Sveriges geologiska undersökning

Urban geology for underground planning. Gothenburg, Sweden

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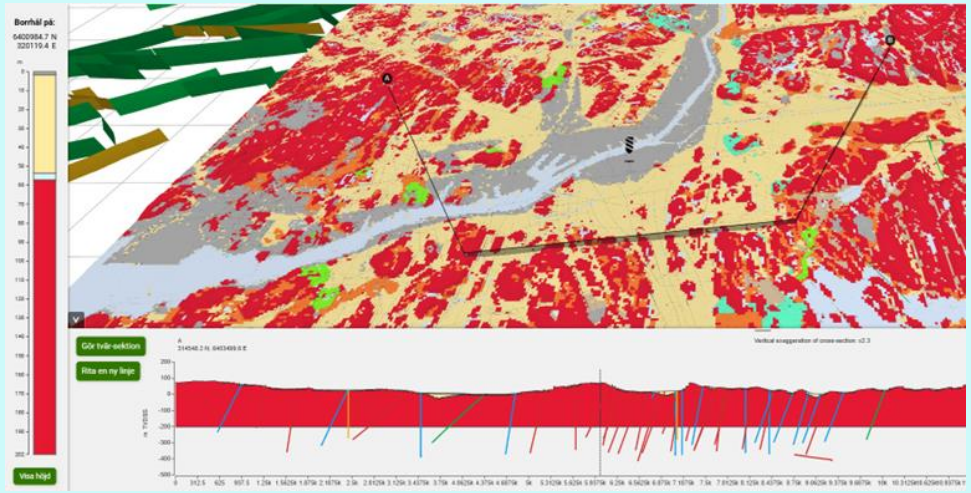


3D geological mapping using SGU and industry generated data from tunnels and boreholes

Aim:

- to provide industry with a better starting point. A framework for them to develop more focused project models.

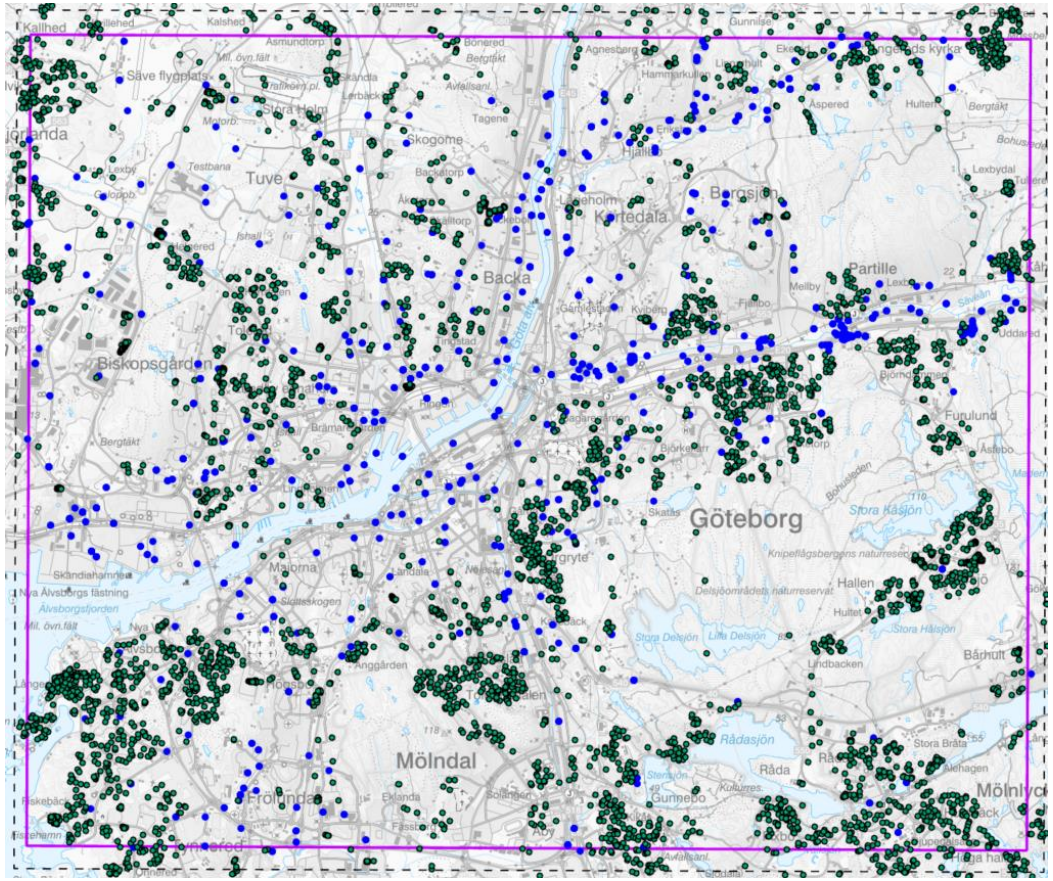
Input:

- Engineering geological mapping of tunnels from the contruction phase, 1960's to today. Varying quality and details.
- Surface mapping, geophysical surveys and boreholes of various types.

Model focus:

- Soil layers and depth to bedrock- bedrock cover for future tunnels
- Weakness zones- faults and fracture zones, dykes for tunneling.

Soil layers and depth to bedrock



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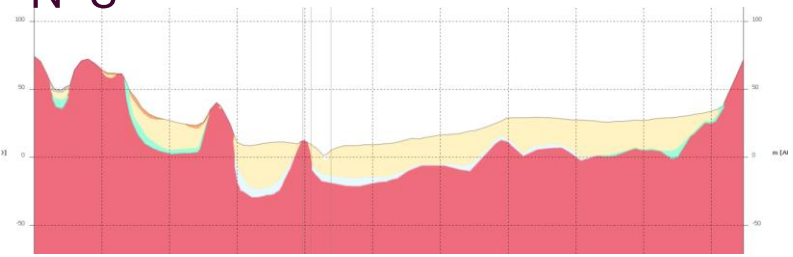

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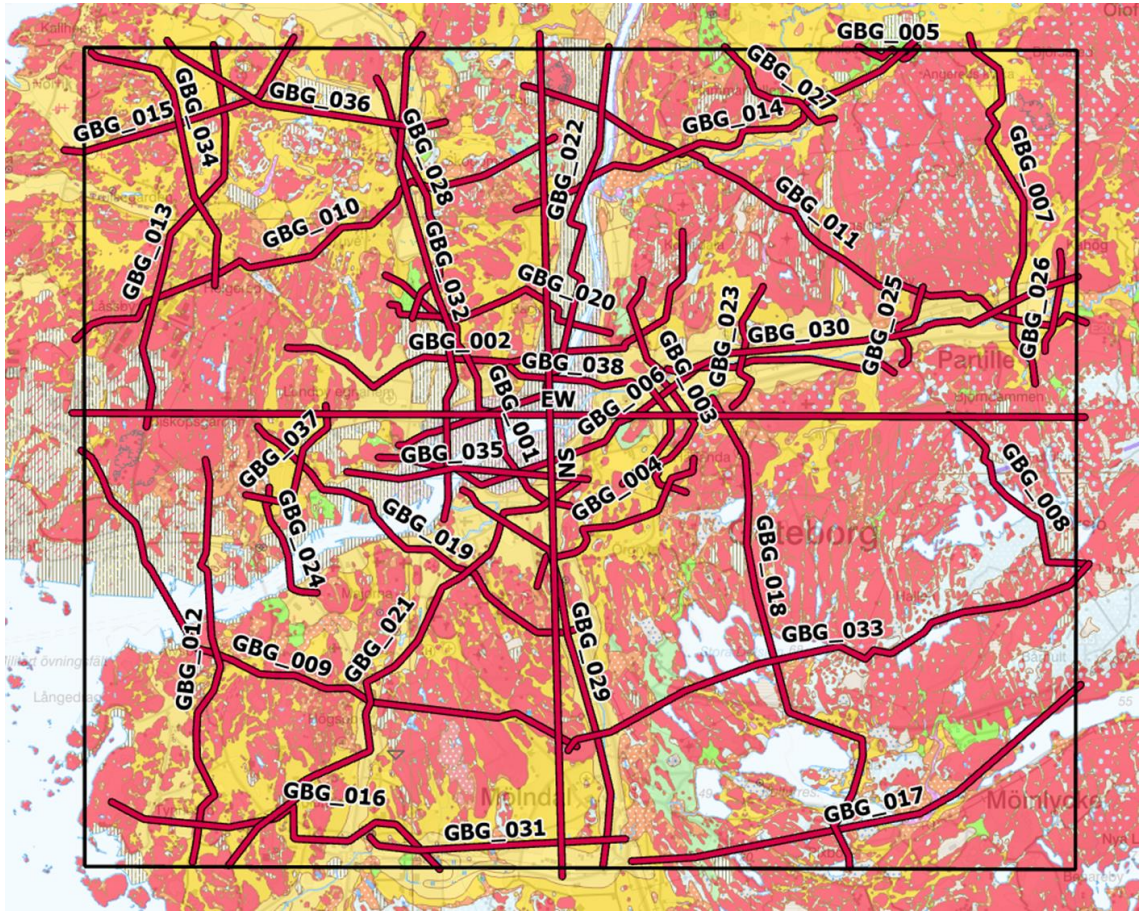
Soil layers and depth to bedrock



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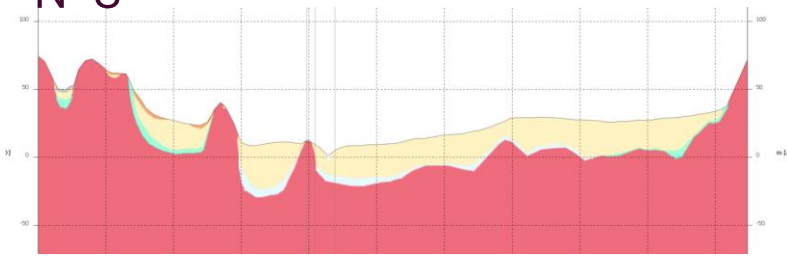

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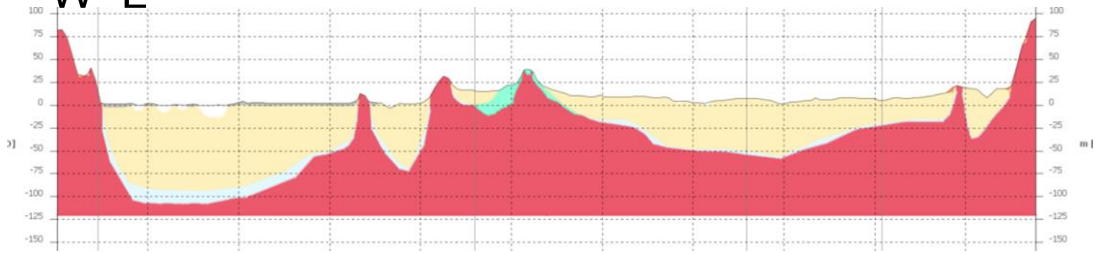


Weakness zones– faults and fracture zones, dykes for tunneling

- **Svaghetszoner**
  - Svaghetszon hog konfidens
  - Svaghetszon medel konfidens
  - Svaghetszon låg konfidens
  - Svaghetszon låg konfidens - lineaments

Northing:	**6397269 m**
Easting:	**315123 m**
Höjd:	**-159.9 m TVDSS**
Dip:	**80°**
Azimuth dip:	**332°**

SVAGHETSZON MED HÖG KONFIDENS

ID: 200205

Strykning: 245° (min: –°, max: –°)

Stupning: 80° (min: 80°, max: 90°)

Bredd: min: – m, max: 100 m

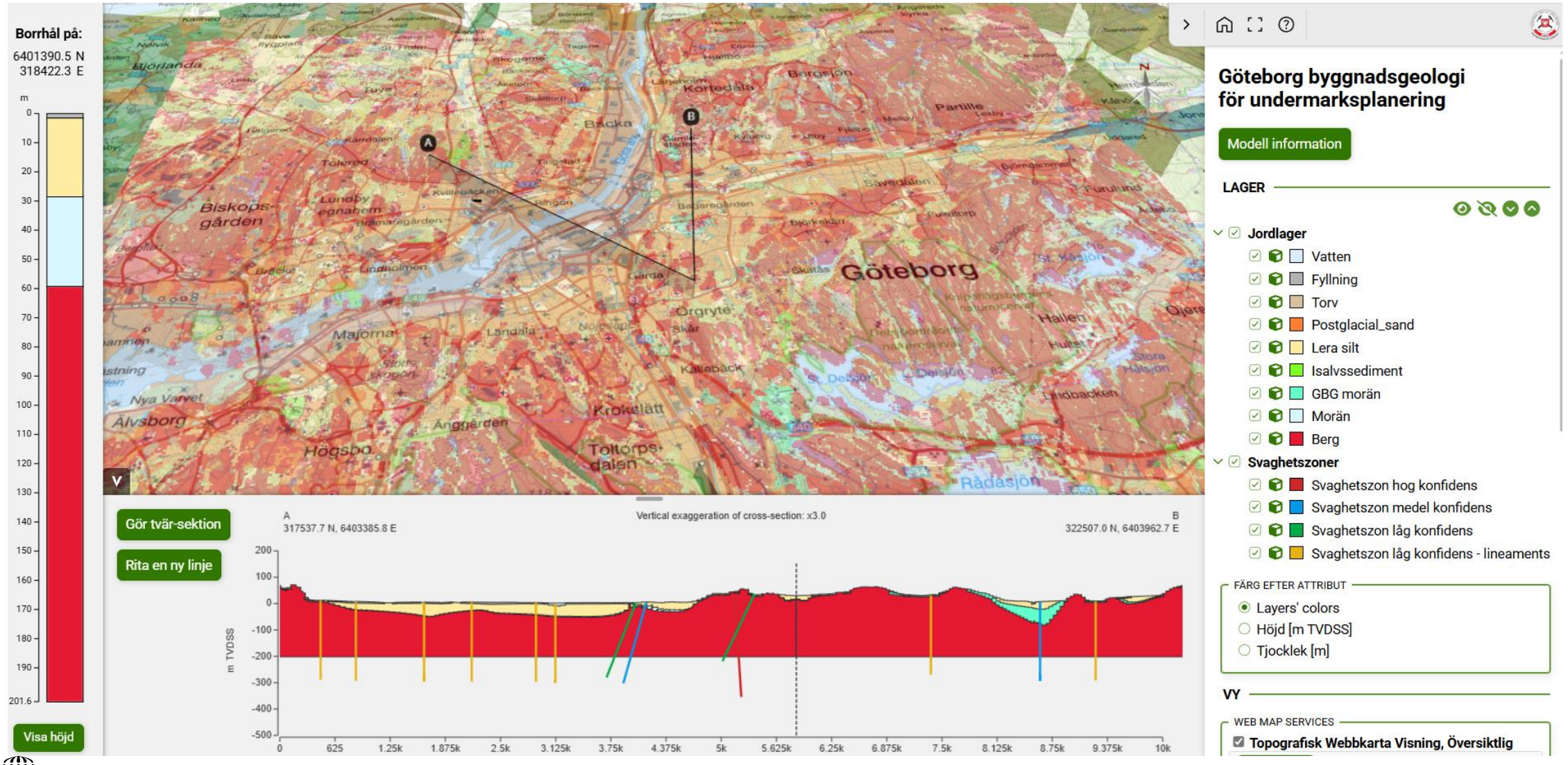
Kommentar: Vatten=1,2. ka. Bergkar_K=3-4. SAN19- SAN20 i sekvens. Bergkaraktär klassad enligt K som är har liknande gränser som Z men skillnaden mellan skivigt och tunnskivigt går vid 10 cm och inte vid 20 cm som för Z-värdet. (SHT14, en kombination av flera olika zoner/riktningar)

Materialegenskap: starkt uppsprucken, ej specificerad läkningsgrad

Tolkningsunderlag: höjddata, fältdata

OBSERVATIONER

Integration and presentation with PGI Geo3D



Communication of results

- Models need to focus on the end users and be presented with a clear GUI, with simple tools that allow interaction and investigation. Downloads can provide the details for further downstream development by experts.
- **Geo3D**: presentation of the 3D map, with simple but effective interactive tools; borehole and cross section generation; downloading associated reports, data sets and videoclips.

Future

- Transfer of existing SGU models to Geo3D. (?)
- Further development of Urban Geology for underground planning, for Stockholm.

Dynamic updating

- **Urban geology of Stockholm**
- The existing 'model' was an, on-the-fly, 3D visualization of data from a series of independent databases and components, rather than from a single sorce or 'model file.'
- Including: Fault network db, bedrock geology db, quaternary deposits db, elevation model, borehole db, well db, obs db etc.
- This means that the individual databases and individual visualizations can be updated dynamically and independently.
- Ideally have a solution like this that links this to a tool like PGI's Geo3D.

Thank you!