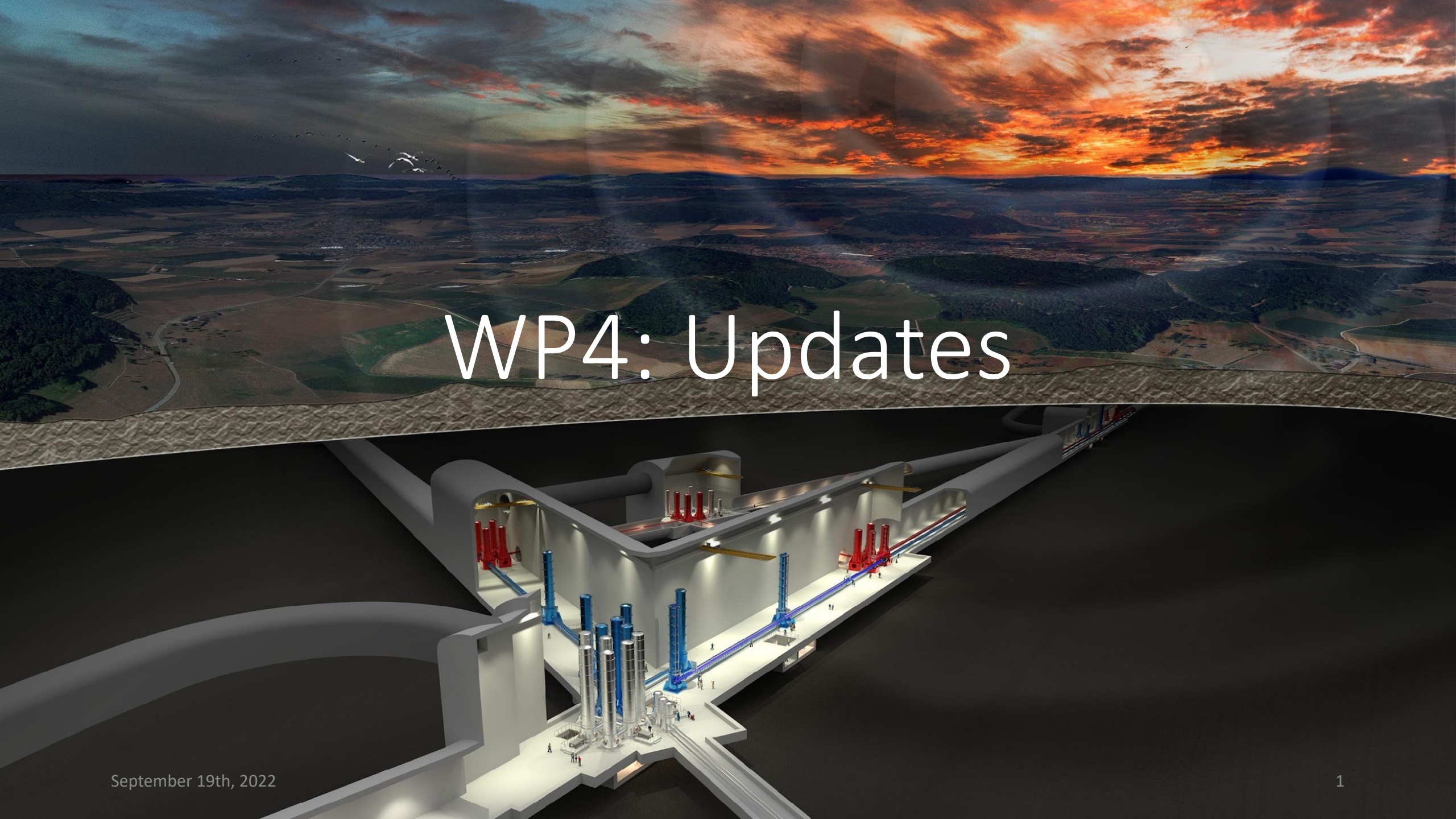


WP4: Updates

WP4 Milestones

Milestone name – Date (in months)/Lead Institution

- **M4.1 – M3/UW :** ***Document detailing the site-specific characteristics that impact ET sensitivity and its duty cycle => REPORT***

- **M4.2 – M10/UW :** ***Common methodology to estimate impact of site characteristics on ET sensitivity and operation and, if required, a scheme to compensate it => REPORT***

(months from ET-PP start date, Sept. 1st)

WP4 Deliverables

Deliverable name – Date (in months)/Lead Institution

- **D4.1- M10/Nikhef:** ***Scan of legal procedures, permitting and land acquisitions, i.e. the steps to be taken prior to starting excavations***
- **D4.2 - M15/INFN:** ***Updated socio-economic impact studies. Scan of accessibility, quality of life etc.***
- **D4.3 - M28/UW:** ***Complete quantification of all the aspects impacting the ET performance for each site***
- **D4.4 - M30/INFN:** ***Report on 3D geology, hydrology, etc. model with localisation of the ET infrastructure***
- **D4.5 - M42/Nikhef:** ***Updated cost and schedule estimates of the excavations, including, if necessary: instrumentation for Newtonian Noise cancellation; costs of debris removal; costs of land acquisition, permitting, etc.***

(months from ET-PP start date, Sept. 1st)

Issues to be addressed soon

- Timeline review (on going)
- Discussions with ISB/OSB on relevant parameters/requirements (Jan Harms workshop July 11th a very good start)
- ET basic geometry definition i.e. Δ versus L (urgent, next ET Symposium will be devoted to that)
- Approach to update notably civil engine… with or without the involvement … gineering parties
- Bidbook approach

ET-PP INFRADEV kick-off Meeting – Barcelona 19-20 July 2022

SPB Re-Organization and Timeline review

- Next SPB meeting (Sept 21st) devoted to discuss plan and future activities of WD1 (Physical variables and characterization) and WD2 (Geology)

SPB-ISB

- Sept. 19th : preliminary call SPB-ISB
  - Update of physical variables to be measured
  - Common methodology to estimate impact of site characteristics on ET sensitivity

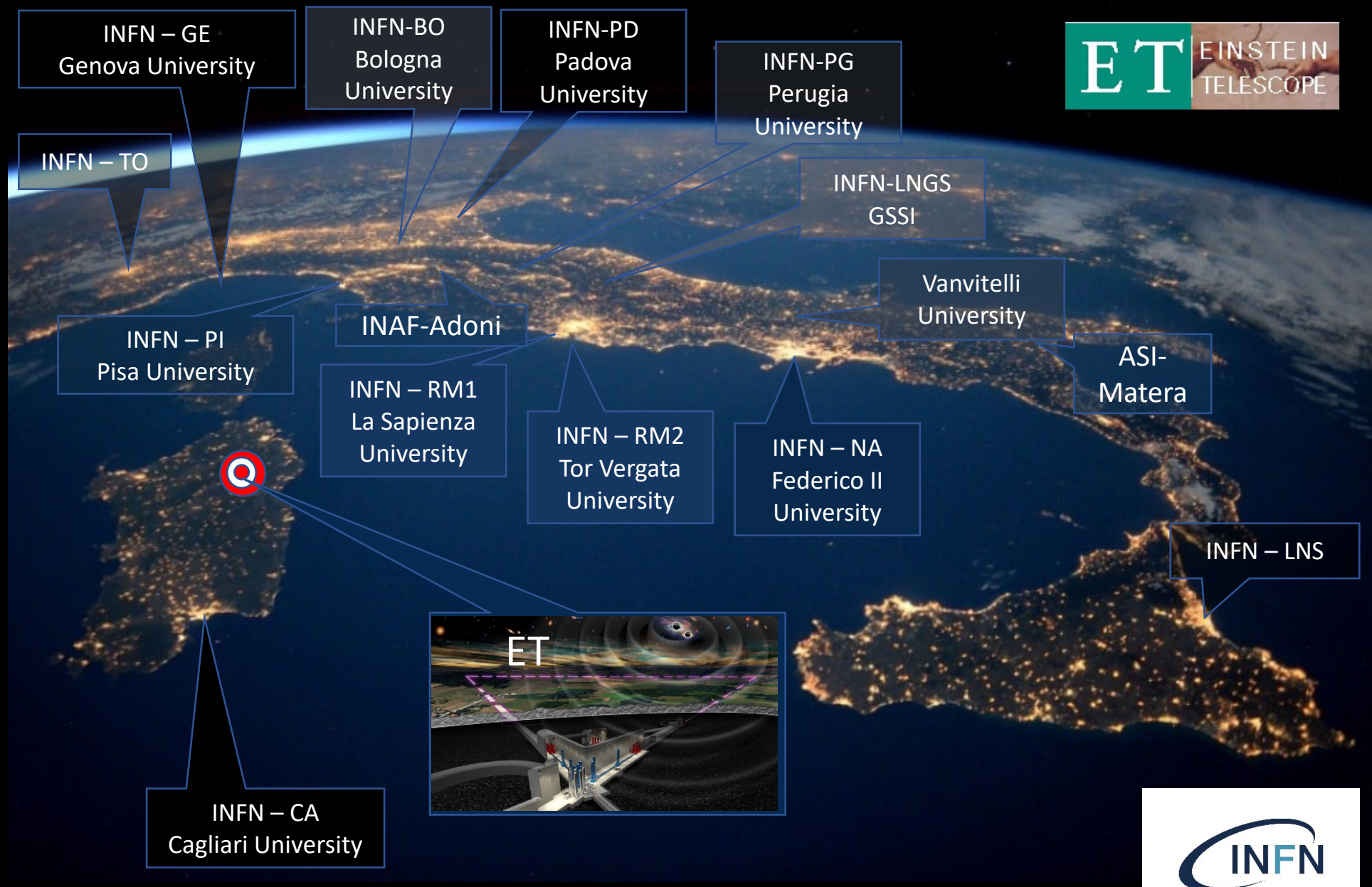
- Talk and meeting on Site characterization @ ISB workshop

ETIC – Einstein Telescope Infrastructure Consortium

Next Generation EU Investment focused on ET enabling technology and Sardinian site candidature support

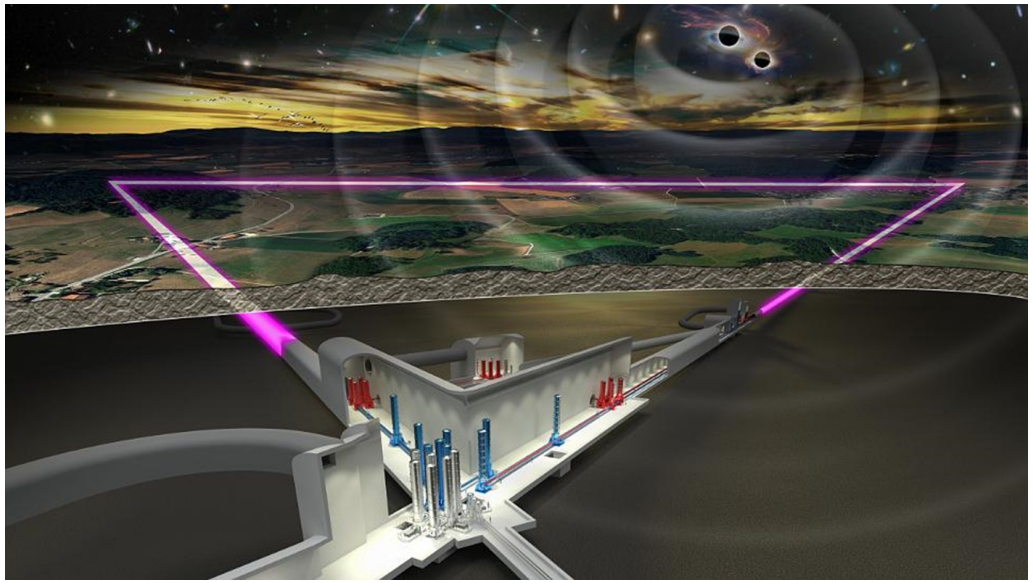
Leaded by INFN
Partners: 11 Universities, INAF and ASI (Italian Space Agency)

Budget 50M€ approved



News from Sos Enattos Site

- ETIC (Einstein Telescope Infrastructure Consortium) project approved. **Budget 50M€**
  - Preliminary Design of ET infrastructure
  - Network of Laboratories for R&D dedicated to ET



ET-PP/INFRADEV
Progress report SPB
Euregio Meuse-Rhine Site

D4.1 – M10
Scan of legal affairs

Contract (~50 k€) awarded to Amberg & Tractebel-Engie to make inventory of legal/planological/environmental hurdles related to the realisation of ET in the EMR.

- ***Kick-off meeting 31-August-2022***
- ***Report expected early 2023***

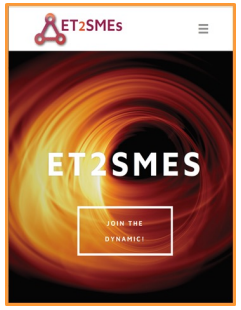
D4.2 – M15/INFN
Socio-economic impact

(this is the main motivation of our governments to support ET, I fear)

4 studies performed of which 2 public (ESFRI annex)

Industrial collaboration

2,2 M€



&

3,6 M€

+ 16 M€ Dutch NGF

Site preservation: *Windturbines*

Very popular, even more so with present electricity prices

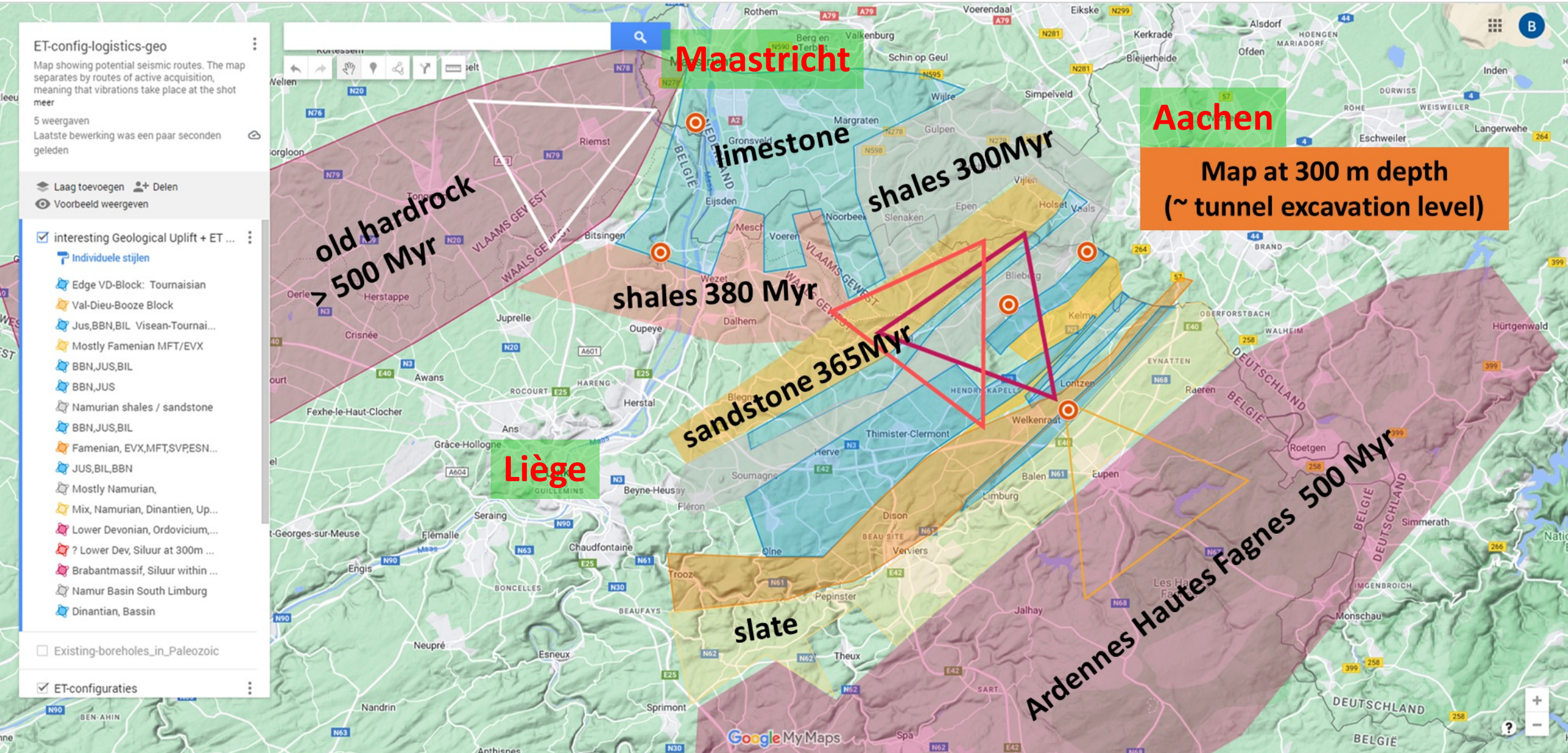
Netherlands:- ban on new windturbines
- ban on other activities (like excavations) that risk to impact ET adversely

Belgium: - discussions ongoing with notably Engie (large windturbine supplier) regarding new initiatives.

Germany: - ?

More measurement campaigns in preparation (with Engie)

Main issue:
Cost-effective location to build ET in EMR?



Answer: *requires lots of geology studies*

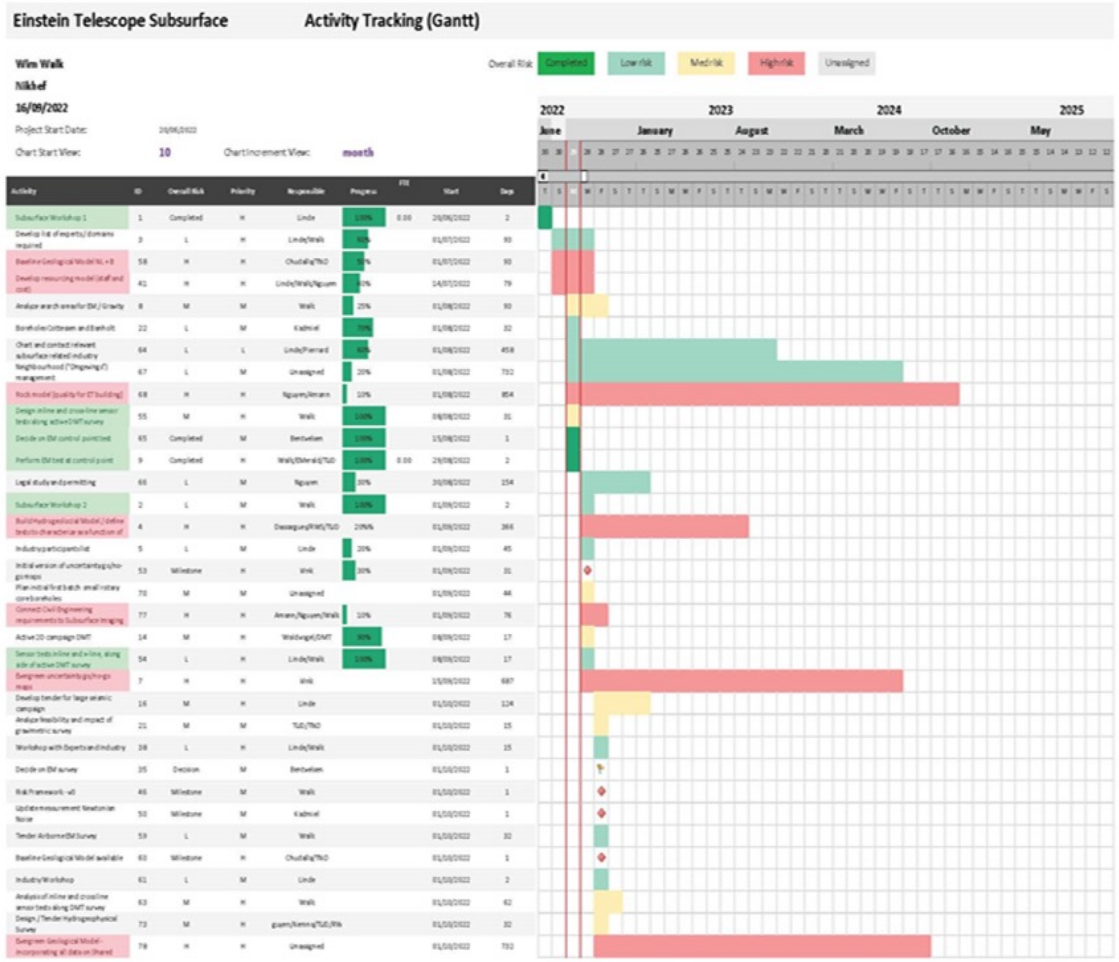
Funding:
- **about 7,5 M€ E-TEST (Interreg-EMR, capital+personpower, 2020-2023)** *(boreholes, active seismic, • • •)*
- **18 M€ (Dutch NGF geology, mosty capital, 2022/2023-2025)** *(more boreholes, lots of active seismic, • • •)*
- **? M€ from a to be submitted Interreg-NWE application focused on sustainability (2023-2025)**

NGF: 2 full-day workshops, June 20 & September 1

Participants: TU/Delft, Liège university, RWTH-Aachen, KNMI, TNO, Antea, Implenia, Limburg province, geological survey Belgium, Royal Observatory Belgium, Nikhef, Bonn university, • • •

Objectives:

- **Update on recent and upcoming activities**
- **Discussion on Urgent/Critical Activities**
  - ***Construction of hydrogeological model (critical)***
  - ***Establish baseline geological model (keep it up-to-date!), including universal data access – shared drive, etc.***
  - ***Geophysical mapping of subsurface: seismic, EM, gravity, • • •***
  - ***Establish critical/minimum subsurface requirements/characteristics in view of excavations***
- **Activity planning & resourcing**
  collaboration towards aligned goal(s)



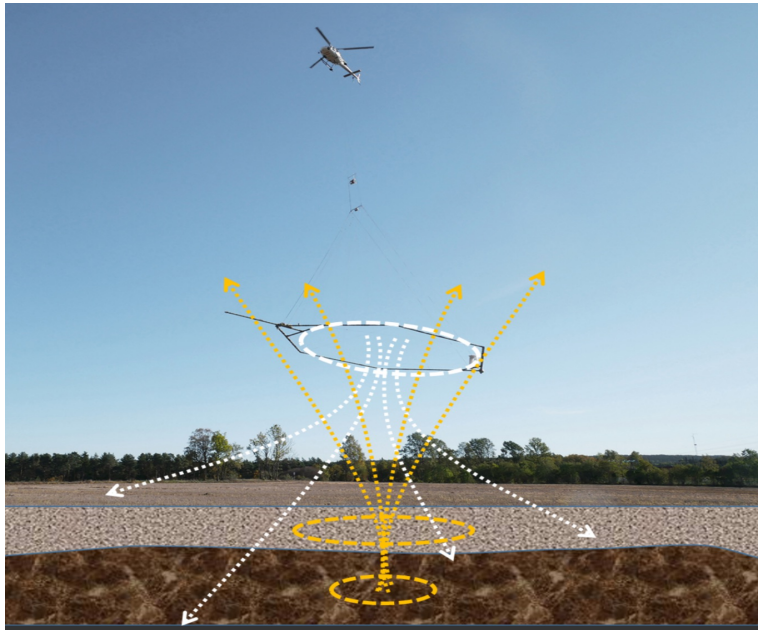
Geophysical measurements

2D & possibly 3D active seismic

Small area: 2019 in Terziet
Large area: Sep/2022 ~40 km (E-TEST project)

Anticipated: 2023 ~400 km (NGF project)

Electro-magnetic (resistivity)

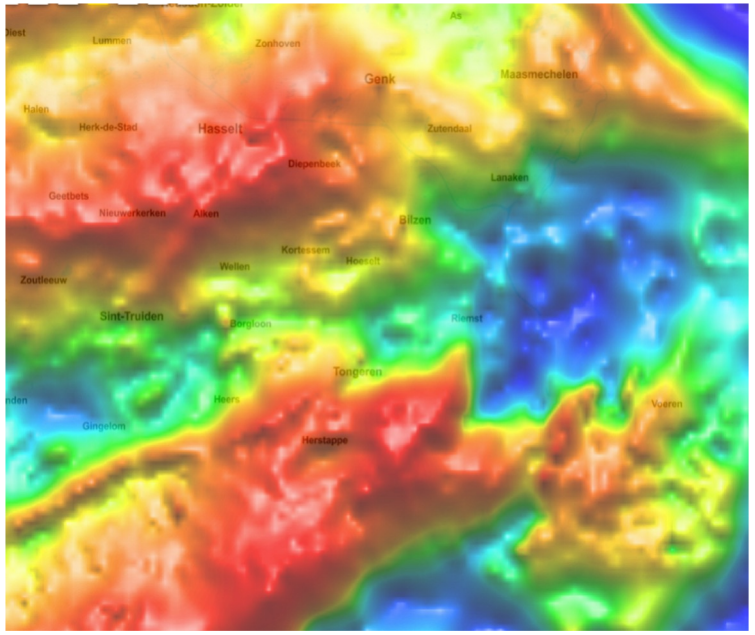


Discussed since 2021 with Emerald Geomodelling (Sardegna & EMR)

First tests Aug/2022

Large air-borne campaign in future?

Gravimetric



Considered

Electro-magnetic test campaign

August 2022

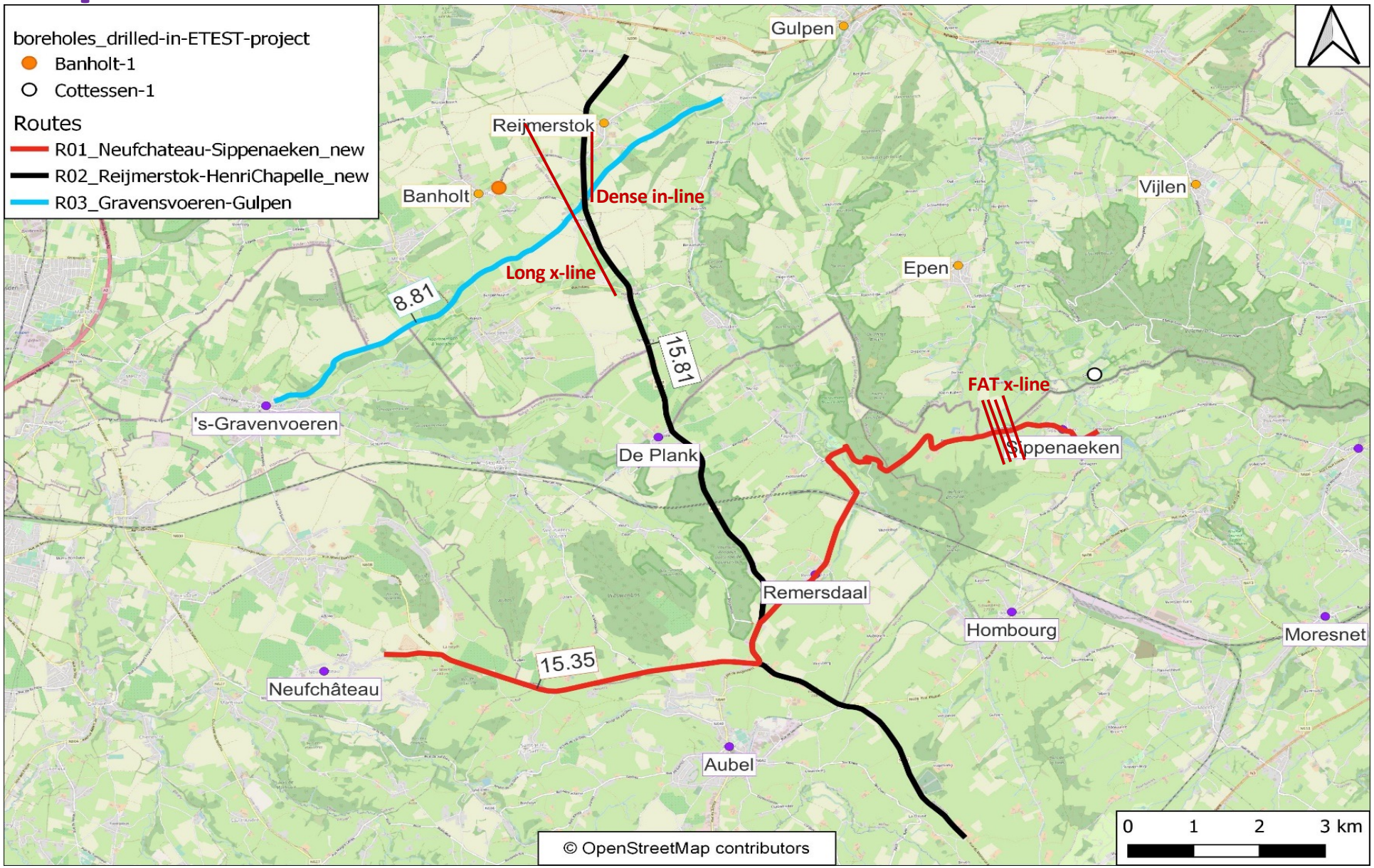
Measurements at two locations each about few 100 × few 100 meters and at one smaller area location:

- ***Moving setup (EM pulses every few meter) as shown in photo***
- ***Stationary setup with a very large (about 40×40 m^2) source coil 'WalkTEM'***
- ***Report (Emerald Geomodelling) expected by the end of September. Hope to reach few 100 m depth***

Active seismic campaign

September 2022

3 lines, ~ 40 km total length
Shots every 20 m (3 vibes)
Receivers every 10 m

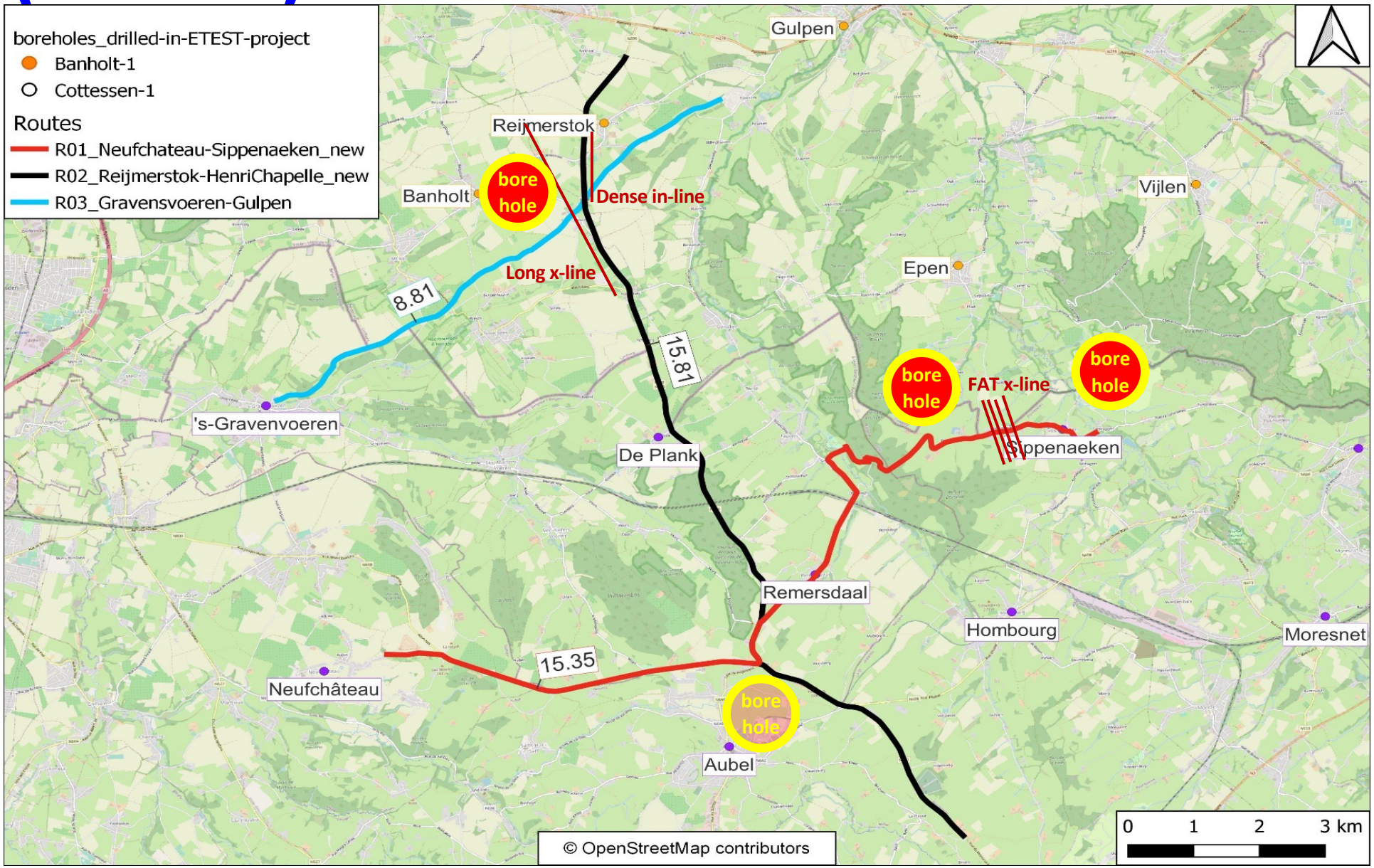


Extra tests:

- ***Study 3D potential: by adding 'cross' lines***
- ***Best receiver separation: 400 m line – 1 m spacing***

Boreholes: 3 done, 1 planned (E=TEST)

3 lines, ~ 40 km total length
Shots every 20 m (3 vibes)
Receivers every 10 m



Extra tests:

- ***Study 3D potential: by adding 'cross' lines***
- ***Best receiver separation: 400 m line – 1 m spacing***

Next SPB workshop: *January 2023, Maastricht?*

3 days with optional excursion to experience the Euregio Meuse-Rhine and to visit ETpathfinder

Active seismic campaign – September 2022