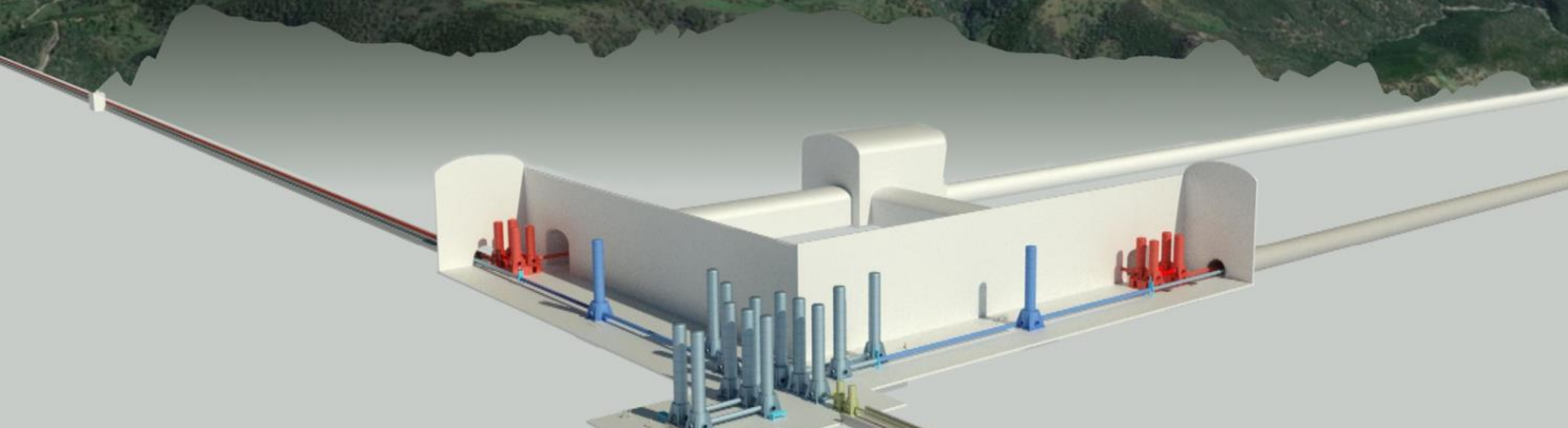


SPB/SCB/WP4 status and updates

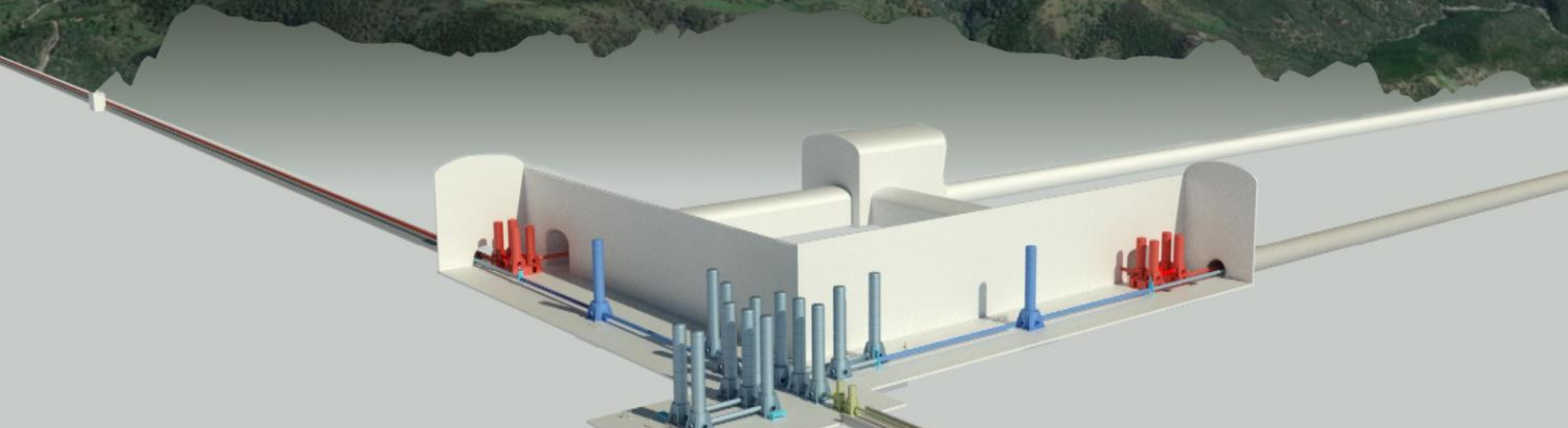


Current Status



- Activities and timing
- Preliminary triangular Detector Layout ready for review
- WP4 Status
- SCB organigram
- Paper on differences in approach
- Evaluation of site dependent detector performance

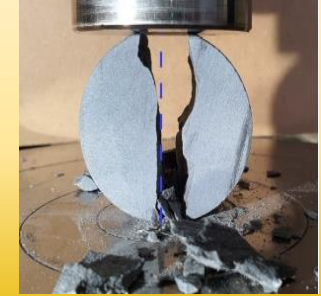
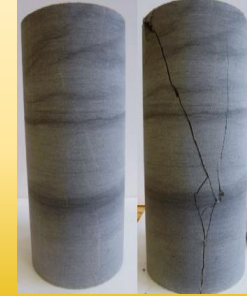
EMR Candidature: Activities and timing



EMR - Critical Milestones (Subsurface)

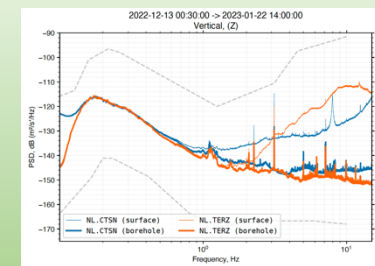
- Structural Geology and Geomechanics

(Q3-Q4 2024)



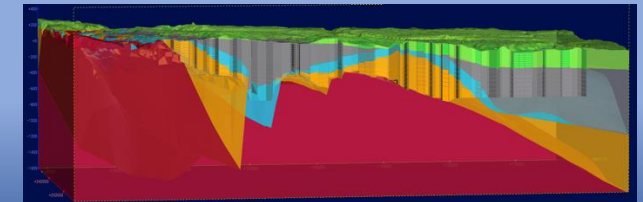
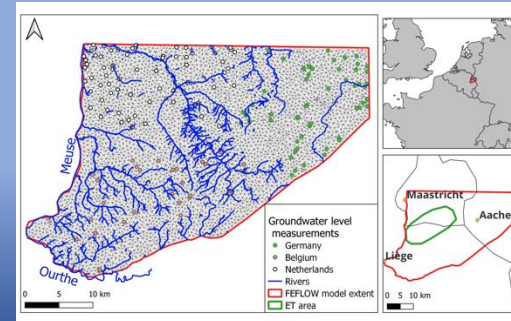
- Newtonian Noise and Magnetic Noise Levels

(Q1-Q2 2025)



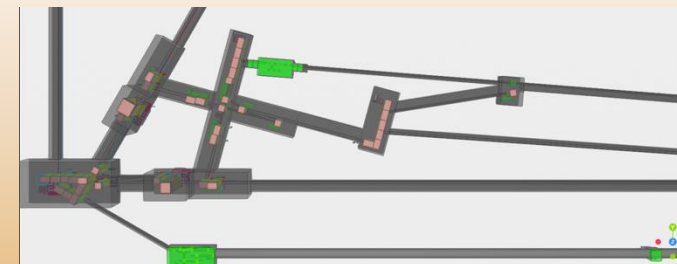
- Hydro-geology

(Q3-Q4 2025)



- Infrastructure and Construction Scenarios
Cost estimates

(Q2 2026)



EMR - Critical Milestones (Subsurface)

- Structural Geology and Geomechanics

(Q3-Q4 2024)

- Newtonian Noise and Magnetic Noise Levels

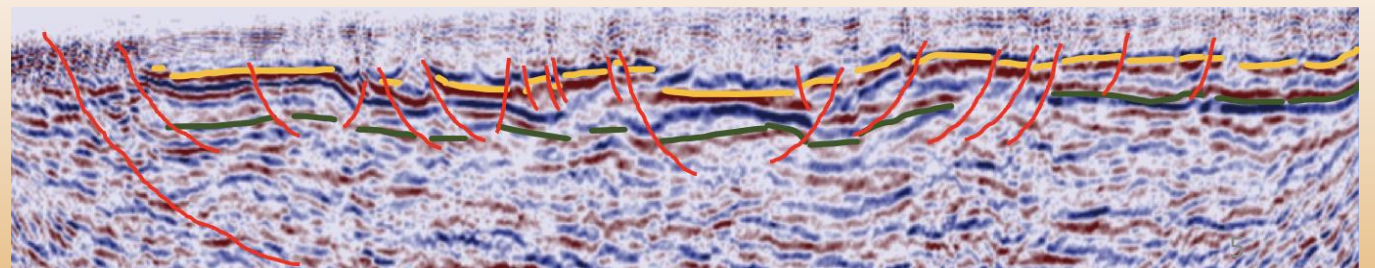
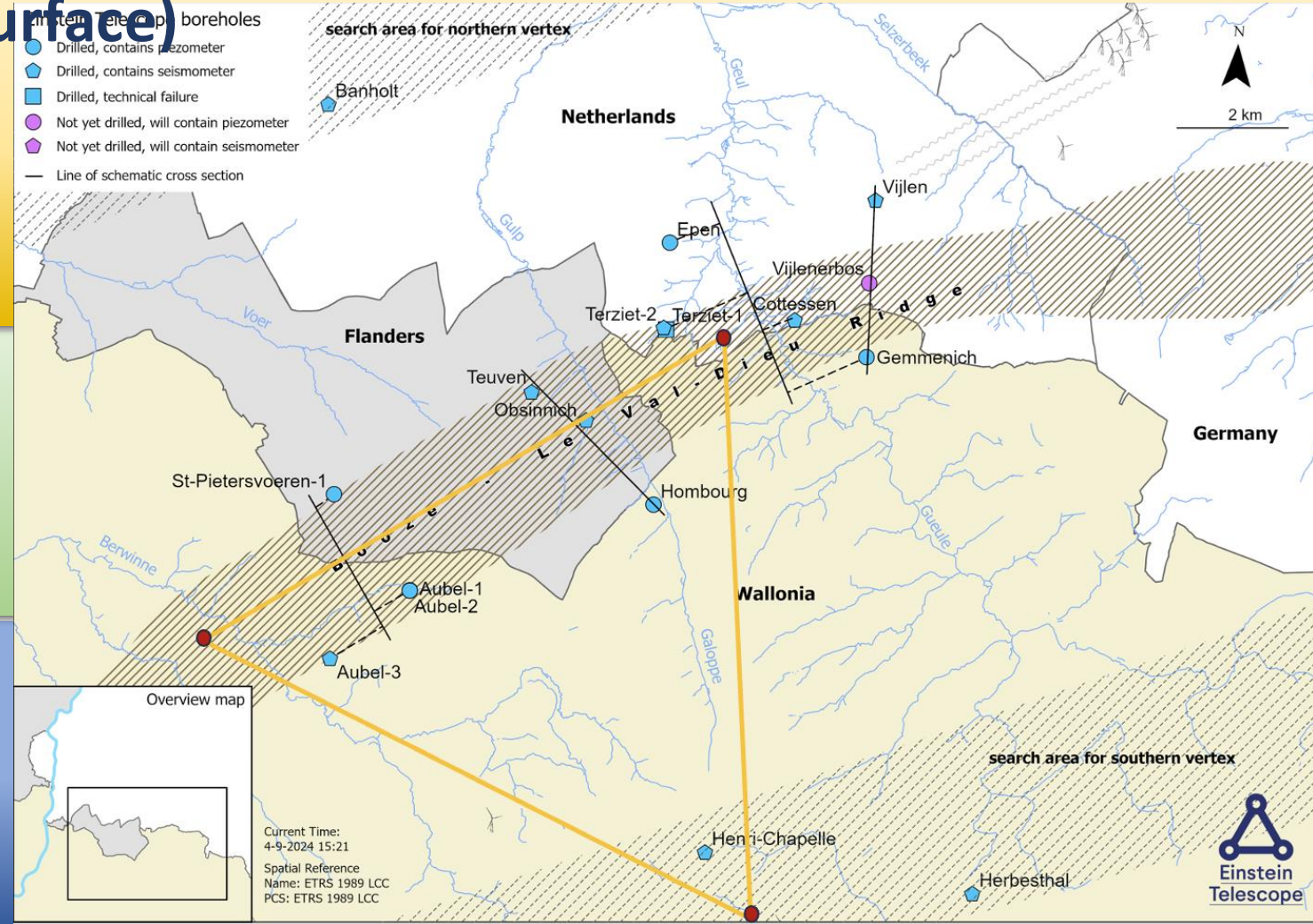
(Q1-Q2 2025)

- Hydro-geology

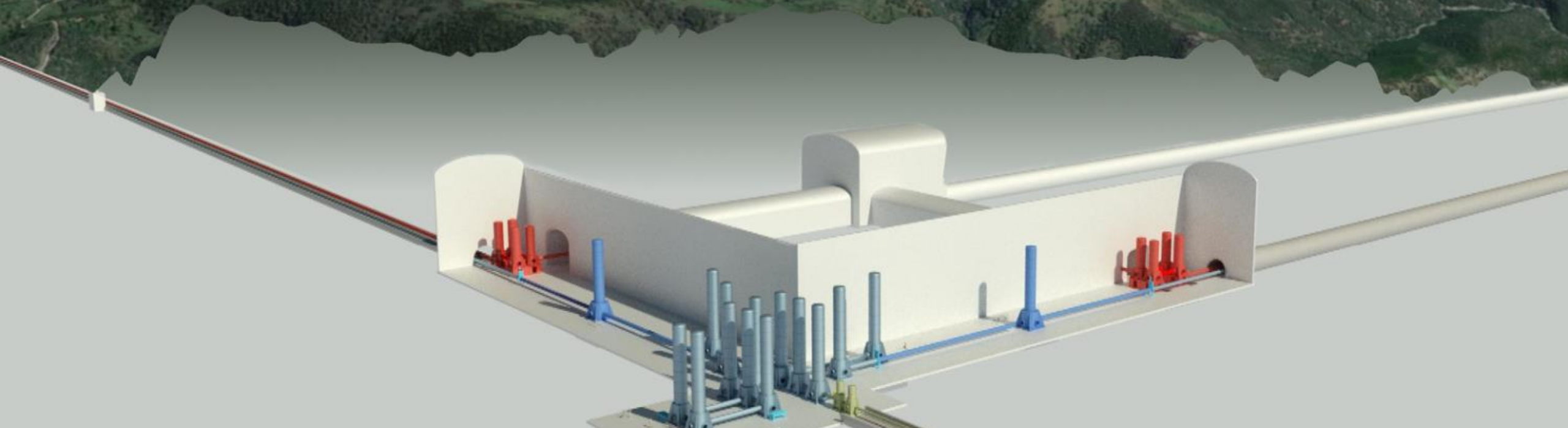
(Q3-Q4 2025)

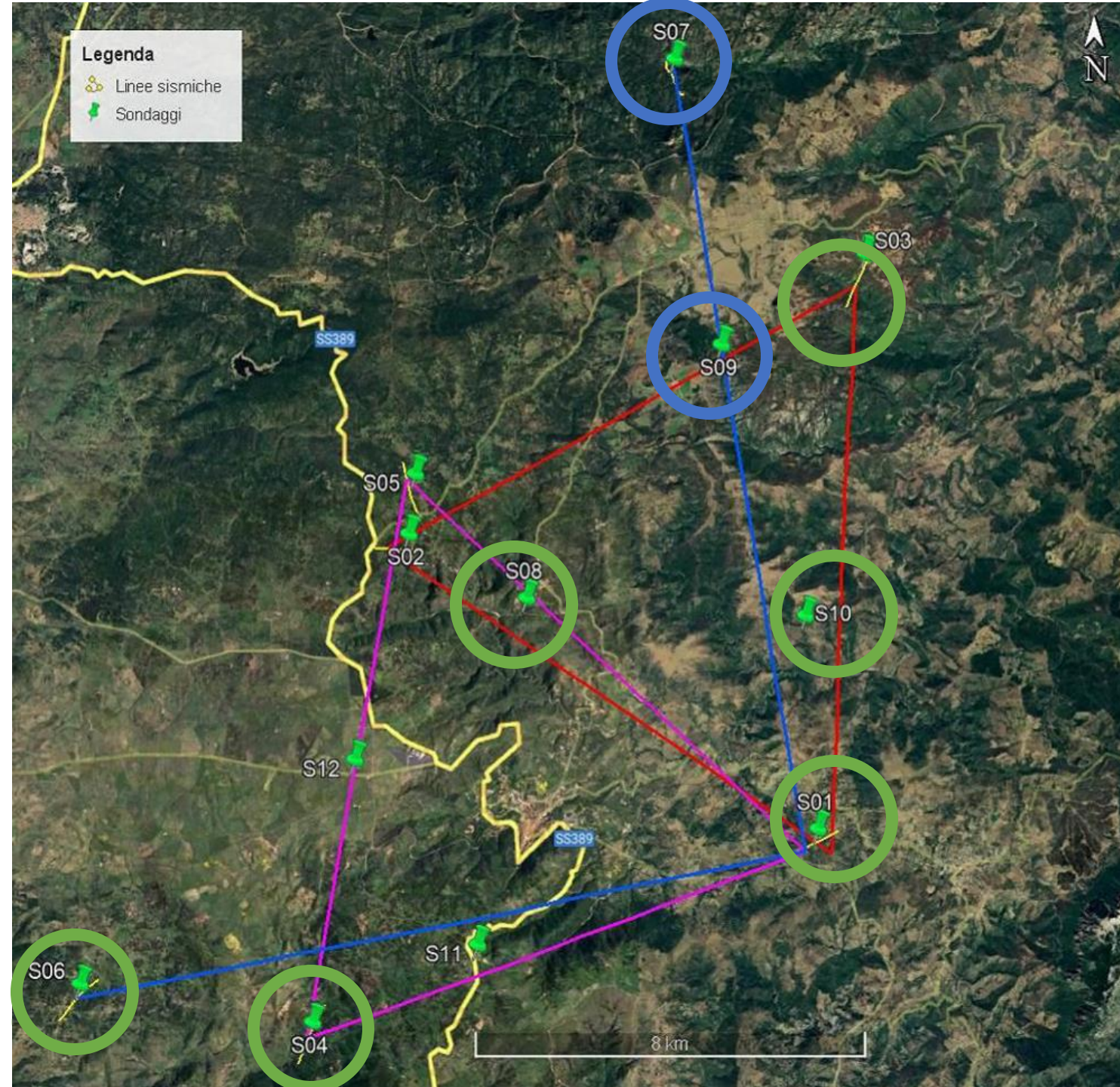
- Infrastructure and Construction Scenarios
Cost estimates

(Q2 2026)



Sardinia Candidature: Activities and timing





New Drilling Campaign started in July '24

- 12 boreholes completed: **S01, S03, S04, S06, S08, S10**
- on going or starting in a few days: **S07, S09**
- Comparison of the two triangle configurations on going

Activities and Timing



- Data for noise studies already available, studies on going.

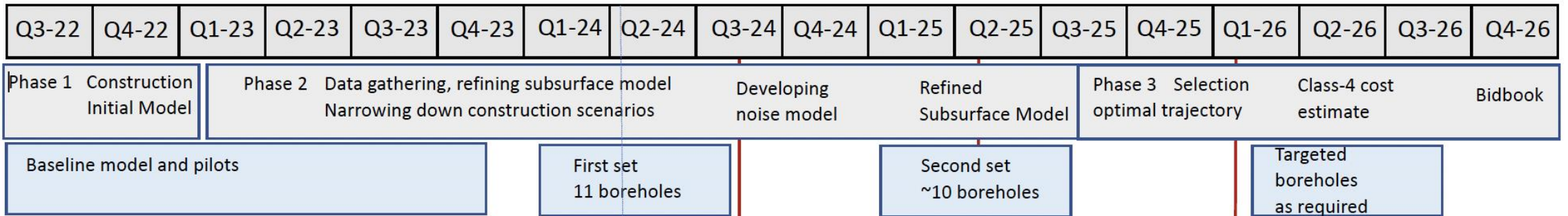
- Company deadline Q2->Q3 2025
 - Technical Studies for Subsurface Assessment and Risk Analysis
 - Design and Construction Feasibility Assessment
 - Cost and Time Estimation
 - Environmental Impact Assessment, Permits, and Noise Mitigation Measures
 - Safety and Security Plan
 - Technical Infrastructure (Underground and Surface)

Roadmap for Phase 1

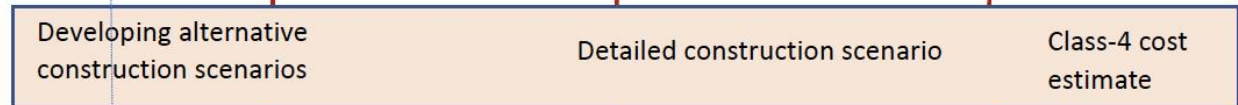
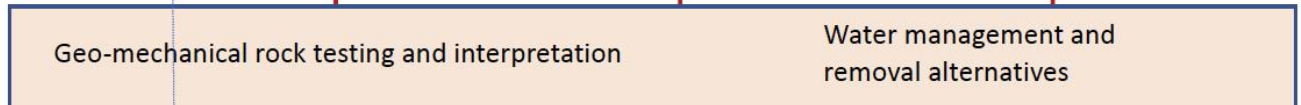
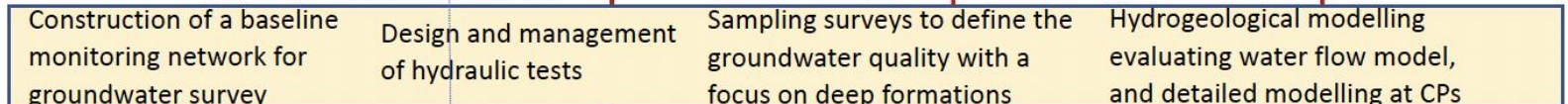
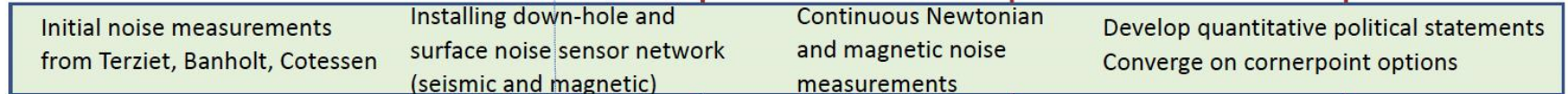
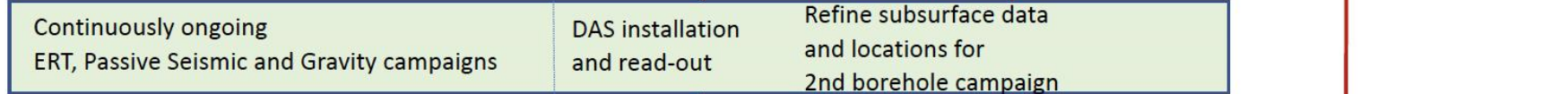
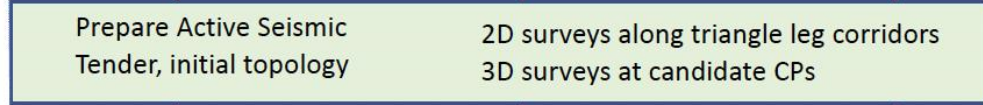
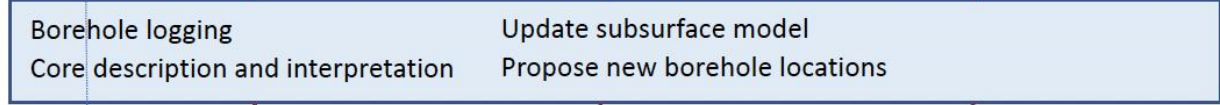


- ETO – Civil Engineering roadmap for phase 1 under preparation by ETO
 - ❑ focused on Phase 1 civil engineering major deliverables or products
 - ❑ based on Timeline already presented by Host Teams at the last ET Symposium by [EMR](#) and [TETI](#) teams

EMR



Geology



Discipline integration

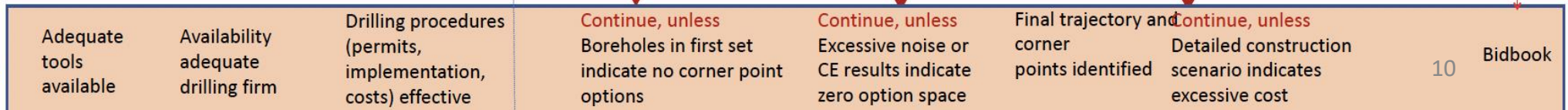
Geophysics / Noise

Hydro-geology

Civil-Engineering

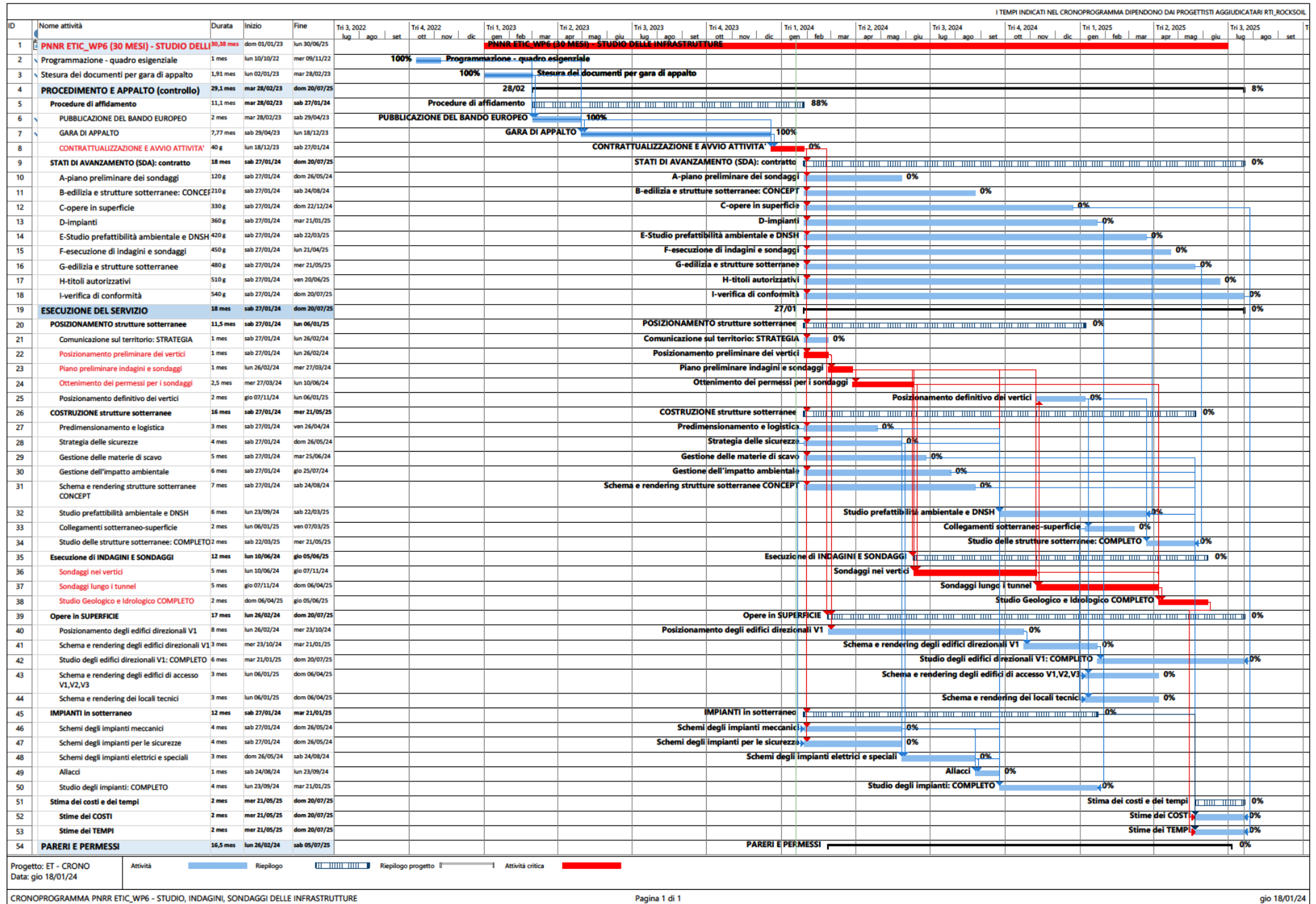
Data Management / Integration

Critical Milestones

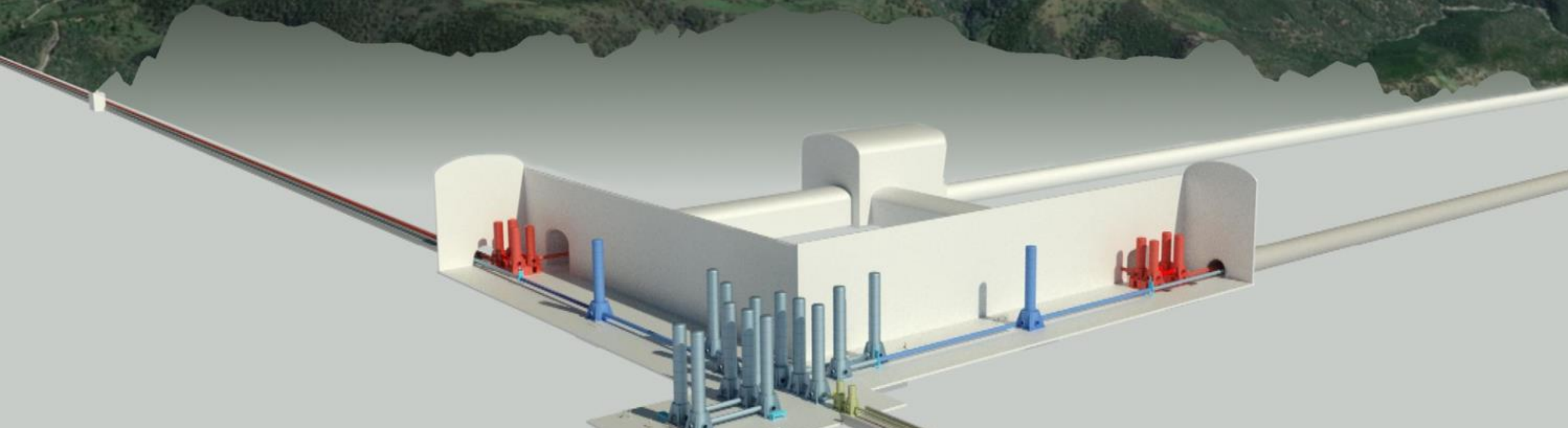


Sardinia

- Start: February 19, 2024
- End: June 30, 2025
- (constrained by the European rules of the Recovery and Resilience Funds - RRF)



Preliminary triangular Detector Layout ready for review



Preliminary triangular Detector Layout



From Patrick Werneke email:

- Over the past five months ETO-ED has collaborated with the different ISB divisions to develop the preliminary triangular Detector Layout, aligning with the triangular Optical Layout
- The Detector Layout provides the volume envelopes required for designing the underground civil infrastructure while meeting detector requirements for space and flexibility.
- This preliminary version is not to be used as a direct input for civil infrastructure design. It serves as input for the Taskforce to develop the subsequent reference optical and detector layouts for the triangle and 2L configurations.
- A Taskforce, led by Fiodor Sorrentino, will review the preliminary design of ET and evaluate the different layout options aimed at reducing civil infrastructure costs.
- The preliminary 2L Detector Layout is currently being worked on by ETO-ED, and should be ready for review by the middle of January 2025.

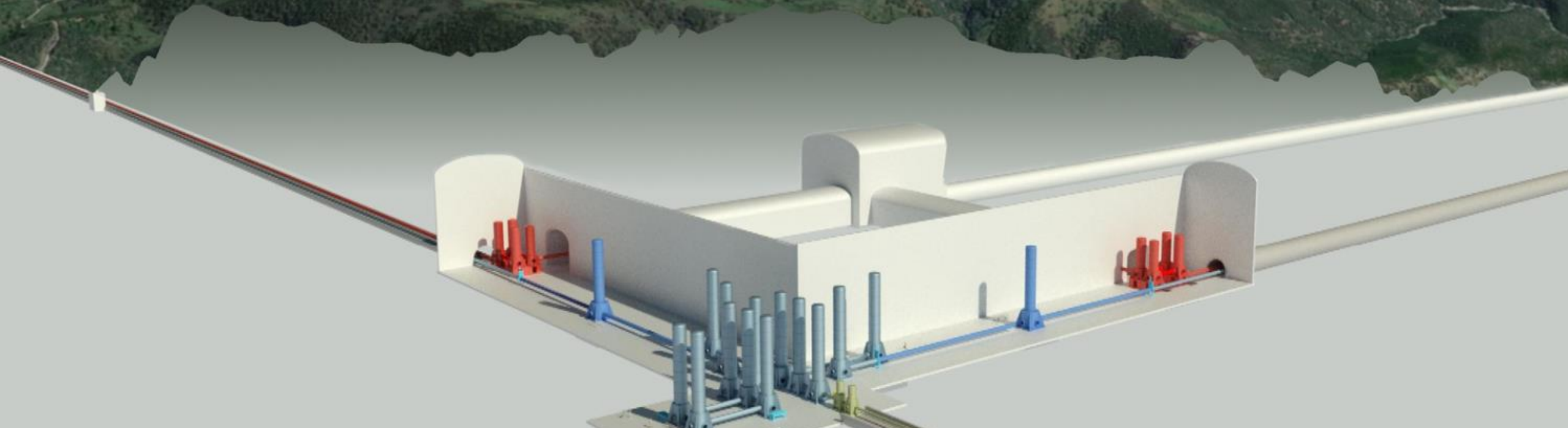
Instructions for comments



- The relevant documents of the preliminary triangular Detector Layout can be assessed here:
 - ❑ the report: <https://edms.cern.ch/document/3194259/2>
 - ❑ the 3D drawing:
https://web.connect.trimble.com/projects/bgr1skWvm0U/viewer/3d/?modelId=3PKVRvo4Osl,dlGR-8BsLC4&=&origin=app21.connect.trimble.com&token=_77K_QmlFZATkBRKtbgNRCg5O7YasrsAKBxm3HJnpJJKYqaTaWY39_XR19VUafmN
- A Trimble Connect Quick Guideline is available on EDMS and the ET Wiki: <https://edms.cern.ch/document/3190382/3> and <https://wiki.et-gw.eu/ED/WebHome>
- The work represents a best-effort approach and should follow the requirements and parameters defined by the triangular optical layout and ISB divisions. If there is any information related to this work that needs correction or if you want to provide feedback, also towards possible improvements and cost reductions, please create an issue in GitLab using the following link:

<https://gitlab.et-gw.eu/et/eto/et-preliminary-detector-layout-10km-triangle>
- **The deadline for submitting feedback is January 22nd.** ETO-ED will summarize the feedback and present this to the Taskforce the week after.

ET-PP WP4: status



WP 4: Deliverables and milestones - overview

Milestones:

M2-M3: Document detailing the site-specific characteristics that impact ET sensitivity and its duty cycle

M2-M10: Common methodology to estimate impact of site characteristics on ET sensitivity and operation and, if required, a scheme to compensate it

Deliverables:

D4.1- M10: Scan of legal procedures, permitting and land acquisitions

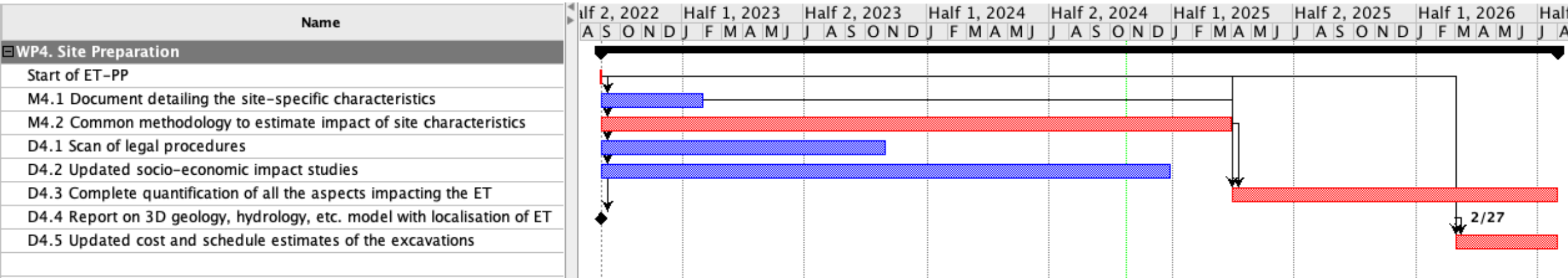
D4.2 - M15: Updated socio-economic impact studies. Scan of accessibility, quality of life etc.

D4.3 - M28: Complete quantification of all the aspects impacting the ET performance for each site

D4.4 - M30: Report on 3D geology, hydrology, etc. model with localisation of the ET infrastructure

D4.5 - M42: 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.

WP 4: Deliverables and milestones – New Timeline



Code	Name	Original date
M2	Document detailing the site-specific characteristics that impact ET sensitivity and its duty cycle	M3/Nov22 => M6/Feb23
M3	Common methodology to estimate impact of site characteristics	M10/Jun23 => M32/March25

Code	Name	Original date
4.1	Scan of legal procedures	M14/Jun23 => M18/Oct.23
4.2	Updated socio-economic impact studies	M15/Dec23 => M30/Mar25
4.3	Complete quantification of all the aspects impacting the ET performance for each site	M28/Dec24 => M47/Jul26
4.4	Report on 3D geology, hydrology, etc. model with localization of the ET infrastructure	M30/Feb25 => M42/Feb26
4.5	Updated cost and schedule estimates of the excavations	M42/Feb26 => M47/Jul26

Project Review Report



- The project continues to be plagued by unresolved issues, high complexity, uncertainty in the achievement of objectives and lengthy delays on delivering core results.
- There are too many variables in the decision making, linked in a closed cycle of science – form –location – governance
- WP4 at risk of not being able to deliver any of their substantial results by the end of the project in August 2026

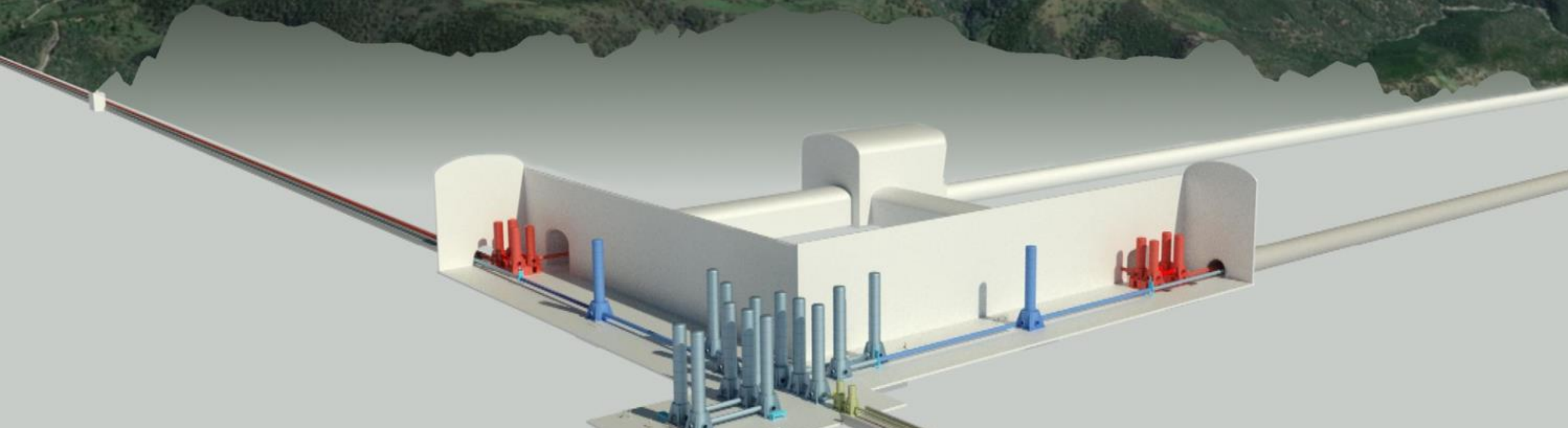
WP4 Review Report



- This WP experiences severe difficulties in meeting milestones and deliverables, due to complexity of the activities involved in the sites
- Deliverables D4.2, D4.3, D4.4, and D4.5 are delayed and are expected in Mar 2025, July 2026, Feb 2026, and July 2026, respectively.
- It was suggested that these deliverables are addressed in EC interim review in Jan 2026.

In addition to site candidates Sardinia and EMR, there is now also the third site candidate site in Lusatia. How this will impact the activities and planning of WP 4 is not yet clear.

SCB Organigram



Site Characterization Board (SCB)

Chairs: Domenico D'Urso & Wim Walk (+ A. Rietbrock)

WD1: Noise Measurements

Lead:

WP1: Seismic Noise

WP2: Gravimetrics

WP3: Magnetic Noise

WP4: Other Environmental Noise

WD2: Noise Evaluation & Validation

Lead:

WP1: Noise Impact Evaluation

WP2: Noise Impact Validation

WD3: Geological and Geotechnical Evaluation

Lead:

WP1: Structural Geology

WP2: Hydrogeology

WP3: Geophysics

WP4: Geotechnology

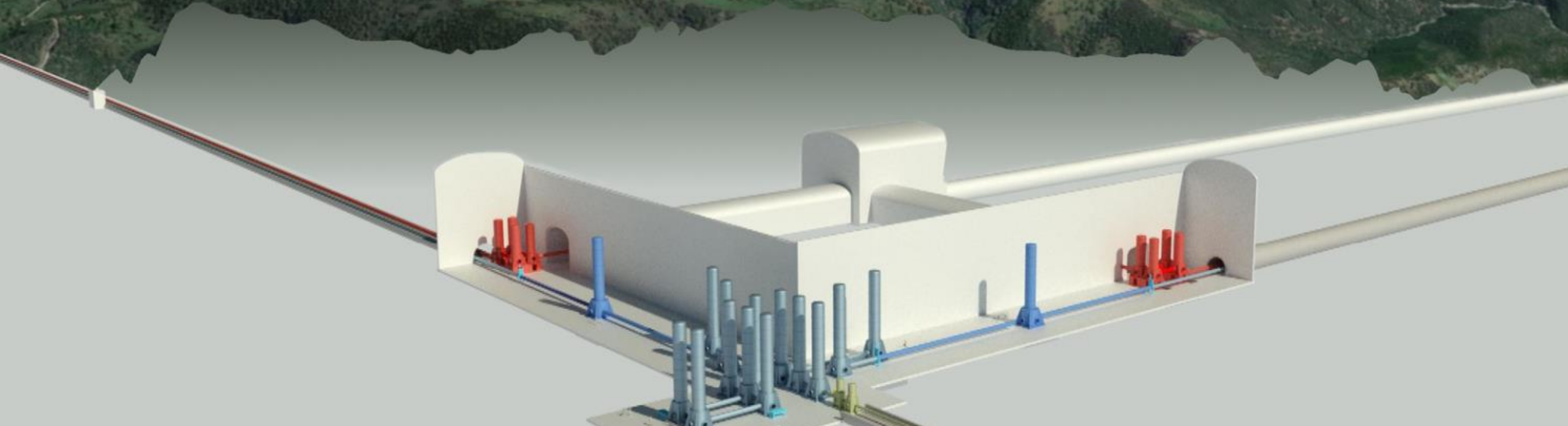
WD1: L. Naticchioni, (EMR), (+ Lausitz)

WD2: D. D'Urso, (EMR), (+ Lausitz)

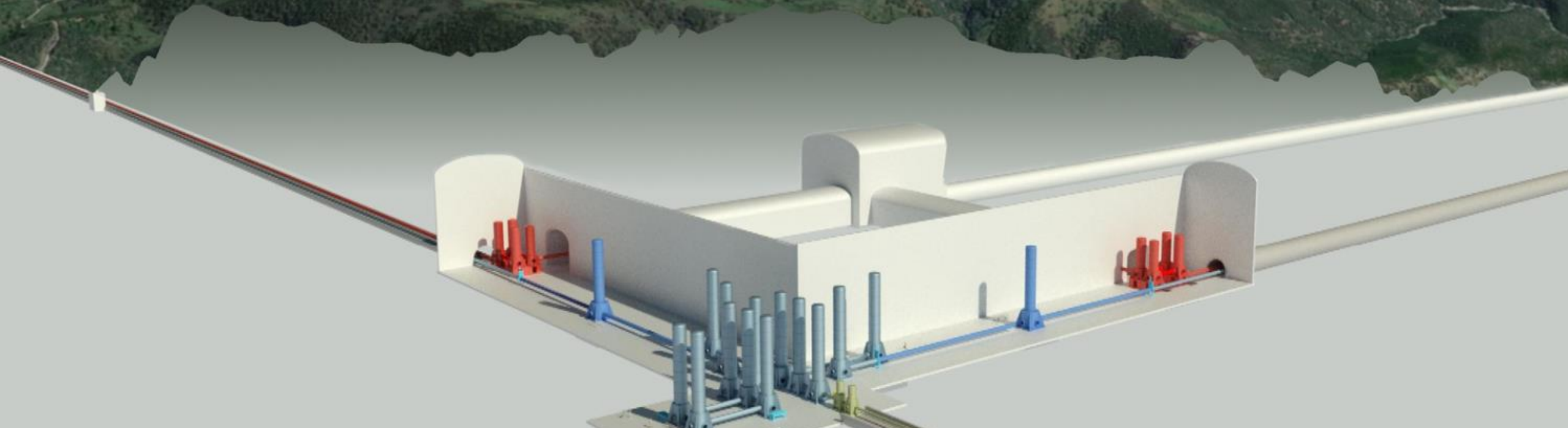
WD3: (Sardinia), (EMR), (+ Lausitz)



**Paper on differences in
approach: status ?**



Evaluation of site dependent detector performance



Time to move



- OSB received a request for a team working with the ETO taskforce for the optical layout
- Today there was a meeting with the OSB DIV9 and 10 coordinators to plan the activities and resources for helping you and the ETO.
- We need to hurry up!

Useful links



- [Wiki page](#)
- [Mailing list: et-spb@et-gw.eu](mailto:et-spb@et-gw.eu) ([subscribe](#))
- [Site data Web Services](#)
- Einstein Telescope @ Sardinia <https://www.einstein-telescope.it/en/home-en/>
- Einstein Telescope @ EMR <https://www.einsteintelelescope.nl/en/>