

# Design and Development of the Countrywide Hydrogeological 3D Database of Saxony

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## Conditions

- **Hydrogeological mapping is done by external companies**
  - **Different modelling software packages are used**
  - **Open 3D data format should be used**
- **Not enough licences for 3D modelling software (GOCAD) for all users at Authority**
- **Main users (staff at Authority) should be able to visualise 3D data very fast in axis parallel cross sections**



## Aims

- **Countrywide, consistently and seamless dataset**
  - **Comprehensive workflow to be implemented:**
    - **Import**
    - **Export**
    - **Consistency checks**
    - **...**
- **Database system to store and visualise different data – open format (can be accessed by SQL)**
- **Export of subareas:**
  - **GOCAD, Geocando, ...**



# Hydrogeological data

- **3D data:**
  - Hydrogeological bodies
  - Faults (surface)
  - Boreholes (line)
  - ...
- **Factual data:**
  - Hydrogeological units (global parameters)
  - Hydrogeological bodies (local parameters)
  - ...
- **GIS data:**
  - Outcrop area of hydrogeological bodies
  - ...

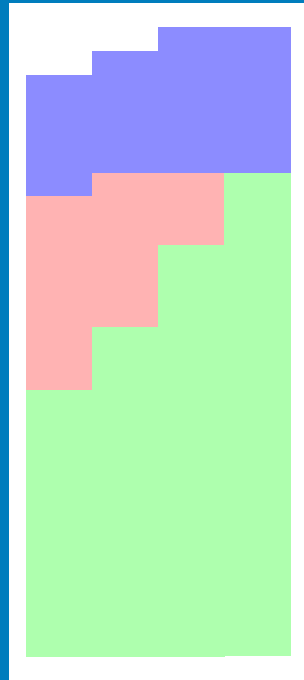
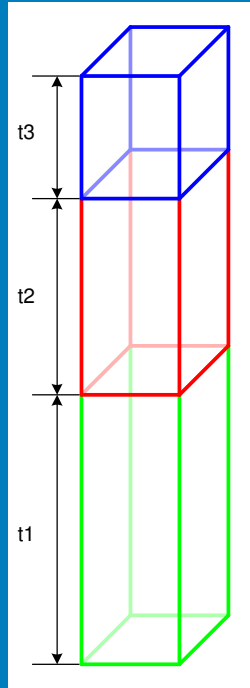
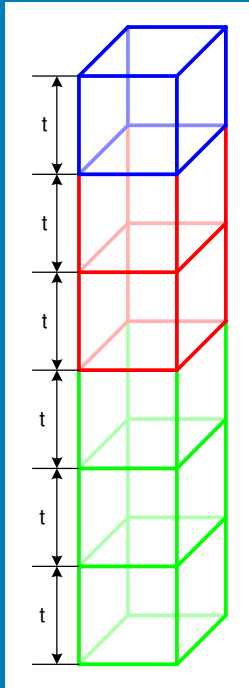


## 3D data format

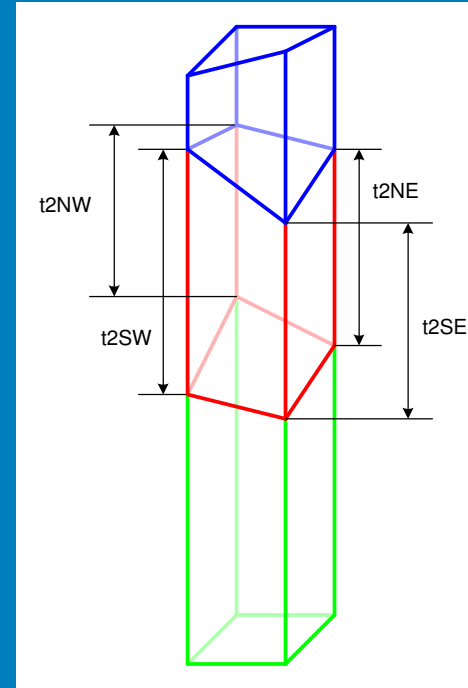
- **A raster based data format should be used:**
  - **Fast data access to construct axis parallel cross sections**
  - **Data can be easily replaced by new data**  
(clip all raster cells in a specified area and replace by updated raster cells)
  - **Format can be created by different modelling software packages**  
(requirement to external software: software must be able to extract elevation values at a given position)



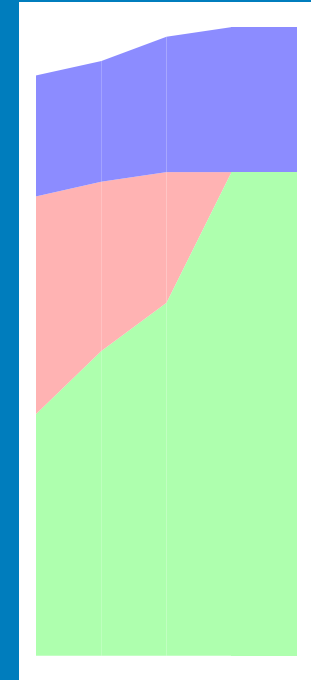
# 3D data format



Cross section



“Column”  
“Column sections”

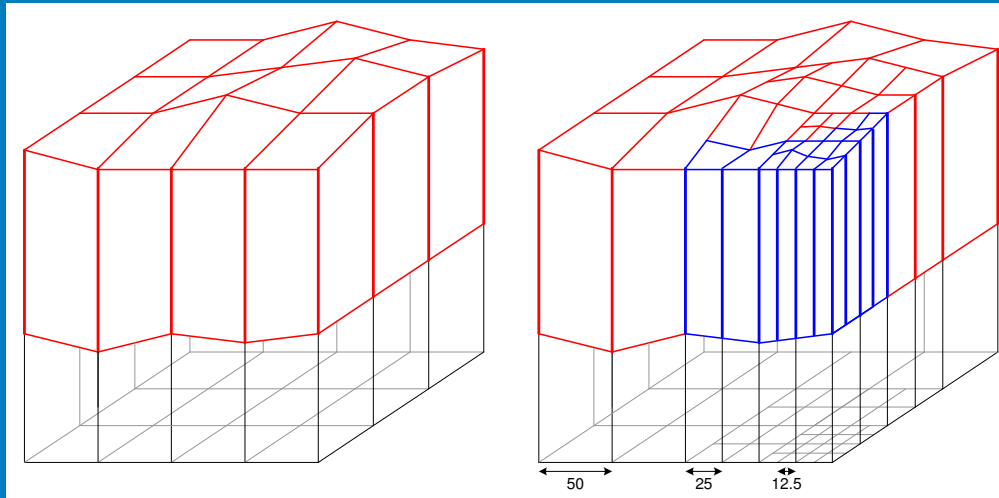


Cross section



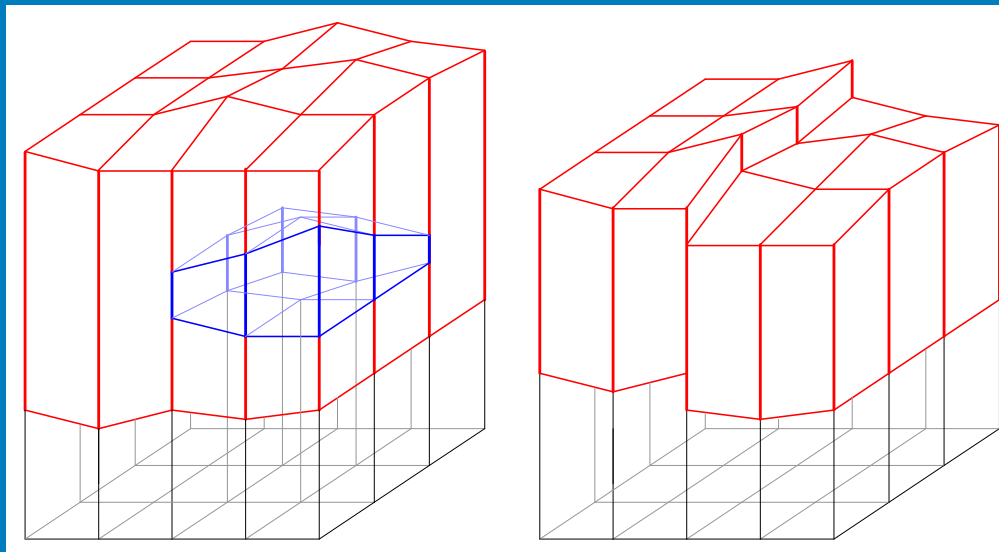
## 3D data format

Each body exists of several column sections.



Cell size of regular raster can vary: 50m, 25m or 12,5m.

Lentils



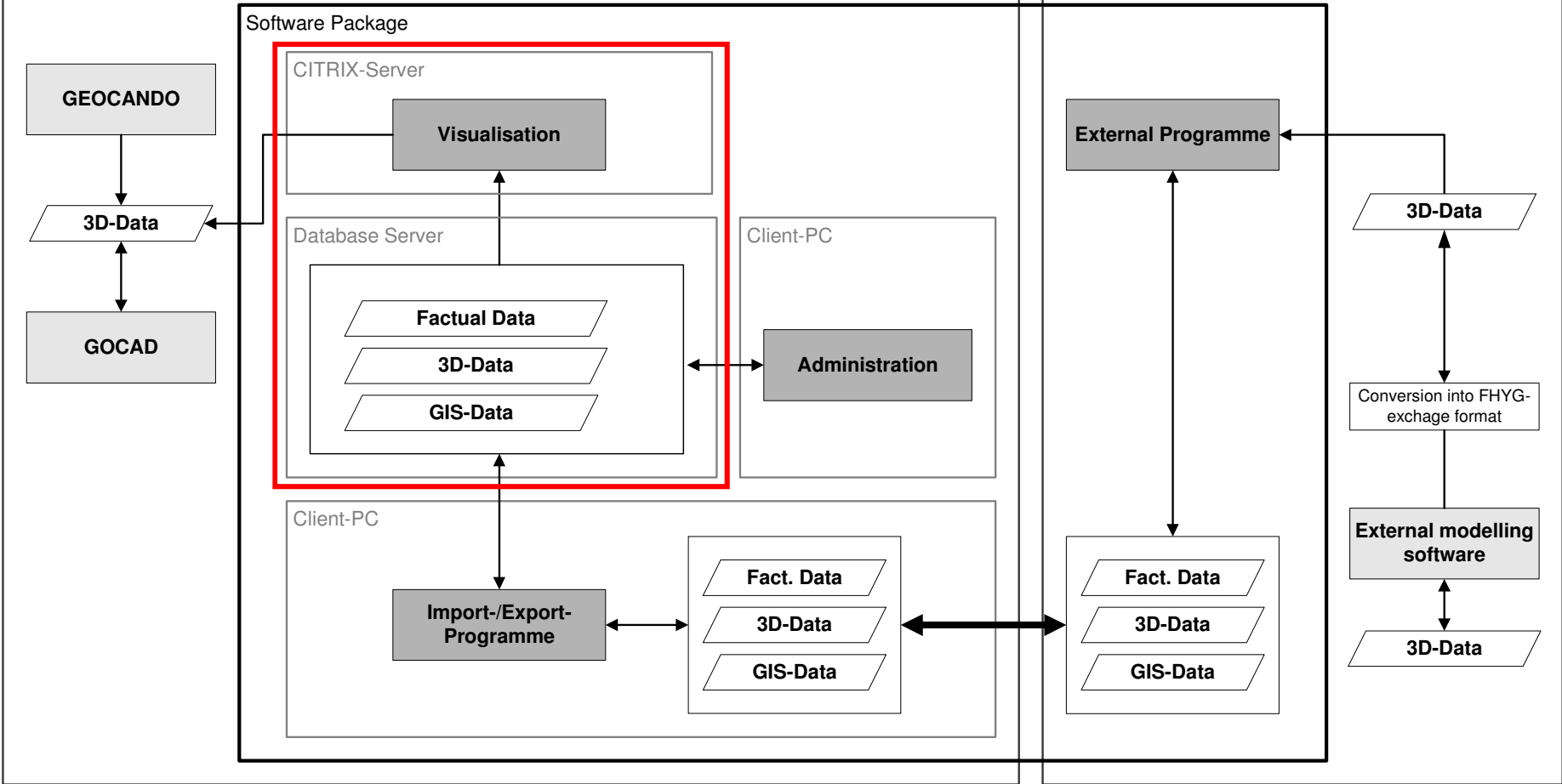
Faults



# Workflow

Authority

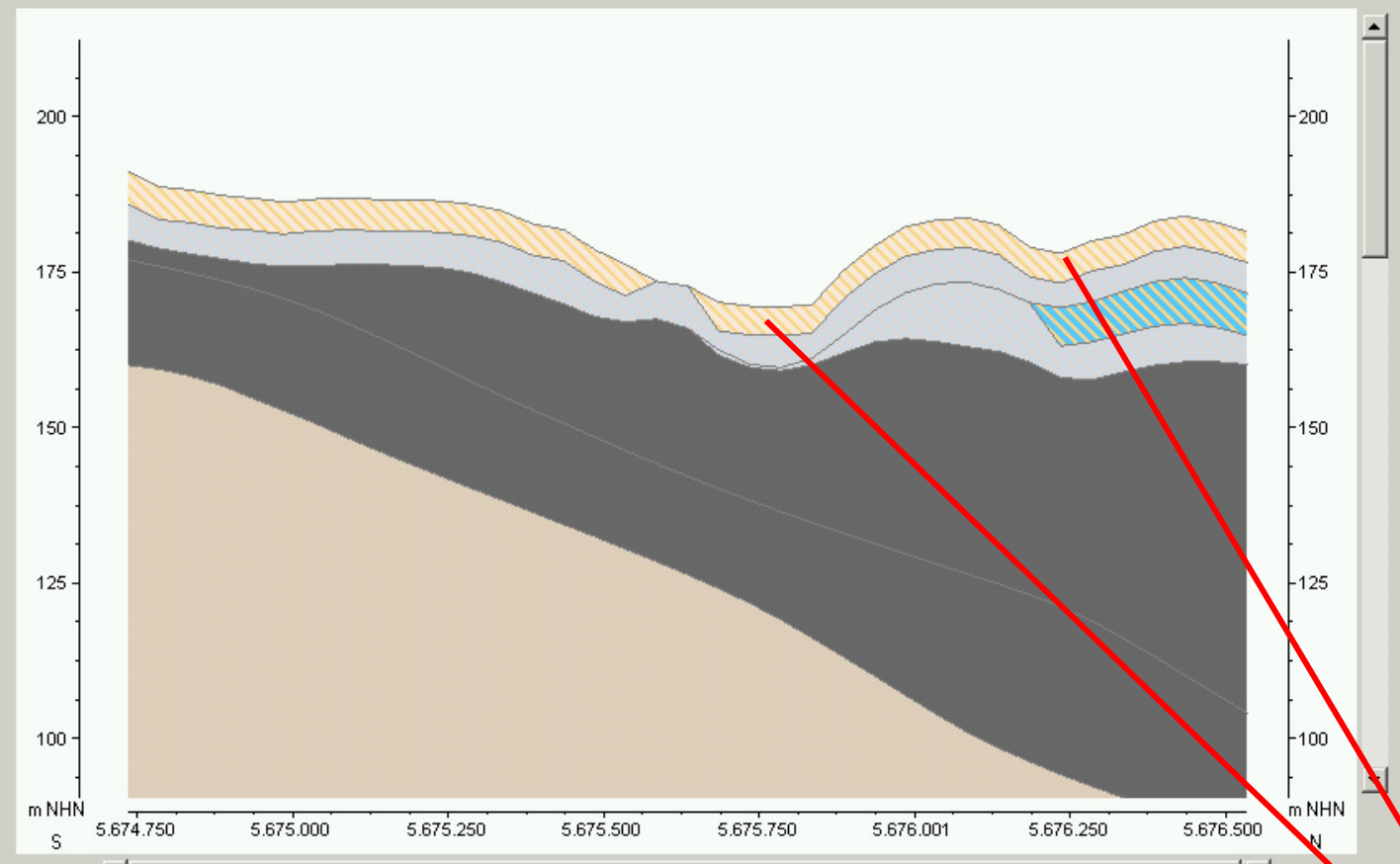
External Company





Schnittdarstellung (Version 0.4.0)

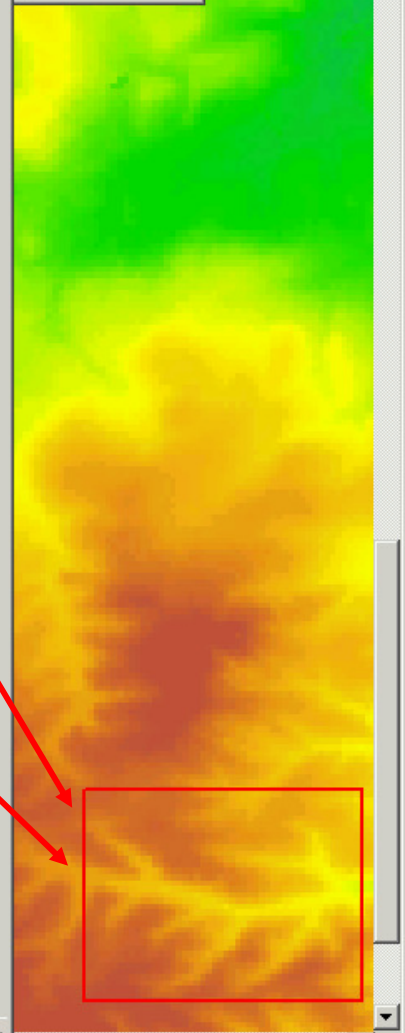
S-N (Rechtswert: 4.577.675) 1:10.000 Überhöhung:10 50x50 Schließen



Sachdatenanwendung FHyG\_IE starten

Hydrogeologie (FHYG)

0 26 125

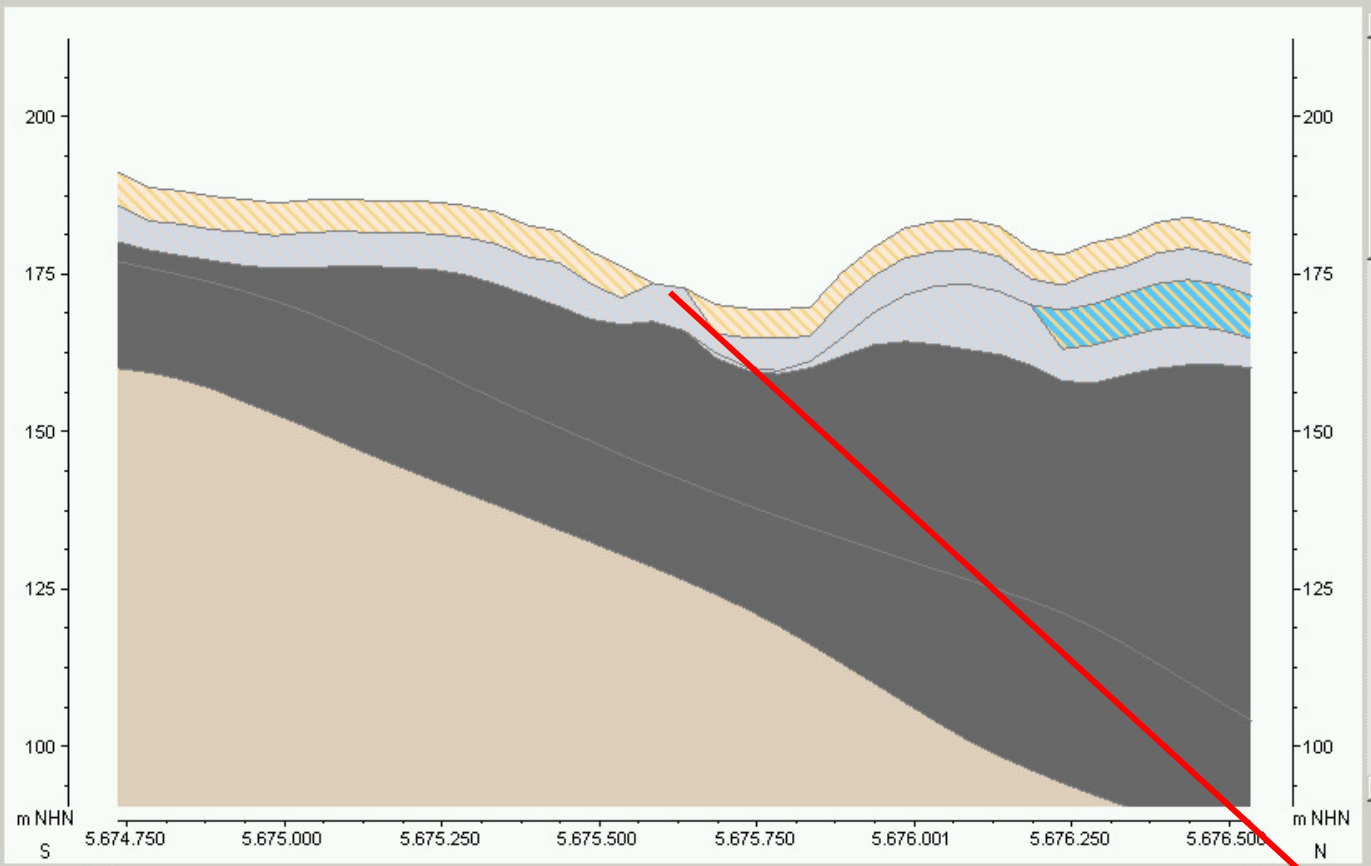


HYE	Name	Durchlässigkeitsklasse	Stratigraphie	Genese
14910	rollig	>1E-5 - 1E-3	KZQp.m.....	
16230	rollig, glazifluviatil	>1E-5 - 1E-3	KZQp.mEl.....	
16150	Grundmoräne	k.A.	KZQp.mEl2.1.....	
48000	ungegliedert	k.A.	MZTB.....	sedimentär

Rechtswert: 4.577.675; Hochwert: 5.674.831; Höhe: 166 Daten der 3D-Säule anzeigen

Schnittdarstellung (Version 0.4.0)

S-N (Rechtswert: 4.577.675) 1:10.000 Überhöhung:10 50x50 Schließen



Outcrop area

HYE	Name	Durchlässigkeitsklasse	Stratigraphie	Genese
14910	rollig	>1E-5 - 1E-3	KZQp.m.....	
16230	rollig, glazifluvial	>1E-5 - 1E-3	KZQp.mEl.....	
16150	Grundmoräne	k.A.	KZQp.mEl2.1.....	
48000	ungegliedert	k.A.	MZTB.....	sedimentär

Rechtswert: 4.577.675; Hochwert: 5.674.833; Höhe: 215 Daten der 3D-Säule anzeigen

Thank you for your attention

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Fragile Earth: C11



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