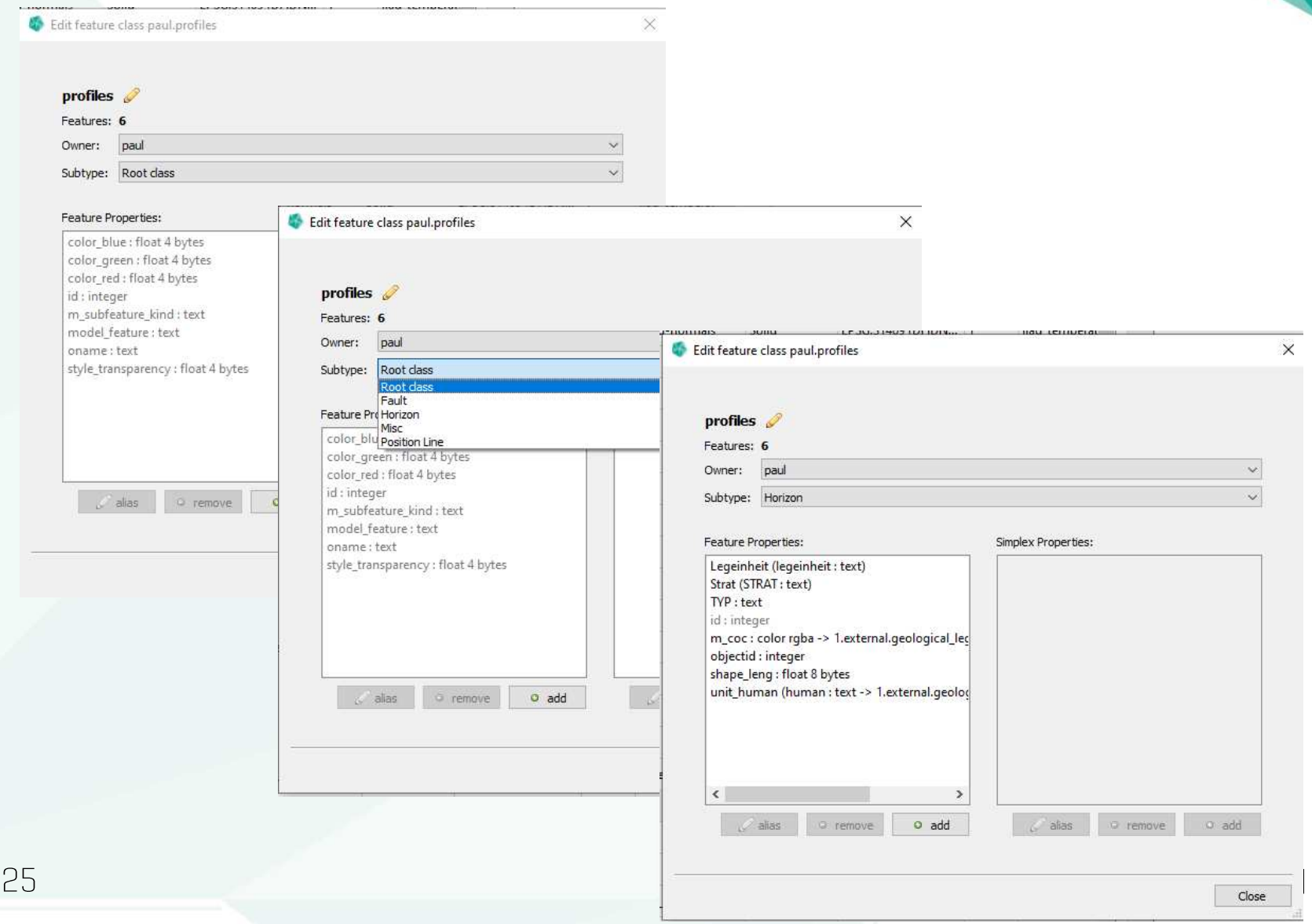


- A profile consist at minimum of a location line
- A profile can consist of
  - Horizon Lines
  - Fault Lines
  - Misc Lines
- Naming is not fixed, only for now
- Basic checking if location line and supplementary lines have similar sizes
- Displayed in GST Desktop and Web as single feature
- Allows distinct attribute sets

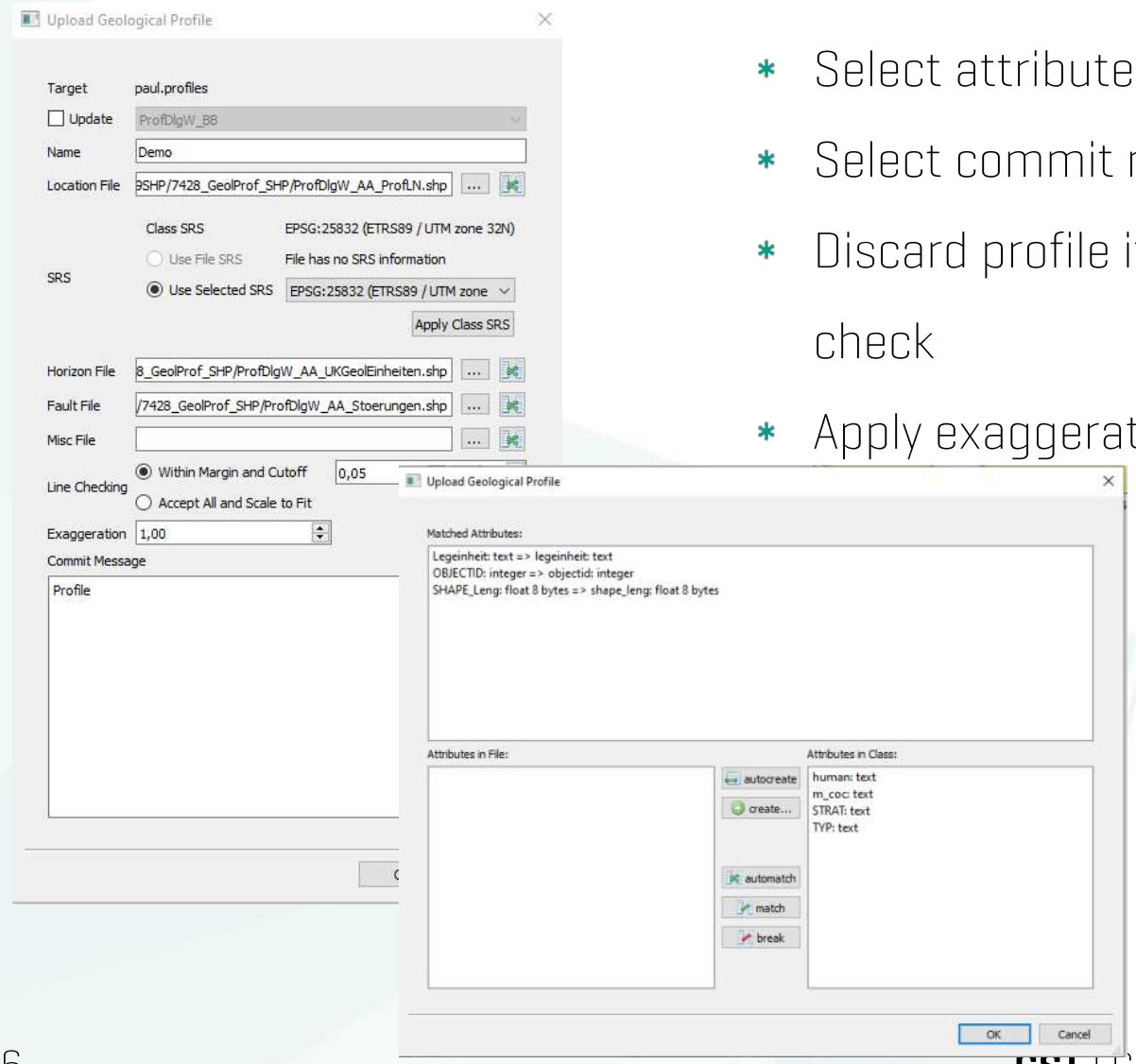
Management of Geological Profiles

- New tool for guided mass import of profiles
- New dialogs for guided import of single profiles in GST Desktop and Web
- New tools in GST Web to display profiles, obtain profiles use profiles
- Based on normal functions of GST -> update of e.g. horizons possible -> versioning of profiles
- Application later by Kathrin Dengler, BayLfU

Management of Geological Profiles

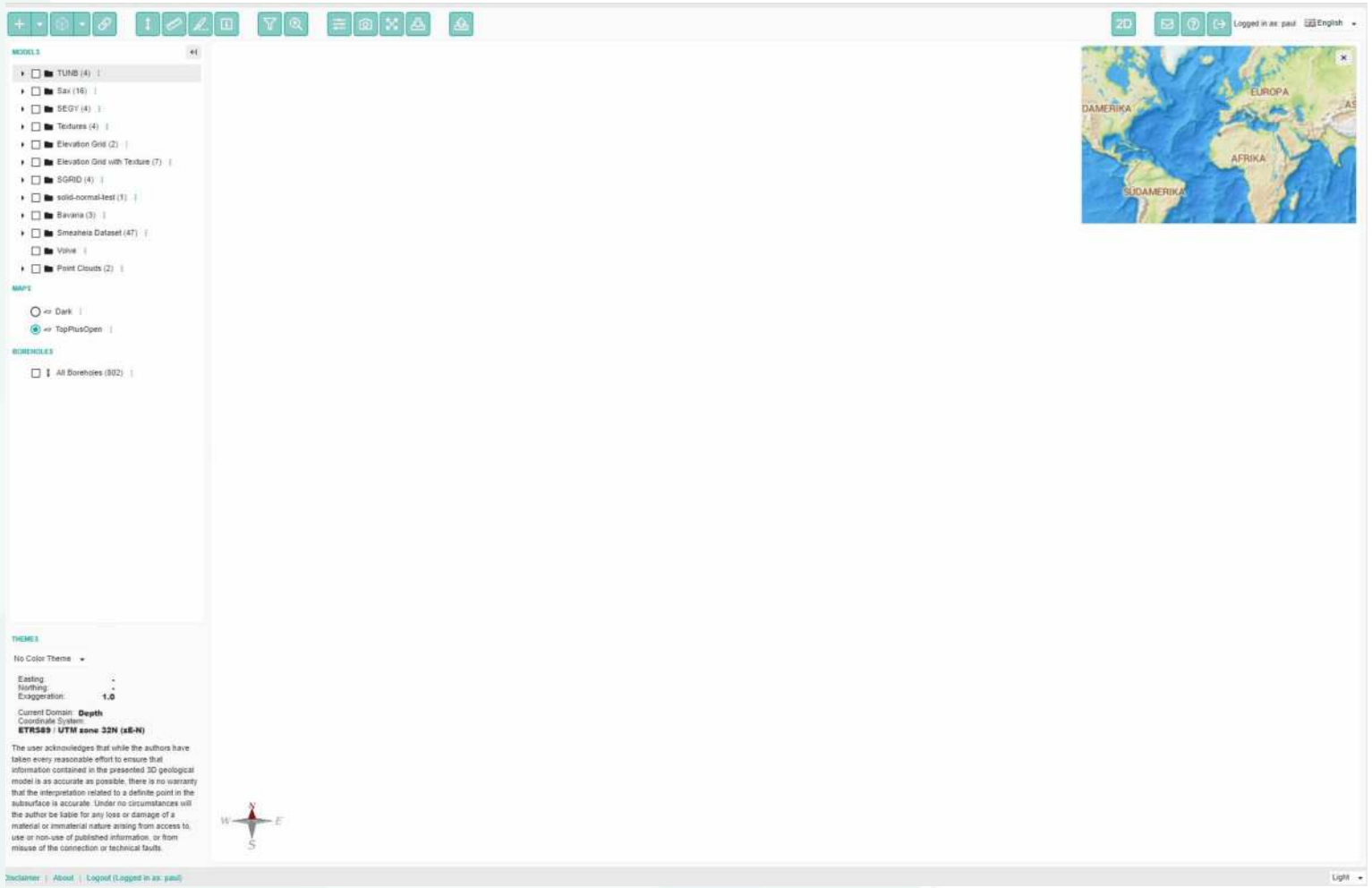


Management of Geological Profiles

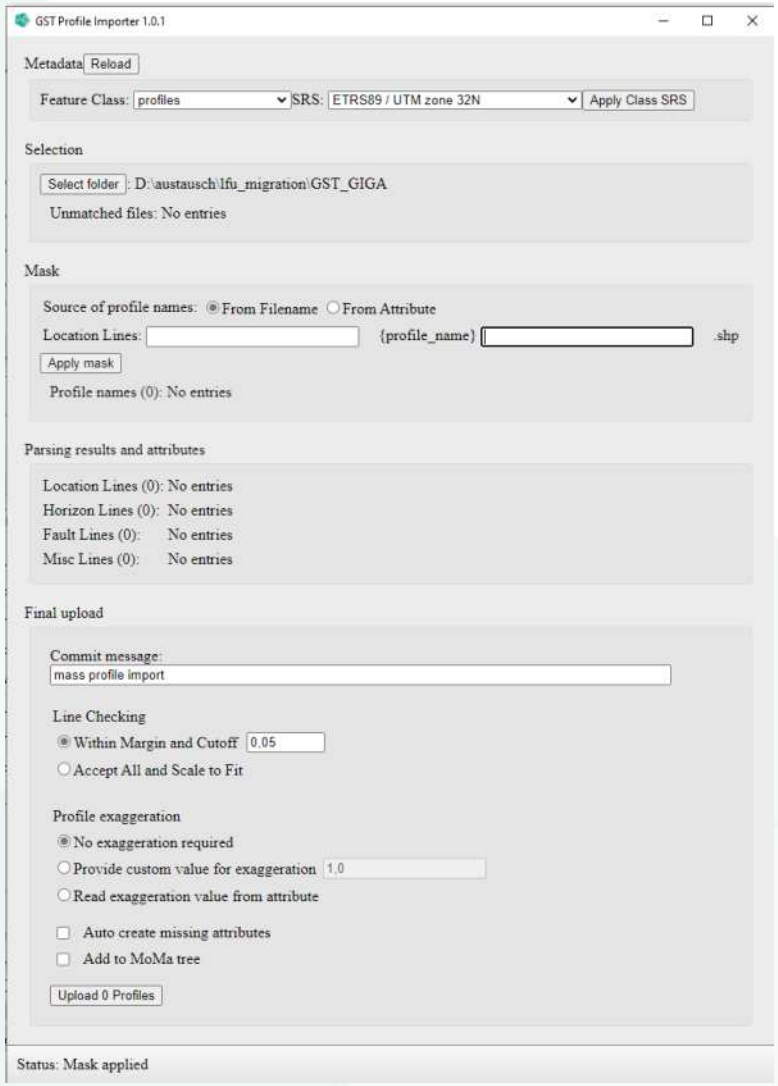


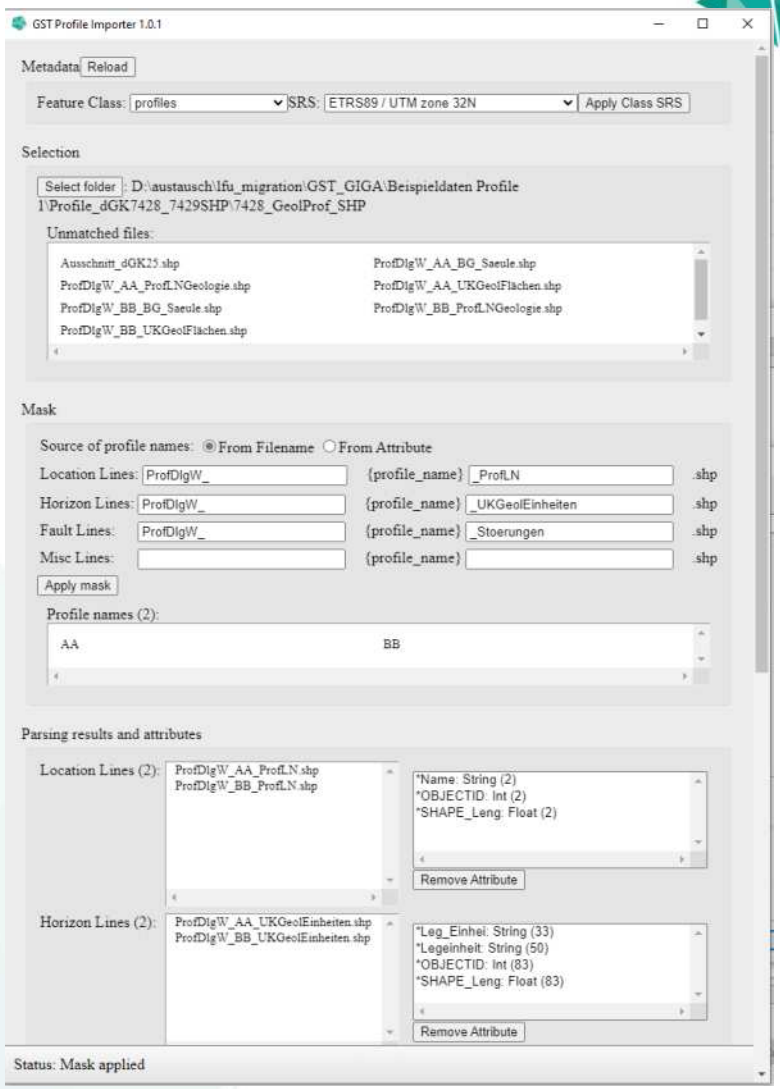
- Select attributes to import
- Select commit message
- Discard profile if it doesn't pass check
- Apply exaggeration

Management of Geological Profiles

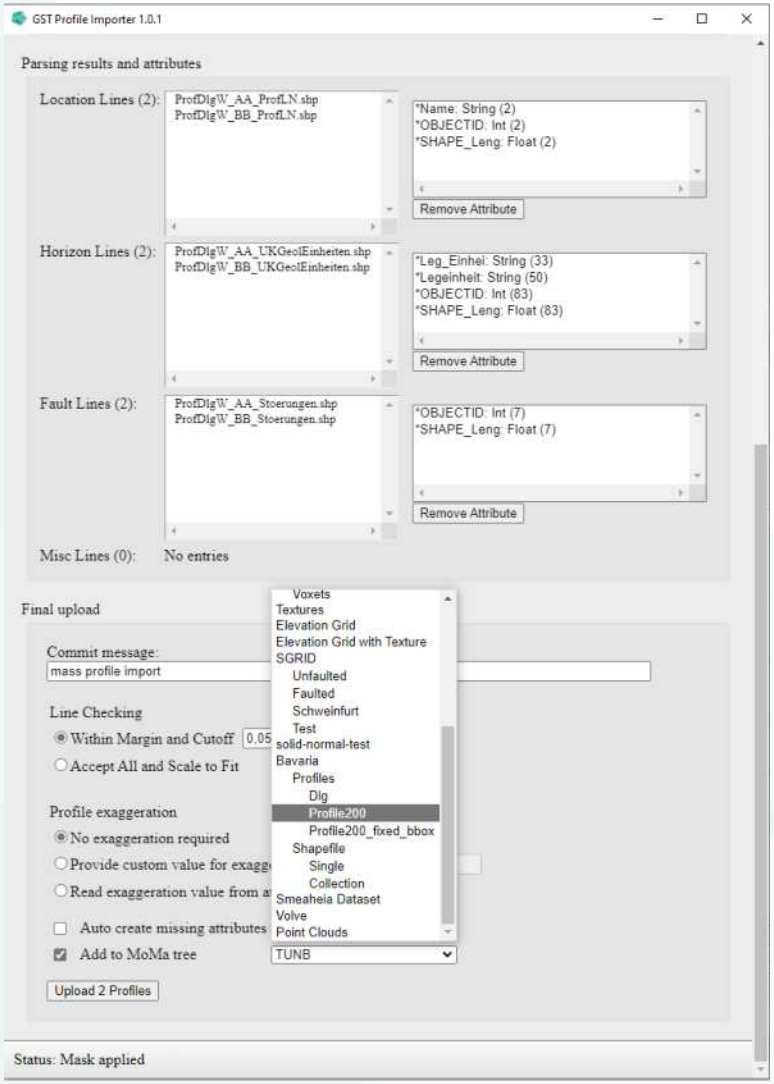


Management of Geological Profiles





Management of Geological Profiles

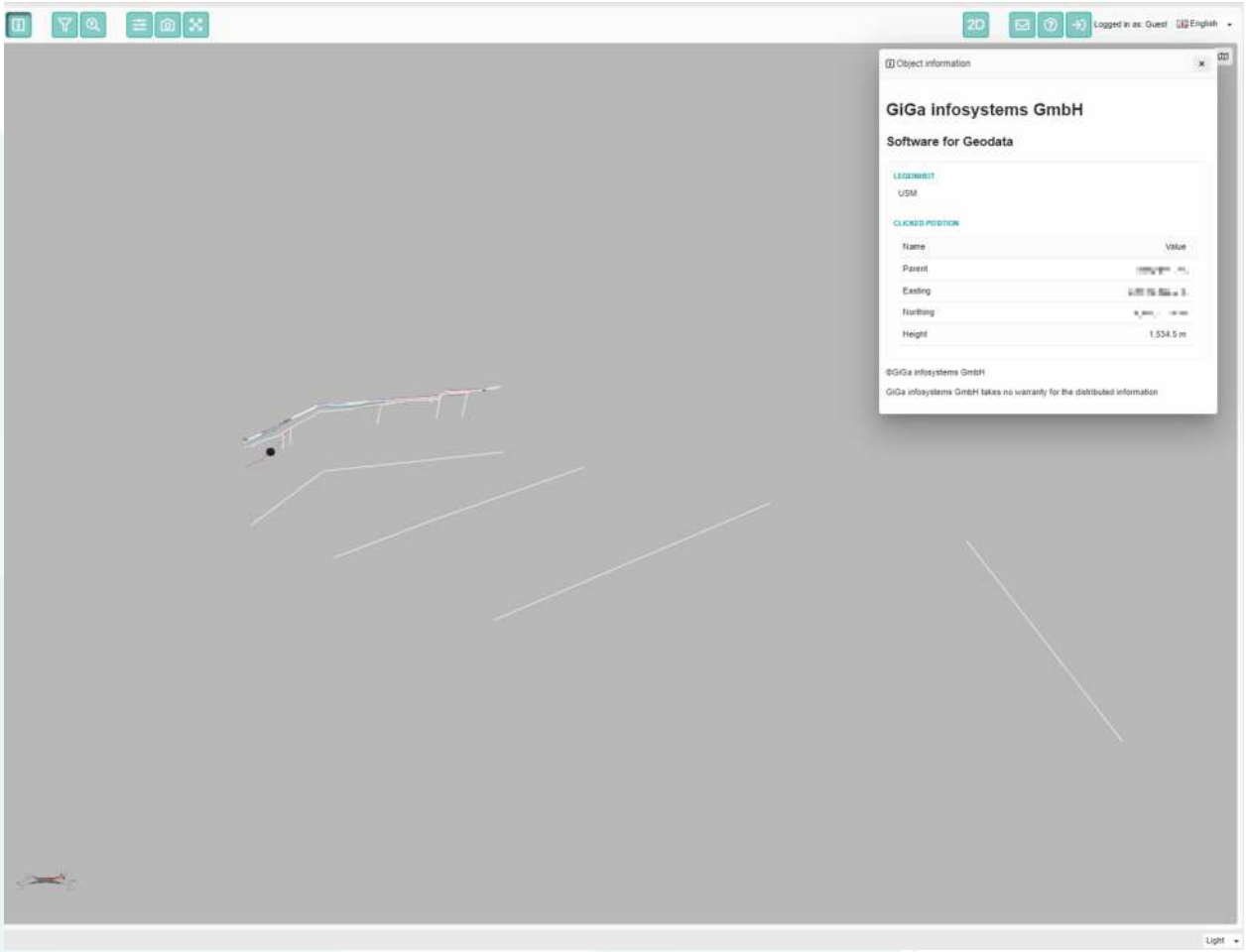


* Select attributes to import
* Select commit message
* Discard profiles which do not fit basic check
* Apply exaggeration
  * Via input
  * Via Shapefile attribute
* Place in Model tree

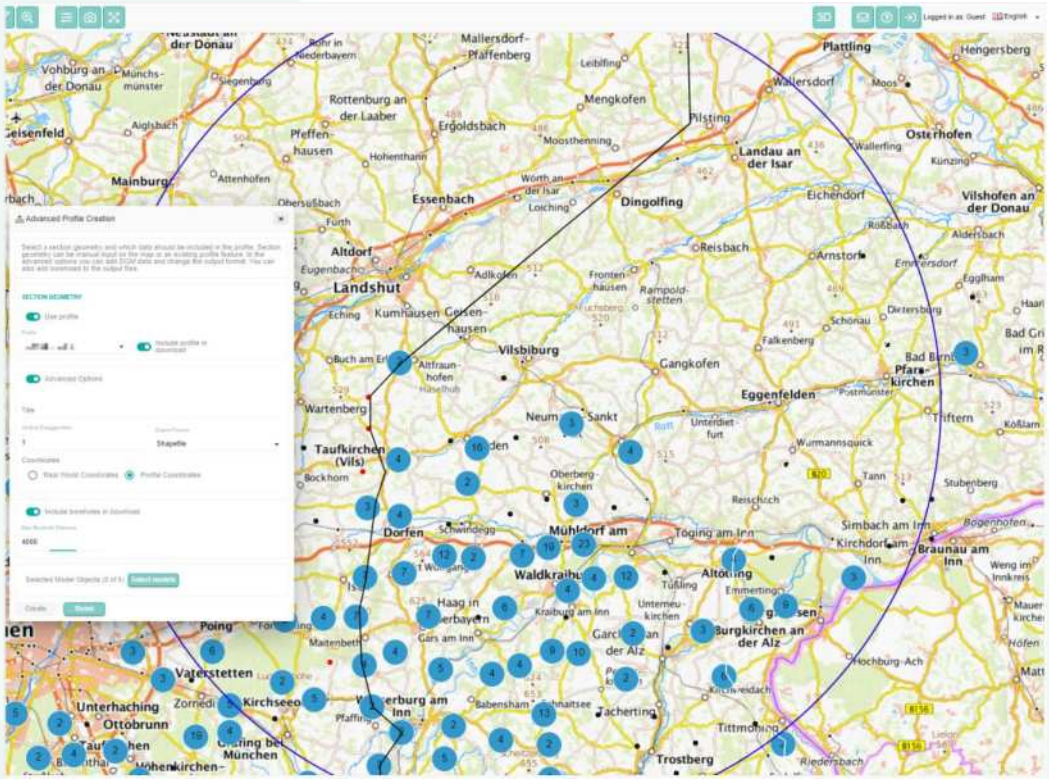
Management of Geological Profiles



Management of Geological Profiles



Management of Geological Profiles



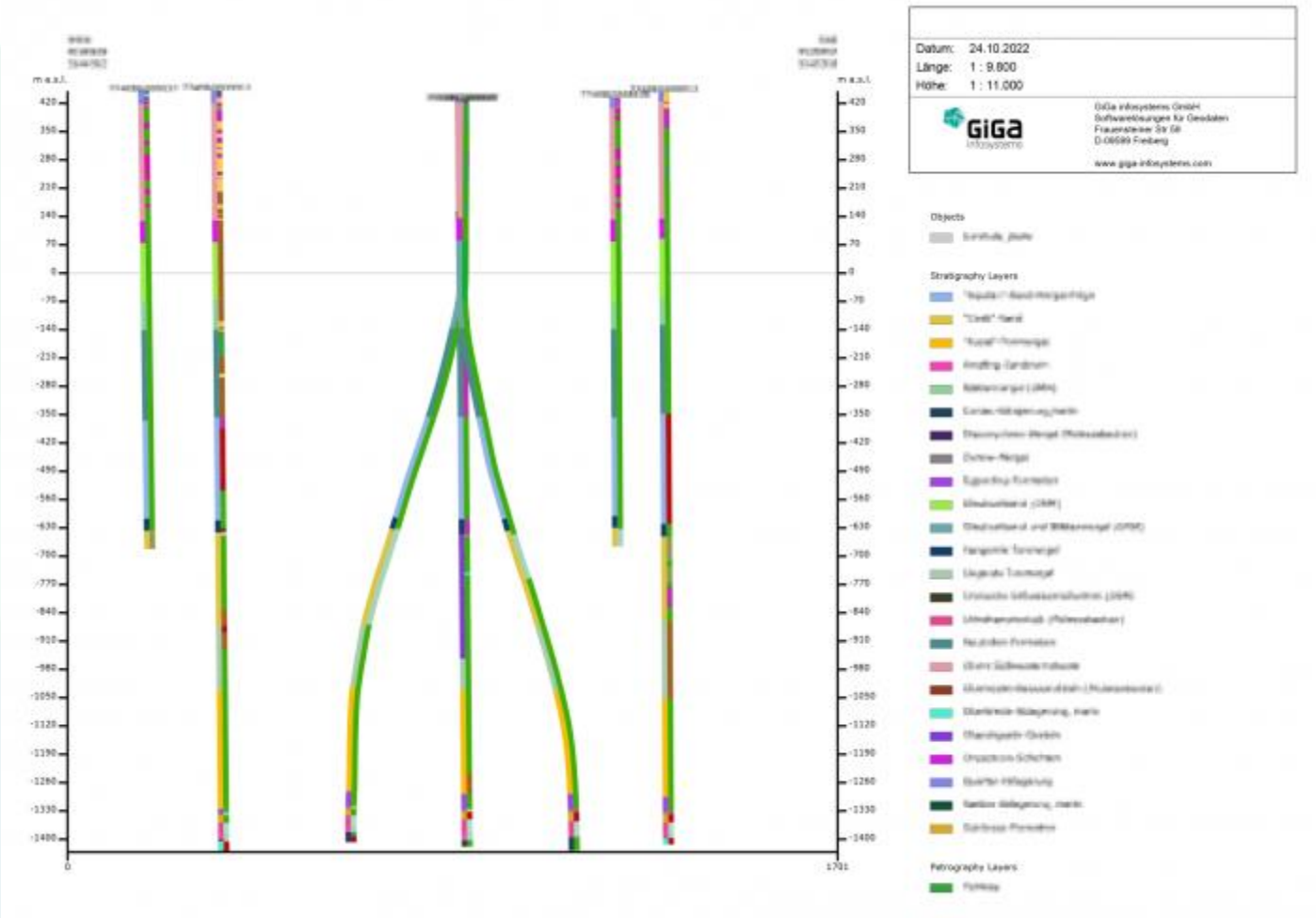
* Select profile as input
* Select output format
  * Shapefile
  * PDF, SVG, PNG
* Real World Coordinates (3d shape), Profile Coordinates
* Apply exaggeration
* Include Boreholes in certain distance
* Intersect model data

Management of Geological Profiles



- Shapefile output contains
  - Profile itself
  - Intersections with other profiles
  - Intersections with models in GST
  - Boreholes
  - DEM and Geological map intersection (retrieved via ESRI Rest)
  - Helper lines: Bends, Zero line

Boreholes in Virtual Cross Sections



Boreholes in Virtual Cross Sections

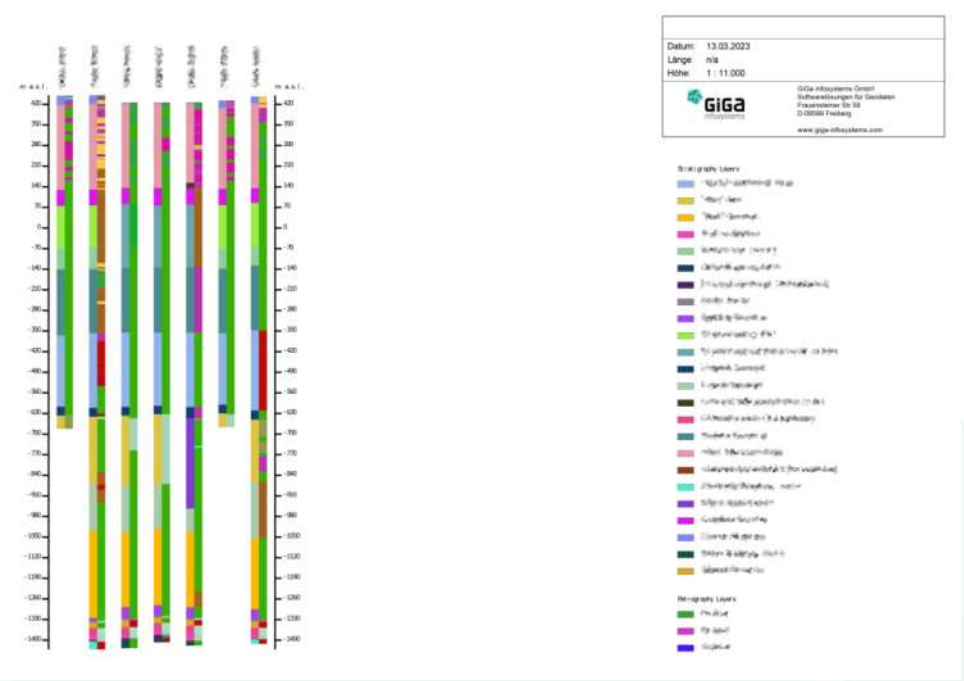


* Selection again via distance to drawn or loaded line
* Can display stratigraphy or pertrography or both
* Are orthogonally projected onto cross section plane
* Legend provides details
* Shapefile output possible

Correlation Plots



Correlation Plots



* Select output format
  * Shapefile
  * PDF, SVG, PNG
* Shapefiles come with attributes for further use

Extended Shapefile Upload



* Load a shapefile with 100s of features into GST as single feature
* Keep all attributes
* Download single shapefiles or one shapefile with all features

Download formats

* KML/Collada -> compatible to Google Earth
* glTF -> compatible to Blender
* Option to exclude normals in OBJ export

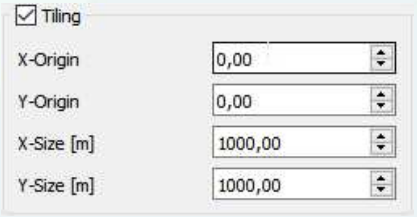
Download formats

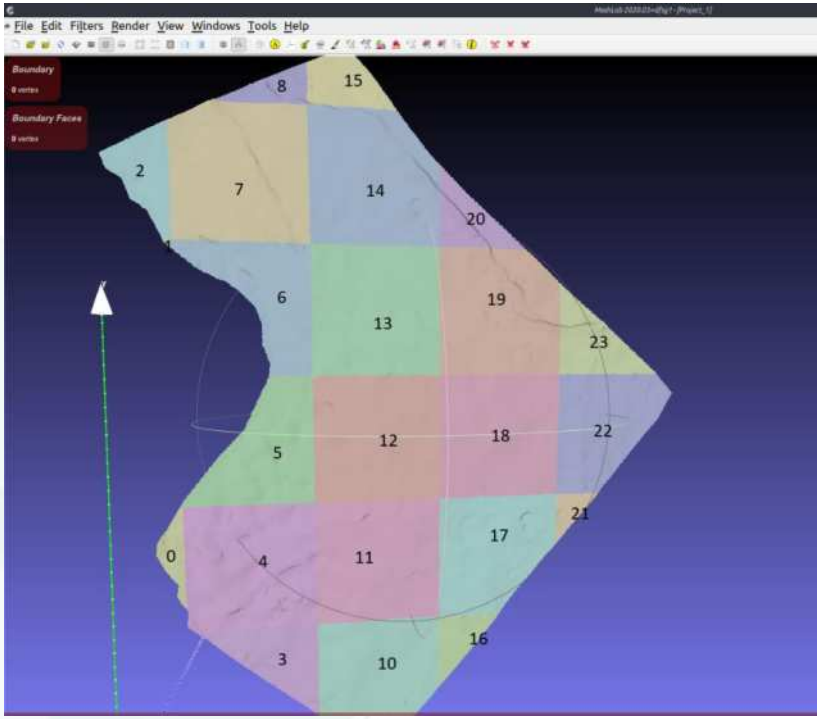


- SEGY Export
- SEGY according SEG Technical Standards Committee's SEG-Y_r2.0 standard
- Values are written as IEEE float
- Text header is from GiGa in ASCII, original header can be exported as text file
- Byte positions are as defined per Standard
- Open-sourced reader and writer at crates.io to be used in Rust:
  - https://crates.io/crates/giga-segy-out
  - https://crates.io/crates/giga-segy-in

Download Options

* More flexibility for GST's XML, write per file or per session or both
* Apply tiling scheme





SGrid improvements



* Stratigraphic Grids: Grids following geology
* Supported since GST 3.9
* Had some strange looking SGrids
* Now full knowledge of SGrid flags
* Best visual result

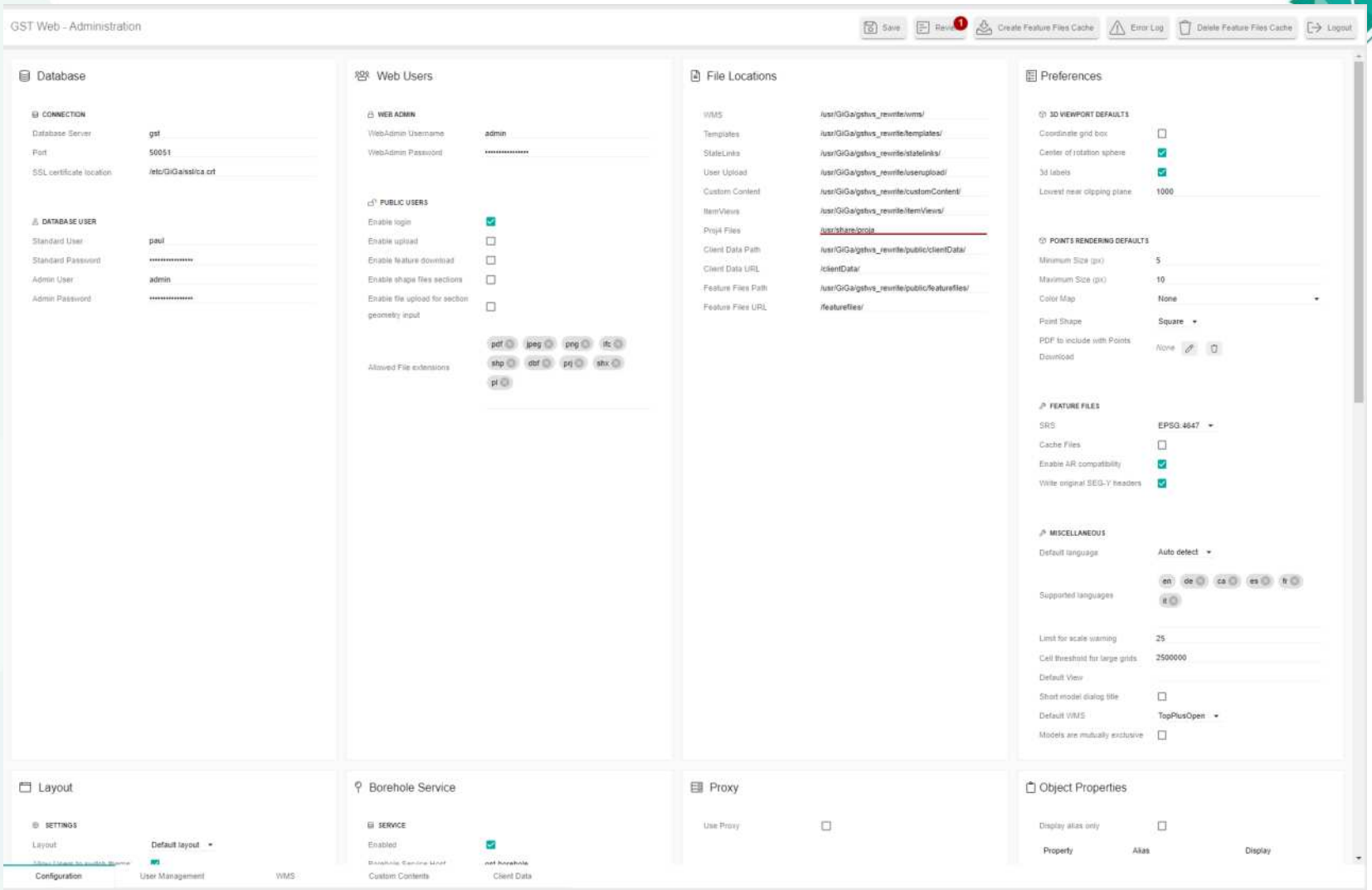


GST Web Admin



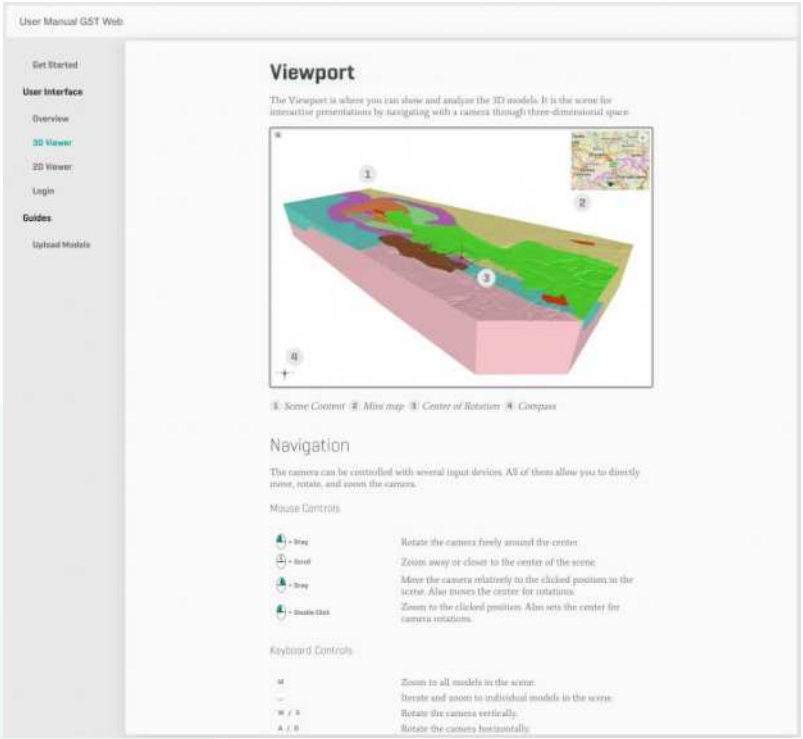
- Final piece of the GST Web rewrite
- Better structured
- Allows reviewing changes before saving
- Modern design and appearance
- Improved User Management -> no need to provide database password
- Improved WMS management
- Improved File management
- Improved cache generation
  - Error logs
  - Asynchronous -> GST Web does it in the background

GST Web Admin



GST Web Manual

* Complete rewrite
* Interactive and integrated in GST Web
* More chapters and guides to come



GST Web Misc



- Make models mutually exclusive
- Set colormaps of multiple features at once
- Improved loading time even with disabled cache
  - e.g. going from 25 sec to 2.5 sec on customer instance
- Improved picking accuracy
- Use shape file, Gocad ASCII or IFC as input for cross sections and profiles
- Include PDF in downloads
- Fixes with special characters



Questions?

Remarks?

Wishes?



Sascha Görne (LfULG, Saxony)
Visualization of Earthquake focuses in GST Web



Björn Wieczoreck (GiGa infosystems)
GST [AR] for Android



Kathrin Dengler (BayLfU)
GST and geological profiles

Roadmap 2023

* Time stamp support as feature attribute and feature property
* Extended Borehole data
* Visualization of complete boreholes
* Download of 2d SEGY as georeferenced GeoTIFF
* Address search result visualization
* More granular rights for Web Users

Provisional Roadmap 2023

* 3d tiles export
* RESQML Import and Export
* BIM compatibility – IFC Import and Export
* Property based Generation of Triangular networks from Sgrids -> Iso-surfaces
* Desktop (pre)View tab (2D map±sections OR simple 3D)
* Store colors on Points / Simplexes
* Import Point Clouds (LAS/E57?)

Provisional Roadmap 2023

- Borehole logs
- Borehole filtering
- Iso lines in GST Web
- Iso surfaces for Voxets and Sgrids
- Geological Grids
- Support of different borehole sets (shallow, deep, geothermal, etc pp)
- Integration with Gocad, ArcGIS, QGIS
- Basic feature manipulation
  - e.g. move 300m higher (z = z + 300)



Questions?

Remarks?

Wishes?



Thank you!

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@gigainfosystems