



**GiGa**  
infosystems

## **GST Anwendertreffen**



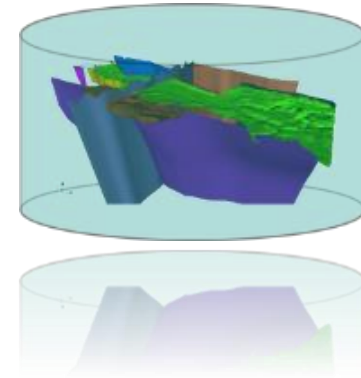
# Agenda

- \* Entwicklungen 2018
- \* Vom Modelviewer zum Datenviewer (Robert Pamer)
- \* Roadmap 2019/20



# GiGa infosystems

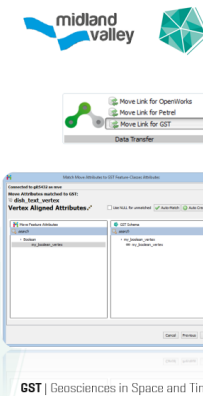
- \* Team von 9
- \* **Oracle Partner, GIS Award**
- \* Zusammenarbeit mit
  - \* TU Bergakademie Freiberg
  - \* Midland Valley [MOVE]



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





## Entwicklungen GST 3 in 2018

- \* 213 Bugs gefixed
- \* 38 Verbesserungen
- \* 143 Neue Features
- \* 2 Release
- \* 44 Issues im Servicedesk geschlossen, 50 erhalten ☹️



## Entwicklungen 2018

- \* Hauptentwicklungen mit Bayern und Swisstopo:
  - \* **GST 3**
  - \* Zugriff auf Samba Shares
  - \* Textured lines mit draping
  - \* Filemanager
  - \* MoMa Sortierung
  - \* GTT



## Entwicklungen 2018

- \* Hauptentwicklungen mit Bayern und Swisstopo:
  - \* MoMa Count
  - \* Multiselection
  - \* Transparenz für Grids
  - \* Multiple Slices für Grids
  - \* Pop Geometries
  - \* MoMa-based Viewlinks



## Entwicklungen 2018

- \* Hauptentwicklungen mit Bayern und Swisstopo:
  - \* Template Engine in GST Web
  - \* MoMa-Properties in GST Py
  - \* GST3 Connectivity in GST Py
- \* Geoplasma
- \* Hackathon EAGE 2018



# GEOPLASMA-CE

- \* EU-Projekt von August 2016-Juli 2019
- \* Wissensaustausch, Entwicklung eine Geothermieauskunftsystems



LANDESAMT FÜR UMWELT,  
LANDWIRTSCHAFT  
UND GEOLOGIE







# GEOPLASMA-CE

\* <https://portal.geoplasma-ce.eu>

Conflicts	
Attribute	Closed loop
<b>Water protection areas (curative, drinking water):</b>	
Drinking Water Protection Area - Surface Water - Reservoir - Zone I	Red square
<b>Natural reserves / protection areas:</b>	
Nature reserve	Yellow square
<b>Cavity, mining areas:</b>	
-	Light green square
<b>Shallow gas leakage:</b>	
-	Light green square
<b>Landfills, contaminated areas:</b>	
-	Light green square



# Python API

- \* Zugriff auf fast alle **GST** API Funktionen
- \* Fertigstellung Q3/2017
- \* <https://support.giga-infosystems.com/updates/gstpy/1.2.0/index.html>
- \* Verbindung zu GST3
- \* Handhabung von MoMa Properties:
- \* <https://support.giga-infosystems.com/doc/gstpy/1.2.0/examples/MoMaProperty.html#example-moma-property>



# Motivation

- \* Automatisierung verschiedener Vorgänge
- \* Einbindung anderer Formate und Software

GSTPy Bayerisches Landesamt für Umwelt

## Übersicht

python

Benutzerdefinierte Formate (bspw.):  
Esri-Formate  
TIN  
XML  
...

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GSTPy Bayerisches Landesamt für Umwelt

## Definition der Features

	A	B	C	D	E	F	G	H	I
1	name	soilclass	soilclass	liber	q	z	liber	liber	hydr
2	00 Topographie	horizont_wiesbaden	Horizont		198	213	255		
3	01 Quartär, fluvial (Unterkarte)	horizont_wiesbaden	Horizont	qH5	255	255	58	sandig kiesig	Aquifer
4	02 Mitt. Keuper (Oberkarte)	horizont_wiesbaden	Horizont	ku	198	204	158	tonig	Aquifer
5	03 Unt. Keuper (Oberkarte)	horizont_wiesbaden	Horizont	ku	198	204	158	tonig	Aquifer
6	04 Ob. Muschelkalk (Oberkarte)	horizont_wiesbaden	Horizont	mu	255	153	255	kalzig	Aquifer
7	05 Mitt. Muschelkalk (Oberkarte)	horizont_wiesbaden	Horizont	mm	255	179	255	mergel	Aquifer
8	06 Unt. Muschelkalk (Oberkarte)	horizont_wiesbaden	Horizont	mu	210	128	255	kalzig	Aquifer
9	07 Ob. Buntsandstein (Oberkarte)	horizont_wiesbaden	Horizont	so	255	204	153	tonig sandig	Aquifer
10	08 Mitt. Buntsandstein (Oberkarte)	horizont_wiesbaden	Horizont	sm	230	153	128	sandig	Aquifer
11	09 Unt. Buntsandstein (Oberkarte)	horizont_wiesbaden	Horizont	su	210	179	128	sandig	Aquifer

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```

import GSTPy

owner = ni.get_current_gst_user()
levels = ni.list_levels()
models = ni.list_elements(owner, levels[0])
units = ni.list_elements(owner, levels[1])

augsburg_model = next((model for model in models if model.label == "Augsburg"))
inner_city_unit = next((unit for unit in units if unit.label == "InnerCity"))

model_links = ni.list_children()
augsburg_link = next(
    (link for link in model_links
     if link.target_id == augsburg_model.id
     and link.target_type == GSTPy.LinkAdjacencyTargetType.Element))

augsburg_child_links = ni.list_children(augsburg_link)
inner_city_link = next(
    (link for link in augsburg_child_links
     if link.target_id == inner_city_unit.id
     and link.target_type == GSTPy.LinkAdjacencyTargetType.Element))

moma_prop_description = ni.create_moma_property(
    "description", GSTPy.PropertyType.TypeText, owner)
moma_prop_revision = ni.create_moma_property(
    "revision", GSTPy.PropertyType.TypeInt)

ni.create_moma_property_value(augsburg_link, moma_prop_description,
                              "3D model of Augsburg.")
ni.create_moma_property_value(augsburg_link, moma_prop_revision, 1)

ni.create_moma_property_value(inner_city_link, moma_prop_description,
                              "The inner city area.")
ni.create_moma_property_value(inner_city_link, moma_prop_revision, 1)

# get revision value for inner city (option 1)
revision_values = ni.list_moma_property_values(moma_prop_revision)
revision_inner_city_value = next(
    (val for val in revision_values
     if val.moma_property.id == moma_prop_revision.id))

# get revision value for inner city (option 2)
inner_city_link_values = ni.list_moma_property_values_of_element(
    inner_city_link)
revision_inner_city_value = next(
    (val for val in inner_city_link_values
     if val.moma_property.id == moma_prop_revision.id))

ni.update_moma_property_value(revision_inner_city_value, 2)
ni.delete_moma_property_value(revision_inner_city_value)

ni.delete_moma_property(moma_prop_description)

```



Browse feature class: EVERYBODY\_pool.sax

Select	oname text	Lock	Geometry Hull	model_feature text
<input type="checkbox"/>	08_ts_dd_geol_Diorite	free	no	(NULL)
<input type="checkbox"/>	05_ts_dd_geol_Stolpener_Granit	free	yes	(NULL)
<input type="checkbox"/>	03_ts_dd_geol_Riesenstein-Granit	free	no	(NULL)
<input type="checkbox"/>	04_ts_dd_geol_Markersbacher_Granit	free	no	(NULL)
<input type="checkbox"/>	07_ts_dd_geol_Porphyrte	free	no	(NULL)
<input type="checkbox"/>	06_ts_dd_geol_Gneise	free	no	(NULL)
<input type="checkbox"/>	09_ts_dd_geol_Hauptgranit	free	no	(NULL)
<input type="checkbox"/>	10_ts_dd_geol_Monzonit	free	no	(NULL)
<input type="checkbox"/>	02_ts_dd_geol_Doehlener_Becken	free	no	(NULL)
<input type="checkbox"/>	13_ts_dd_geol_Osterzgebirge	free	no	(NULL)
<input type="checkbox"/>	11_ts_dd_geol_Monzodiorit	free	no	(NULL)
<input type="checkbox"/>	14_ts_dd_geol_Lausitzer_Granodiorit	free	no	(NULL)
<input type="checkbox"/>	12_ts_dd_geol_Elbtal-Schiefergebirge	free	no	(NULL)
<input type="checkbox"/>	01_ts_dd_geol_Kreide	free	no	(NULL)

Hide default columns

Edit via Clipboard ...

Object name:

Object appearance

Red:  0

Green:  0

Blue:  0

Transparency [%]:  100

OK Cancel



The screenshot displays the GST Desktop application window with the following components:

- Connect** | **Feature Selection** | **Models** | **Commits** | **Logs**
- Model Management**
  - [-] Saxony (1)
    - [-] bodies (5)
      - ▲ 01\_ts\_dd\_geol\_Kreide
      - ▲ 02\_ts\_dd\_geol\_Doehleener\_Becken
      - ▲ 03\_ts\_dd\_geol\_Riesenstein-Granit
      - ▲ 04\_ts\_dd\_geol\_Markersbacher\_Granit
      - ▲ 05\_ts\_dd\_geol\_Stolpener\_Granit
    - [>] [-] Model1

- 1:Model** | **2:Unit** | **3:Element** | **4:Features**
- Elements of level 0**
- [>] test\_user
- [>] EVERYBODY\_pool
- [>] test\_group\_pool
- Filter unassigned
- Theme: [Native]
- Property Descriptions ...

The **Global Selection** window on the right contains:

- ▲ 08\_ts\_dd\_geol\_Diorite
- ▲ 07\_ts\_dd\_geol\_Porphyrite
- ▲ 09\_ts\_dd\_geol\_Hauptgranit
- ▲ 10\_ts\_dd\_geol\_Monzonit

Buttons and controls at the bottom of the Global Selection window include:

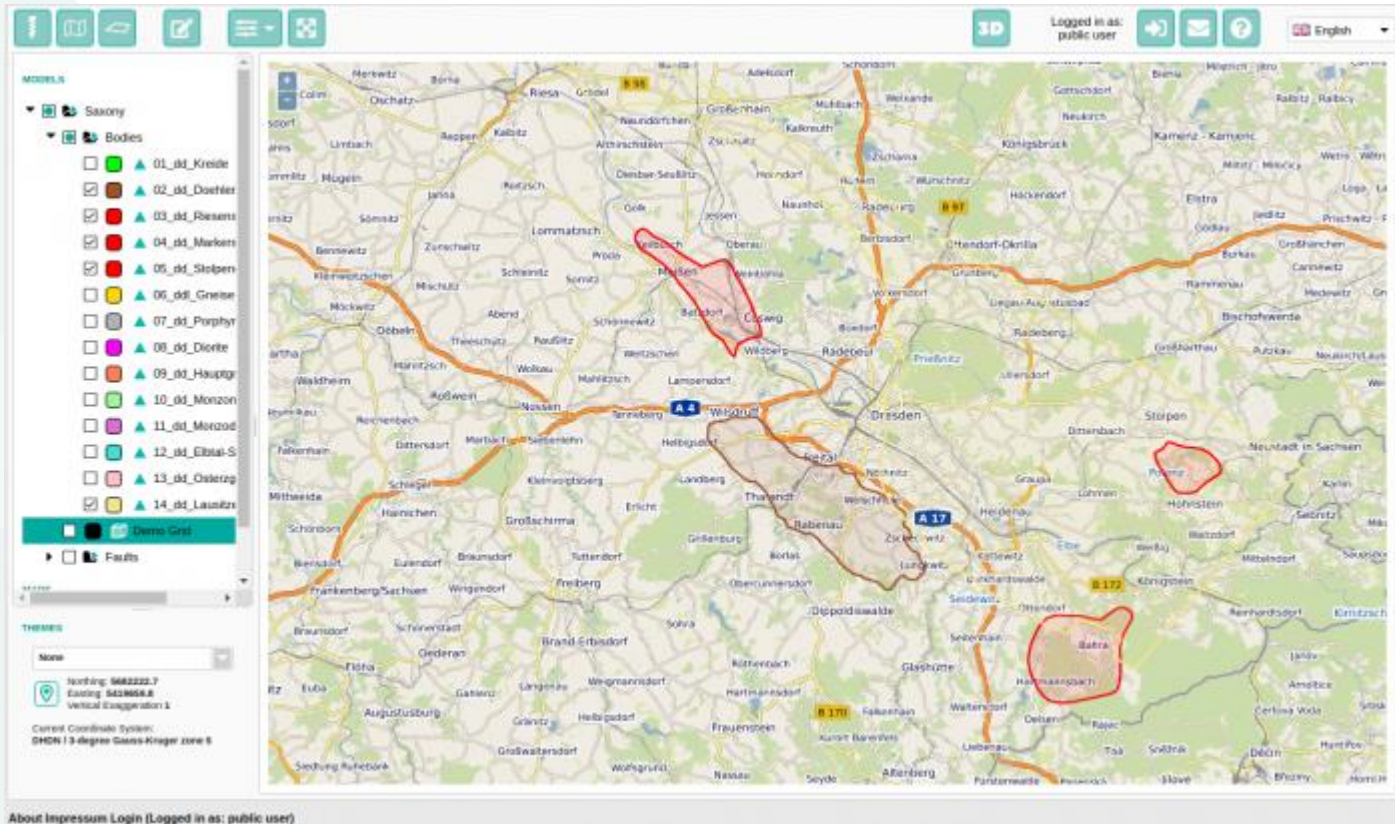
- Add LOD's to selection
- Gocad File (.vs,.pl,.ts,.so, .vo)
- ▶ Options
- Download





The screenshot displays the GST web application interface. At the top, there is a toolbar with various navigation and editing tools. The main area shows a 3D geological model of a copper deposit, with a color scale ranging from 0 (yellow) to 3 (red). The model is overlaid on a 2D map of the region around Dresden, Germany, showing major roads like A17 and cities like Chemnitz and Usti nad Labem. The interface includes a layer list on the left with 14 geological units and a 'Demo Grid' layer. A 'MAPS' section shows 'OpenStreetMap WMS - by te' selected. A 'THEMES' section shows 'None' selected. A coordinate system information panel displays 'Current Coordinate System: DHDN / 3-degree Gauss-Kruger zone 5' with Northing: 5642210.5 and Easting: 5410405.9. A 'DEMO GRID' control panel shows X: 51, Y: 69, and Z: 39. A compass rose is located at the bottom left of the main view area. The bottom status bar indicates 'About Impressum Login (Logged in as: public user)'.







Geology | Config

2D | Logged in as: public user | English

**MODELS**

- M1 (7)
- Sax (13)
- Sections (2)
  - cross\_section\_1
  - cross\_section\_2

**MAPS**



- Topographie

**THEMES**

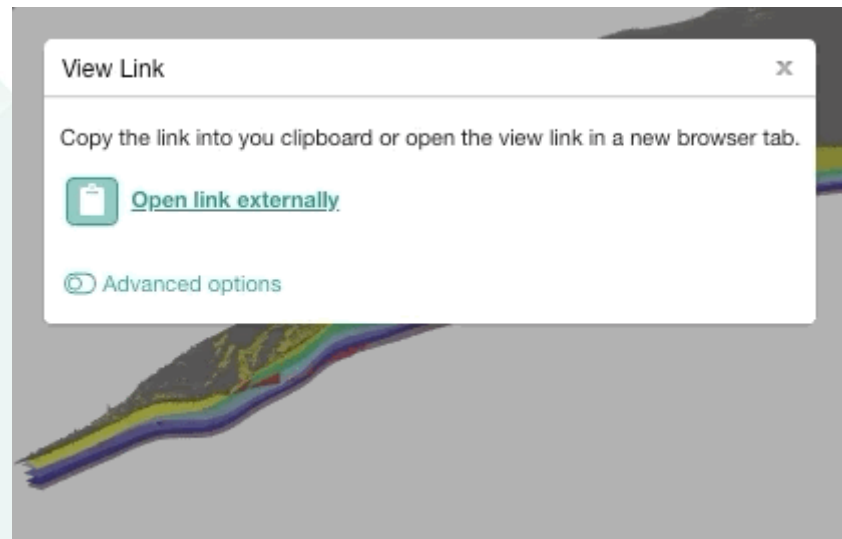
None

Northing:  
Easting:  
Vertical Exaggeration 1

Current Coordinate System:  
DHDN / 3-degree Gauss-Kruger zone 5

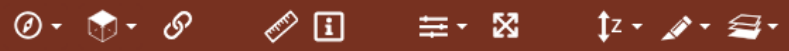


About Impressum Login (Logged in as: public user) | Upload status: No Uploads active





3D Geology 2D Geology



Logged in as: public user [English](#)

- Model View
- MODELS
- Local Server
    - Molassebecken (Projekt Ge)
    - Regionsmodell Region 4
    - Basismodell Nürnberg-Fürth
    - Basismodell Schweinfurt

THEMES

Northing:  
Easting:  
Vertical Exaggeration 1

Current Coordinate System:  
DHDN / 3-degree Gauss-Kruger zone 4





Choose a template for boreholes

Please select a file with one of the following extensions:

- svg

Show all files

Drop files here or [Browse](#)

[templates](#)

File Name	Actions
borehole_template_example.svg	
crossSection_template_example.svg	
error_template_example.svg	
horizontalSection_template_example.svg	
template_skeleton_overviewMap.svg	
thumbnail_bore.png	
thumbnail_cross.png	

[New directory](#)

error\_template\_example.svg

Error during intersection

Uploaded: 06.12.18 - 10:56  
Size: 1.23 KB

[Select](#)

Links

Page:

Page: <https://support.giga-infoystems>



11-TLi  
12-TKeu  
13-TMus  
14-BMes  
17-BPC  
17-BPC\_vermu

GeoMol17\_AG (3)  
GeoMol17\_FR (3)  
GeoMol17\_GE (3)  
GeoMol17\_LU (3)  
GeoMol17\_SO (3)  
GeoMol17\_VD (3)  
GeoMol17\_ZH (3)  
Grid (1)  
grid  
Switzerland (3)  
Test juillet (3)

MAPS  
Topographic

THEMES  
None

Northing: 1253985.7  
Easting: 2661118.6  
Vertical Exaggeration 5

Current Coordinate System:  
Swiss CH1903+ / LV95

modeled\_logk  
-8 -7 -6 -5 -4 -3 ndv

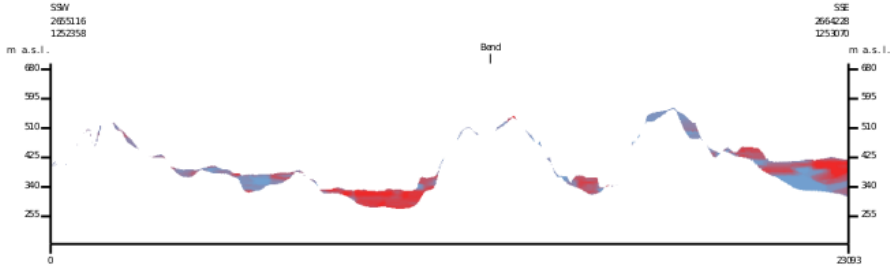
About Impressum Login (Logged in as: public user)



<b>grid - modeled_logk</b>	
Datum: 05.03.2019	
Länge: 1 : 140000	
Höhe: 1 : 14000	
	GiGa Infosystems GmbH Softwarelösungen für Geodäten Frauenhofer Str. 59 D-09599 Freiberg
	<a href="http://www.giga-infosystems.com">www.giga-infosystems.com</a>



-8  
-3





11-1Li  
12-TKeu  
13-TMus  
14-BMes  
17-BPC  
17-BPC\_vermu

GeoMol17\_AG (3)  
GeoMol17\_FR (3)  
GeoMol17\_GE (3)  
GeoMol17\_LU (3)  
GeoMol17\_SO (3)  
GeoMol17\_VD (3)  
GeoMol17\_ZH (3)  
Grid (1)  
grid  
Switzerland (3)  
Test juillet (3)

MAPS  
Topographic

THEMES  
None  
Northing: 1251668.9  
Easting: 2667788.7  
Vertical Exaggeration 5  
Current Coordinate System:  
Swiss CH1903+ / LV95

2D Logged in as: public user English

GRID  
Mode  
Single Slice  
Settings  
X: 283  
Y: 347  
Z: 100

modeled\_logk  
-8 -7 -6 -5 -4 -3 ndv

About Impressum Login (Logged in as: public user)





**MODELS**

- ▶  06 GeoMol17 (3)
- ▶  France (3)
- ▶  Geneve (3)
- ▶  GeoMol EU Pilot Region Sw
- ▶  GeoMol15 (5)
- ▼  GeoMol17 (4)
  - ▶  Data Coverage (1)
  - ▶  Fault Zones - GM17 (7)
  - ▶  Geography (4)
  - ▶  Horizons - GM17 (16)
  - ▶  GeoMol17\_AG (3)
  - ▶  GeoMol17\_FR (3)
  - ▶  GeoMol17\_GE (3)
  - ▶  GeoMol17\_LU (3)
  - ▶  GeoMol17\_SO (3)
  - ▶  GeoMol17\_VD (3)
  - ▶  GeoMol17\_ZH (3)

**THEMES**

None

Northing:  
Easting:  
Vertical Exaggeration 1

Current Coordinate System:  
Swiss CH1903+ / LV95

About Impressum Login (Logged in as: public user)



## Hackathon @EAGE 2018

- \* Organisiert durch Matt Hall, Agile Scientific (<https://agilescientific.com/>)
- \* Thema: Visualize this
- \* Knapp 24 h für Teamfindung, Ideen, Ansätze, Umsetzung, Präsentation
- \* 63 Teilnehmer: Coder, Geologen, BWL
- \* 7 Teilnehmer von GiGa → 2 Team
- \* 2 Projekte

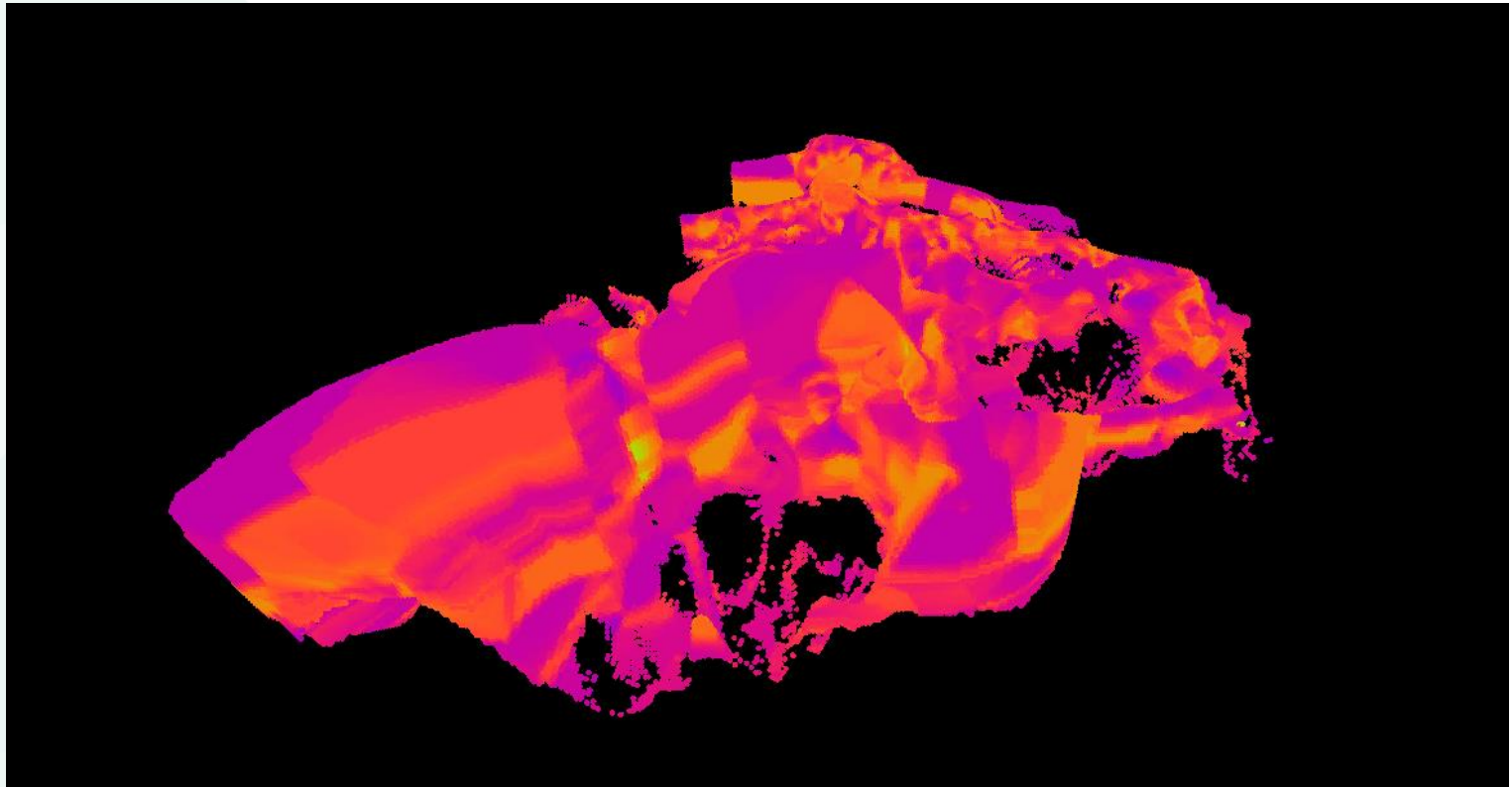


## GridVizards

- \* Visualisierung von Grids im Webbrowser
- \* Test verschiedener Ansätze:
  - \* Volumetric Rendering
  - \* Level of Detail
  - \* Isosurfaces
  - \* Partikel
  - \* Filter



## GridVizards





## GridVizards | Ergebnis

- \* Kleine Webanwendung
- \* Drag'n'Drop von 400 MiB Grid
- \* Sofortige Darstellung
- \* Filterung on the fly möglich



# SmARt\_OGs





# What they did

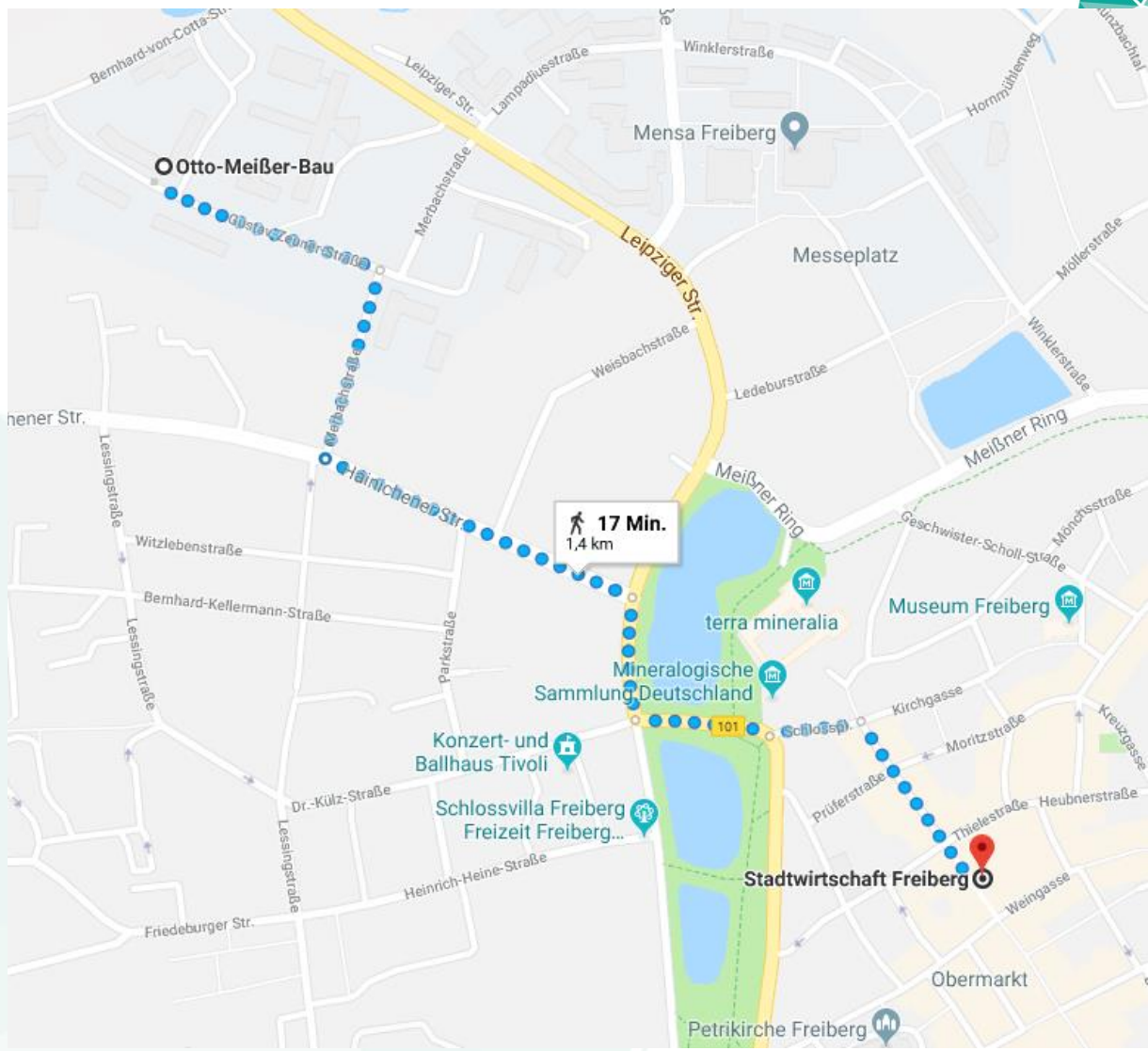
## Augmented Geology (AR)





# Roadmap

- \* Essen in der Stadtwirtschaft 19.00 Uhr







# Vom Modelviewer zum Datenviewer, Robert Pamer



## Roadmap 2019/2020

- \* Mitwirkung bei GEOPLASMA-CE (Geothermie, 2016-2019)
- \* Boreholes in GST Web
- \* Constrained Table
- \* Shapefile Export
- \* SEGY in GST Web
- \* GST as a Service
- \* Usermeeting 2020



## Boreholes in GST Web

- \* Grundlegende Leistungsbeschreibung existiert  
[<https://docs.google.com/document/d/1f32TUiBcKV-kDZv3SltGiRMwkEALG6kEvg8zqn4AJCw/edit#heading=h.2gn6px46qqps>]
- \* Anbindung einer Bohrungsdatenbank
  - \* Direkt über 2-3 Extratabellen
  - \* BoreholeML
- \* Darstellung des Bohrpfad, Bohrlochsegmenten, Schichtmarkern
- \* Keine Duplikation in GST Server selbst
- \* Filterung nach Länge und Ort



## Constrained Table

- \* Erweiterung der Constrained Properties
- \* Verlinkung von nicht nur einer Spalte, sondern ggf. mehreren Spalten

## Shapefile Export

- \* Export von einer oder mehreren Linien
  - \* Als 3d Shape
  - \* Als Profiline und Profilschnitt



## SEGY in GST Web

- \* Erste Versuch zusammen mit TU Darmstadt
- \* Bisheriger Weg über Gocad Voxet nicht zufriedenstellend
- \* SEG Y an sich complex
- \* Idee:
  - \* Ein SEG Y Service, welcher SEG Y in einem Verzeichnis indiziert/katalogisiert
  - \* Aufbereitung der SEG Y für GST Web, ggf. Weitere Systeme



# SEGY in GST Web

Navigation icons: Home, 3D, Link, Zoom, Pan, Rotate, Measure, Info, Layers, Full Screen.

2D | Logged in as: public user | Help | Language: English

**MODELS**

- Darmstadt

**MAPS**

- Basemap Projektgebiet
- Basemap Stadtgebiet
- Basemap Stadtgebiet Detail
- Frankenberger Grubenfelde
- Grubenfelde
- OSM-By Terrestris
- Trechtingshausen Textur

**THEMES**

None

Northing:  
Easting:  
Vertical Exaggeration 1

Current Coordinate System:  
ETRS89/UTM 32 N

About Impressum Login (Logged in as: public user)

# Thank you!

[www.giga-infosystems.com](http://www.giga-infosystems.com)



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aufgrund eines Beschlusses  
des Deutschen Bundestages



EUROPÄISCHE UNION

