A short Update on GST[AR] Collaborative Visualization in AR

Björn Wieczoreck, 16.03.2023

A short Update on GST[AR]

Agenda

- Short recap
- Now on Android!
- Features
- Limitations

Short Recap

What has happened so far?



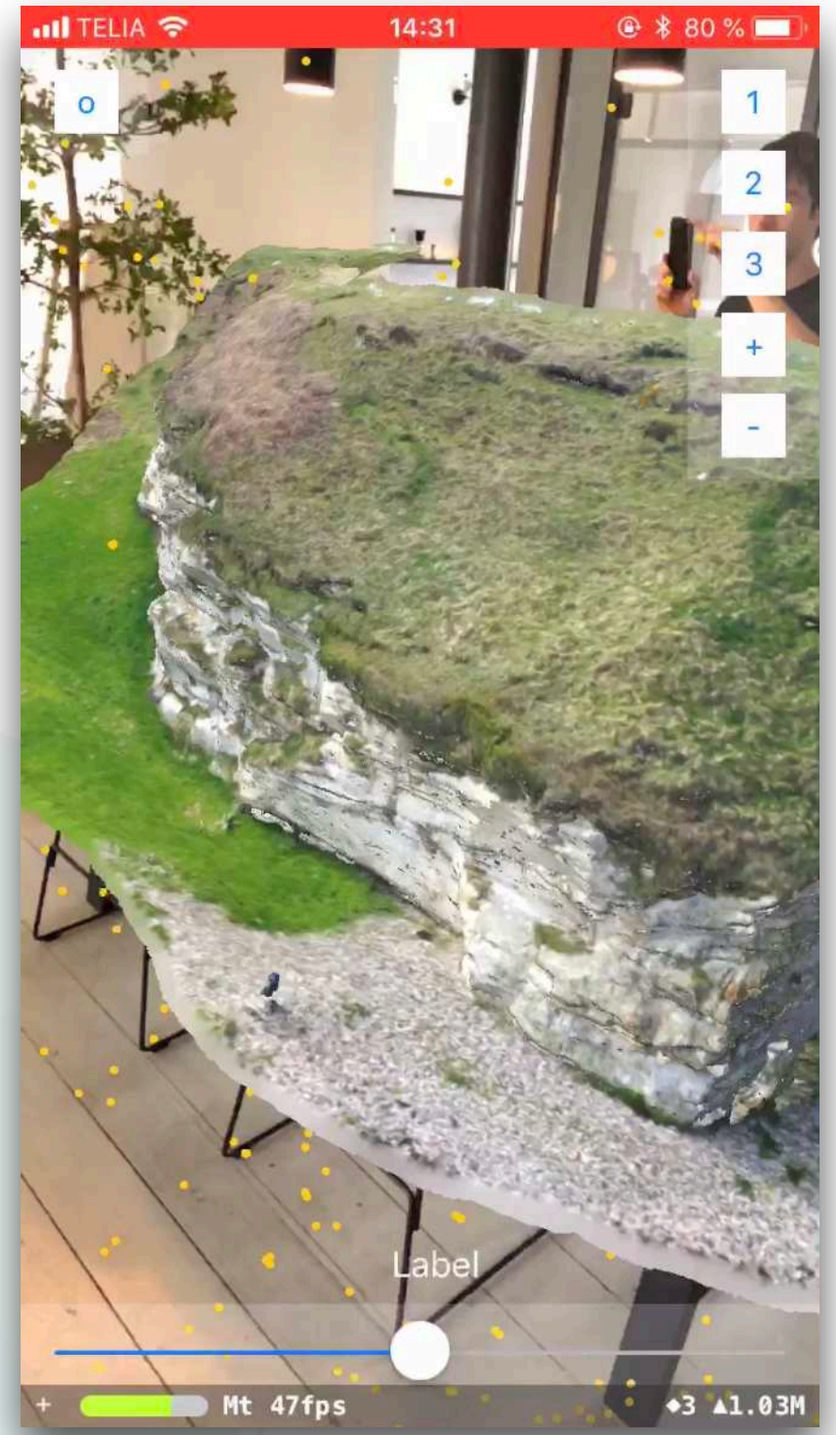
- New technology can be exciting, but also needs to be accessible
- Augmented reality is available on many devices and intuitive to use
- An opportunity to see geodata from a new perspective?
- Promising enough to work on a prototype!

Origins

The dream becomes reality

- Subsurface Hackathon

  (2018, Agile Scientific)
- Team of 5
- Surpassed our expectations
  - Visualize model
  - Collaborate
  - iOS/Android/Desktop



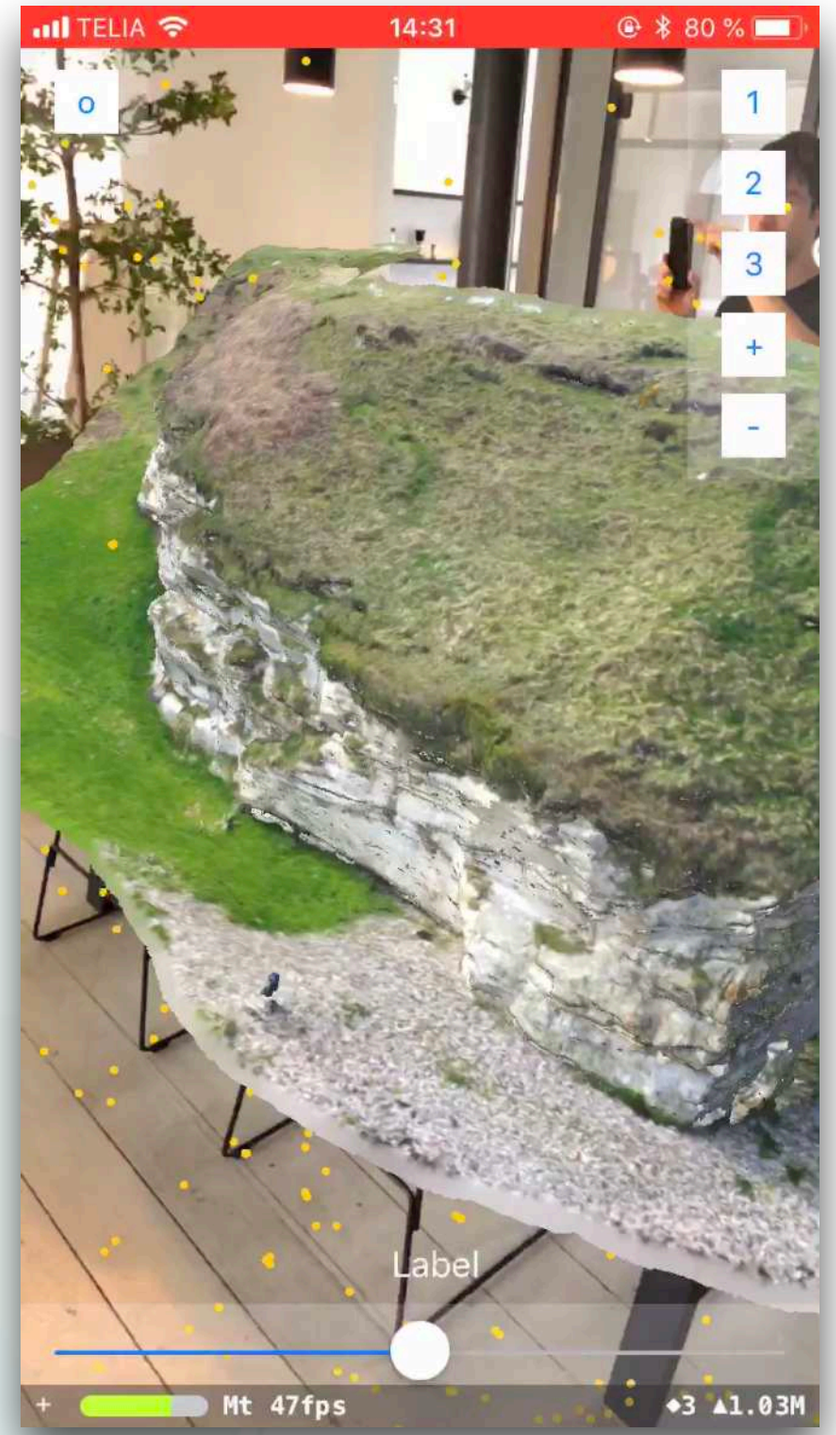

Brian
Bjorn :)
PRESS START
PLAYER 1

Origins

The dream becomes reality

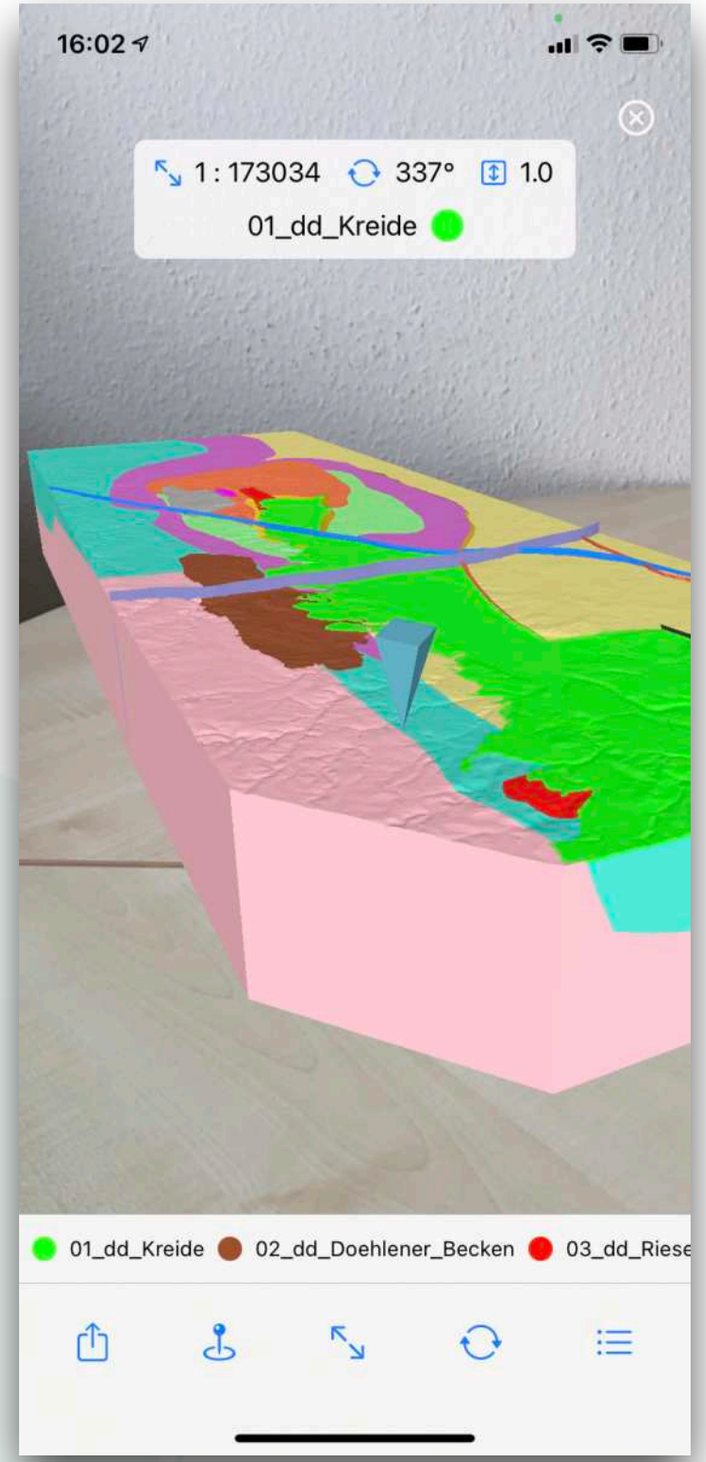
- Subsurface Hackathon

  (2018, Agile Scientific)
- Team of 5
- Surpassed our expectations
  - Visualize model
  - Collaborate
  - iOS/Android/Desktop



Augmented Reality Showcase

Project with swisstopo



- Summer 2020
- Michael Zwick/Eva Kurmann
- One showcase out of three
- App Store ready version of the prototype
- Complete rewrite (iOS only)

Now on Android!

Took us long enough

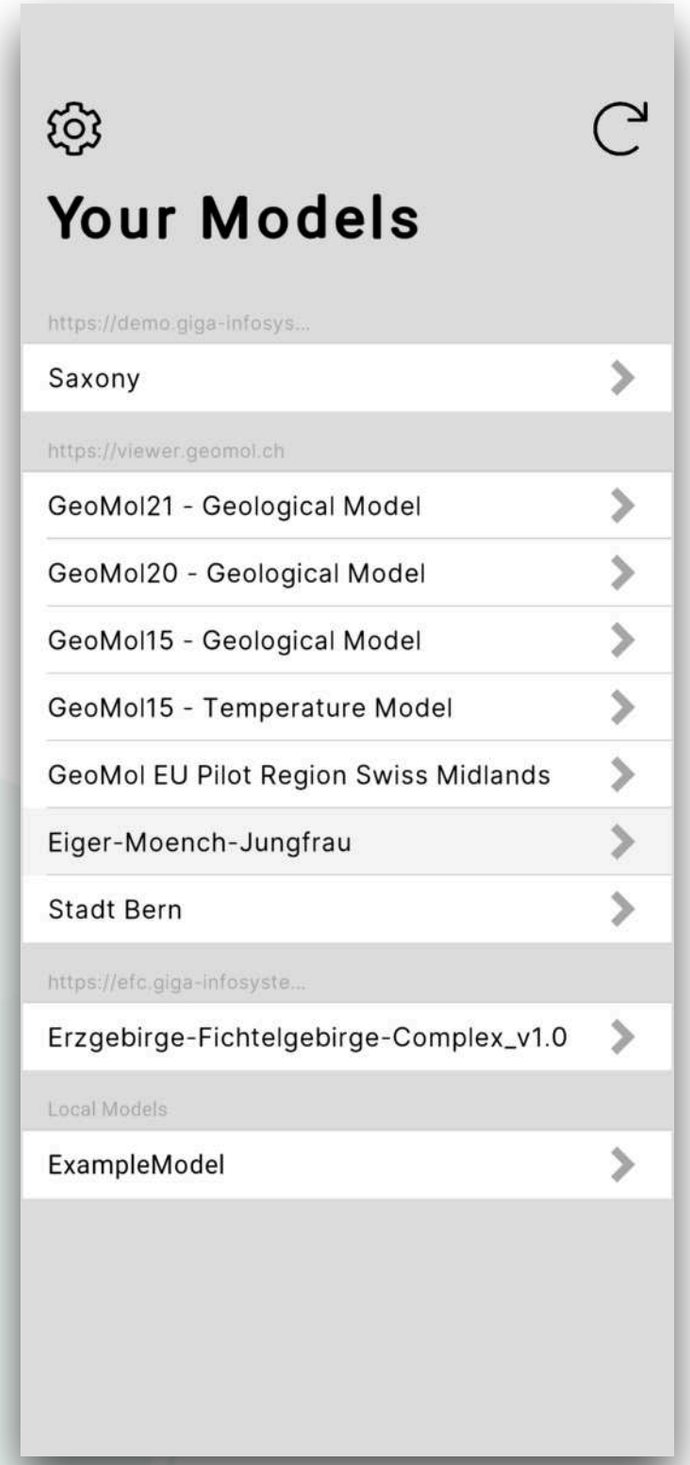
- Working together with „Ten Eyes Media“ in 2022
- Unity based implementation
- All features from the iOS app are included
- Some limitations apply



Features

Model overview

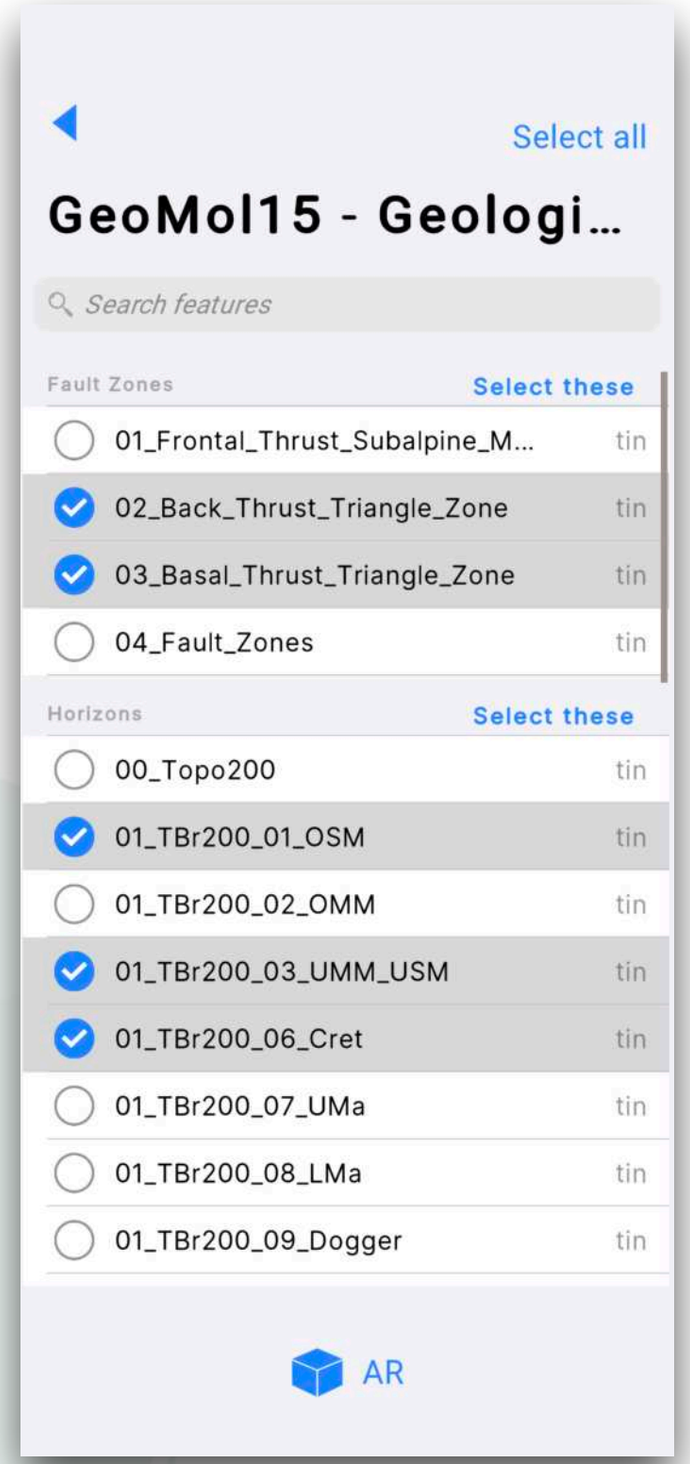
- App stores endpoints (GST-Web instances)
- Queries which models are available and presents them
- Local models for offline viewing



Features

Feature list

- Per model: show a list of all available features (TINs/solids)
- Search through features
- Make selection for AR
- Sections roughly follow MoMa tree



Features

AR View

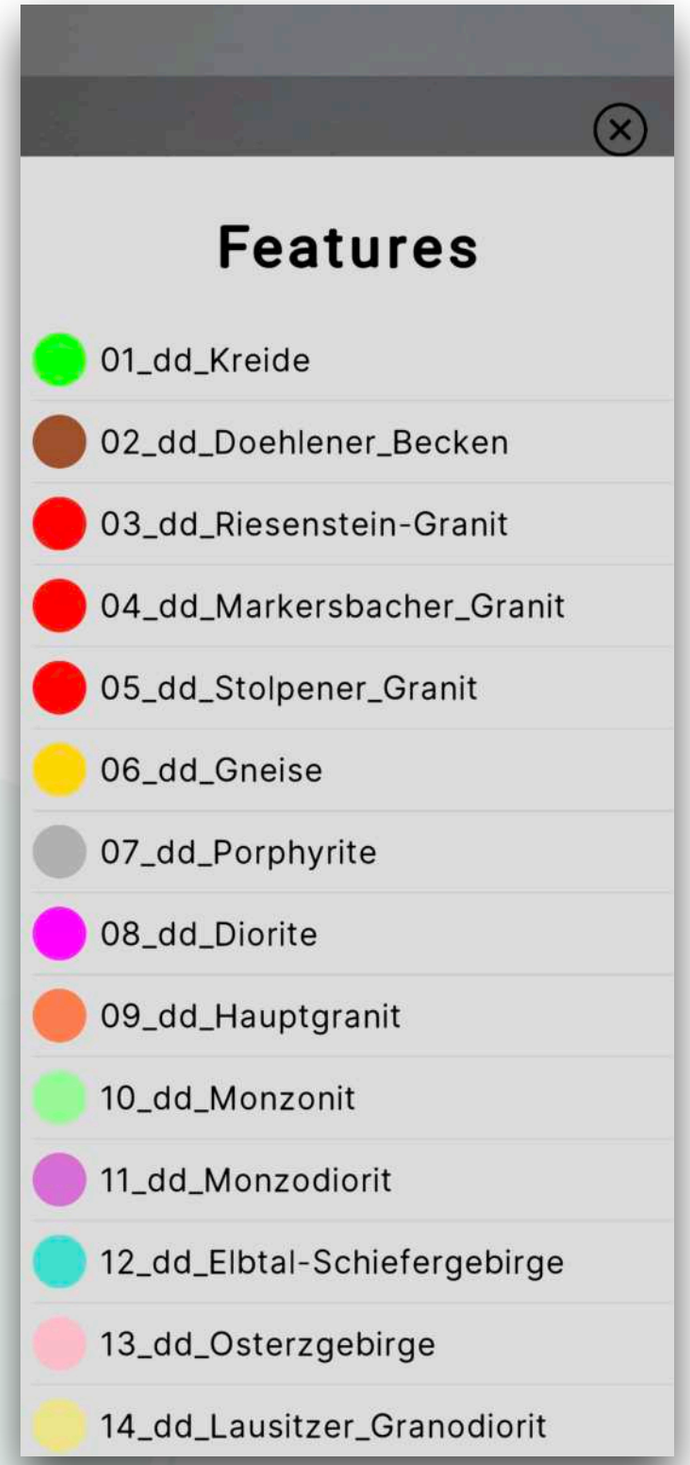
- (Re-)Place 3D model in AR
- Change size/rotation/ superelevation via gestures/ sliders
- Tap to see name of features
- View list of features via legends (horizontal/vertical)
- Highlight individual features



Features

AR View

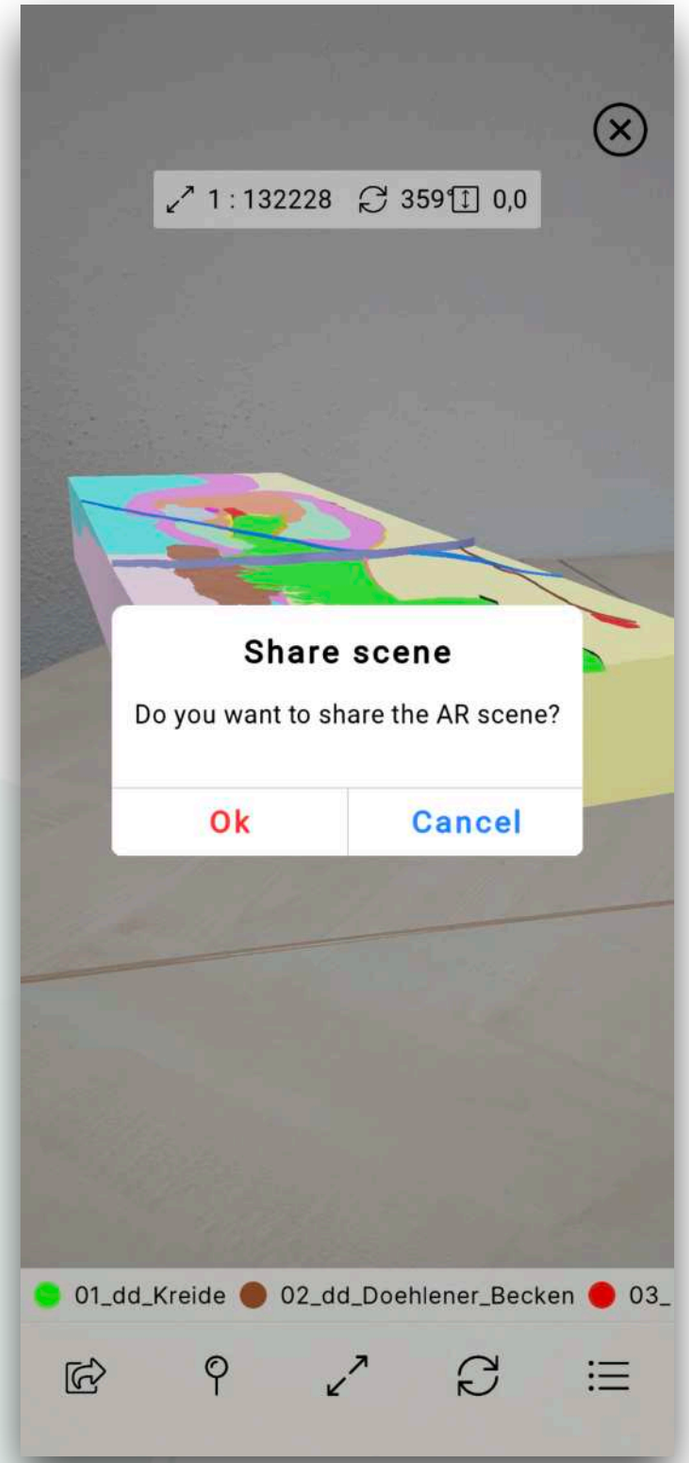
- (Re-)Place 3D model in AR
- Change size/rotation/ superelevation via gestures/ sliders
- Tap to see name of features
- View list of features via legends (horizontal/vertical)
- Highlight individual features



Features

Collaboration

- Share session with one peer
- Both users see model in same location in the same state
- Both users can manipulate scene
- Both users can place markers and share feature selection

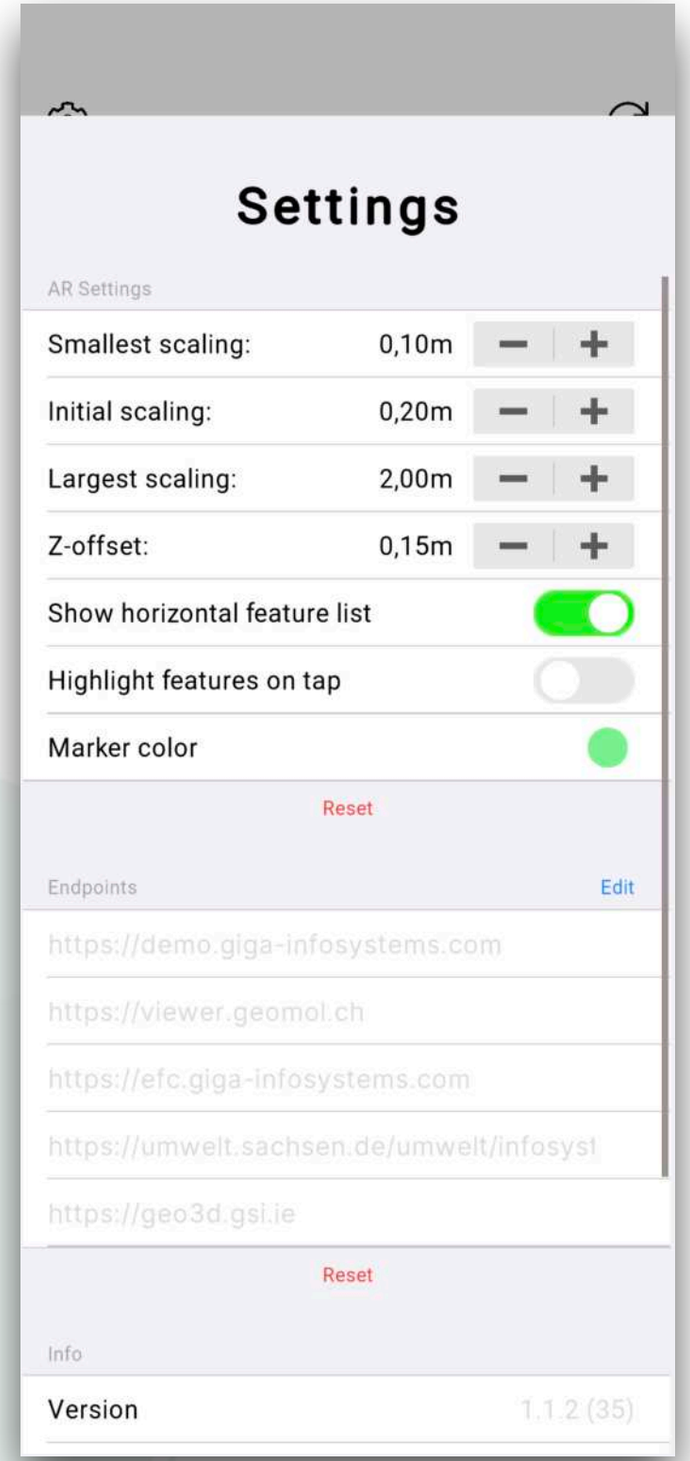


Features

Settings

- Change min/max size
- Show/hide horizontal legend
- Personal marker color
- Manage endpoints

  (Add/remove/reorder)



Demo

Android Limitations

Not as bad as they sound

- We use .obj files with Unity -> not as optimized as USDZ (yet)
- Android AR is a bit less performant, models cannot be as big, tracking needs well lit environments
- Collaboration only possible between two devices (WIP)
- Collaboration requires communication via Google servers (not locally)
- No cross-platform collaboration

Further development

Let us know what you think



- ✅ Android app
  - ✅ Most likely no cross platform collaboration from the beginning
  - ✅ Collaboration on Android possible
  - Tablet support

- Viewlinks that take you to the app (via QR codes)
- Guided collaboration (only one user manipulates scene)
- Presentation mode (place shared model in front of you)
- [your idea here]

Thank you!

www.giga-infosystems.com

Requirements



- Android 7.0 or newer
- Device is compatible with „Google Play Services for AR“ (this might be stricter than the above requirement)