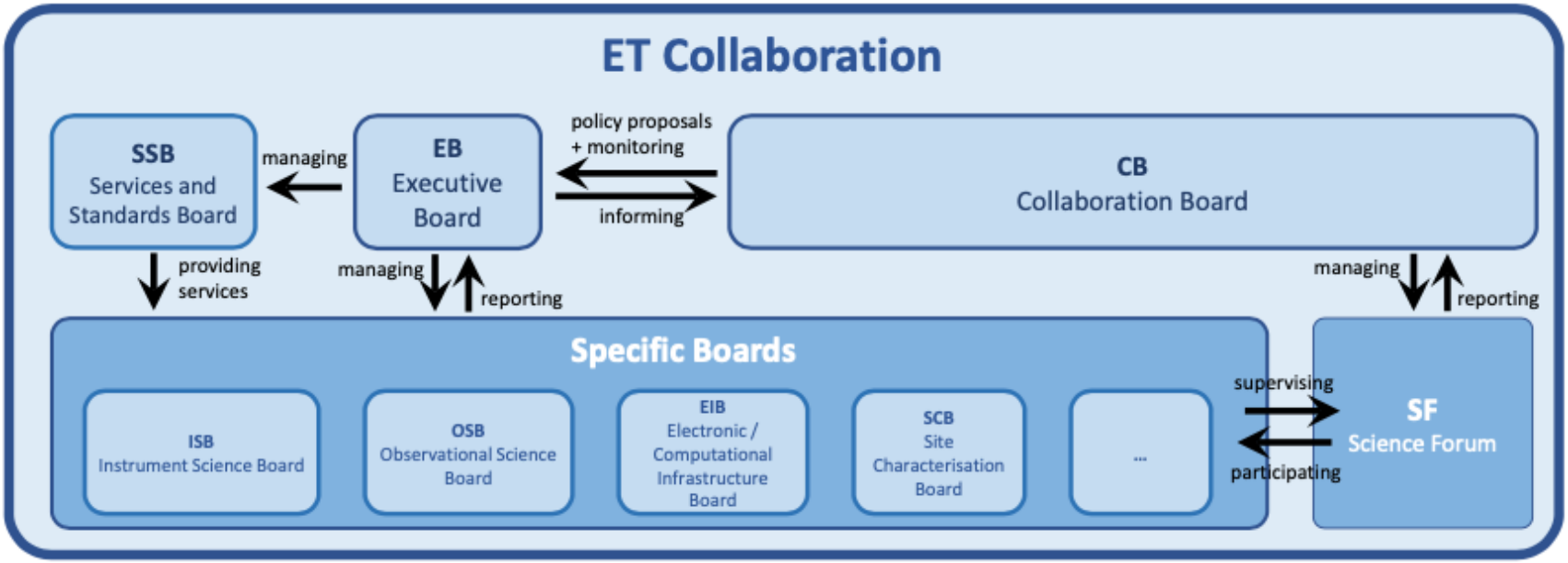
Site Preparation Board mandate approved at PD-SC chairs meeting April 20th 2022

ET Collaboration Structure

- Executive Board (EB)
- Collaboration Board (CB)
- Science Forum (SF)

- Specific Collaboration Boards
- Service and Standards Boards and Committees



SPB: General Mission

The SPB must lead the effort on the Einstein Telescope site related activities

- It must coordinate the activities to acquire the required characteristics for each site proposing to host the Einstein Telescope
- Collect, organize and/or produce all the characterizations and documentation needed for a fair comparison of the sites;
- Propose a common framework and common basis for the evaluation of the candidate sites.

Site Characterization: physical variables

- Define surface and downhole measurements to be performed for accurate noise characterization and site description in terms of geophysical, geological and geotechnical information.
- Environmental studies including seismic surveys. Coordination of measurements to be performed (long-term, short-term, passive and active measurements). Geophysical and technical investigation. Coordination of measurements to be performed.
- Definition of unique data formats for sensor data acquisition. Set up of (or identify) a database to collect and to share the various data acquired at each site with all ET collaborators. Definition of software tools and recipes to be used for data analysis

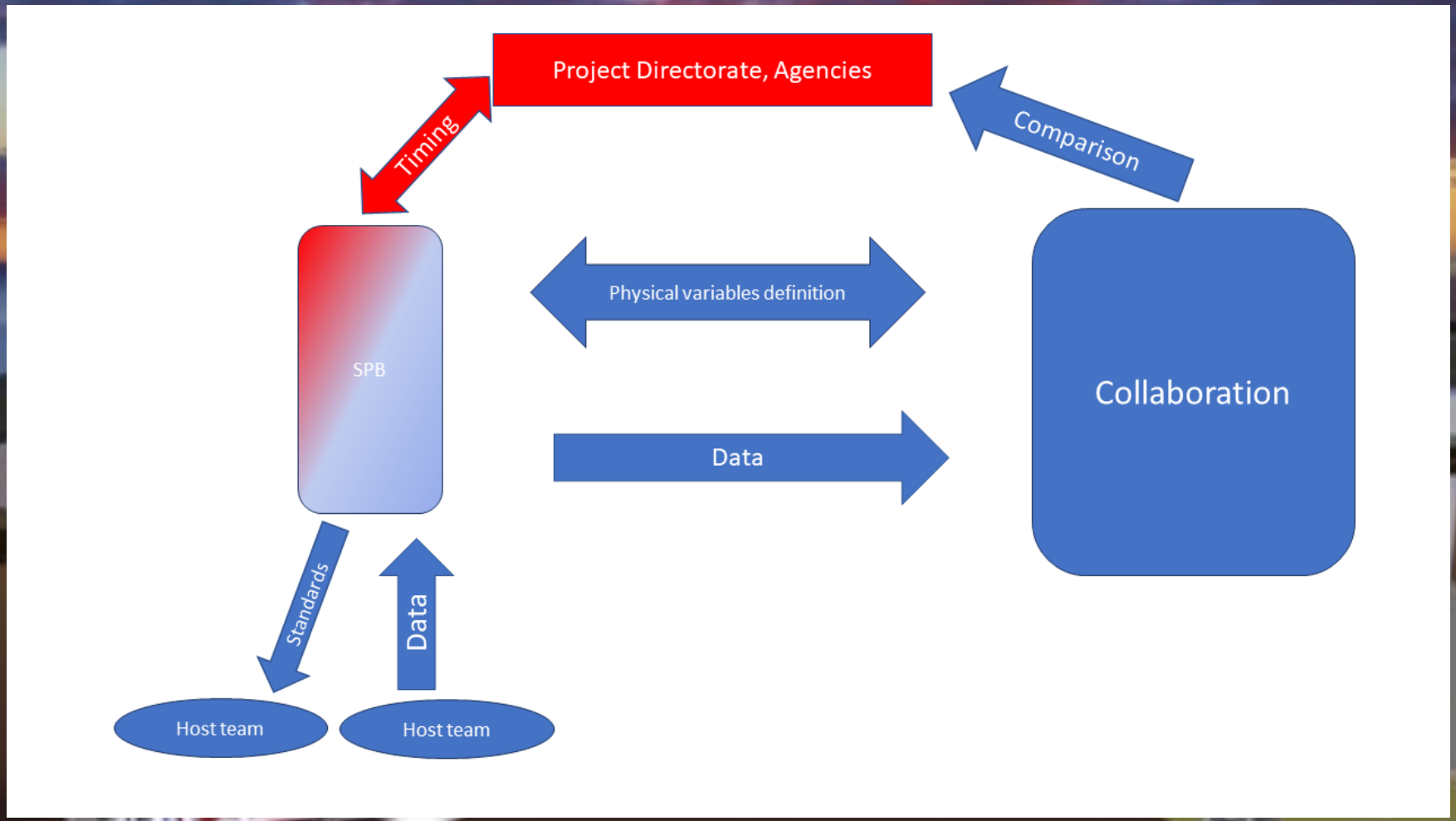
Topics and open issues

- Definition of best practice and common indication for measurements
  - Surface and borehole measurements
  - Instrumentation, number and detector sensitivity
  - Minimal duration of data taking
  - Recommended setup
- Exchange of experience from the two sites
- Data sharing (seismic and environmental measurements, geological and geotechnical data)
- Common recipes, prescriptions and tools for data access and data analysis
- Windmills
- ...

Expected Output

- Definition of a set of physical variable to be acquired
- Definition of set of standard in their acquisition, and the data collected according that standards

Information Flux



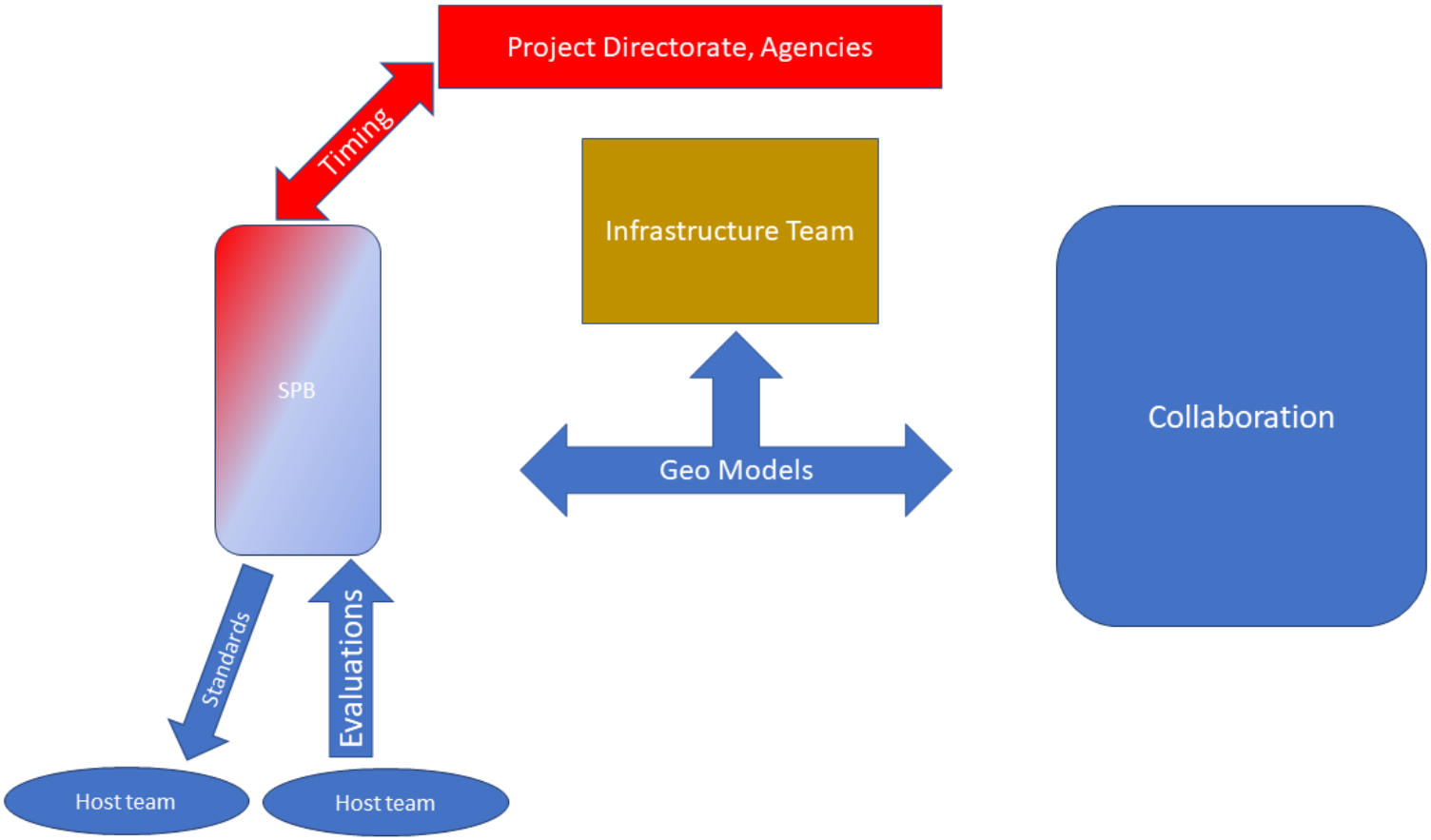
Site Ch: geological, geophysical and geotechnical information

- Definition of a minimal set of geological, geophysical and geotechnical investigations
  - Sub-surface geological structure and notably rock quality and stability;
  - Hydrology;
  - Inventory of (major) fault zones.
  - …

Expected Output

- 3D map of the sub-surface of the volume enclosed by ET
- Reports – using a common or at least comparable format– to be used for site comparison.

Information Flux



Site Char.: costs and timing

- Plan, cost and timing estimation for waste disposal, land-acquisition, logistics, surface infrastructures (buildings, services, …)
- NN compensation and all action needed to mitigate site "effects" on ET

Expected Output:

- comparable set of site-specific cost and timing evaluations, based on a common framework

Site Char.: legal and site-quality aspects

- Identification of all the legal aspects to be faced in all the ET realization phases (construction and operation)
  - legal, planological , (local) community, etc. issues

Expected Output:

- A list of required legal documents, needed for the realization of the ET infrastructure
- A report describing the consolidated strategy to preserve the site quality. A standardization of the timeline computation

Site Char.: socio-economic and environmental impact

- Estimation of socio-economic impact

Expected Output:

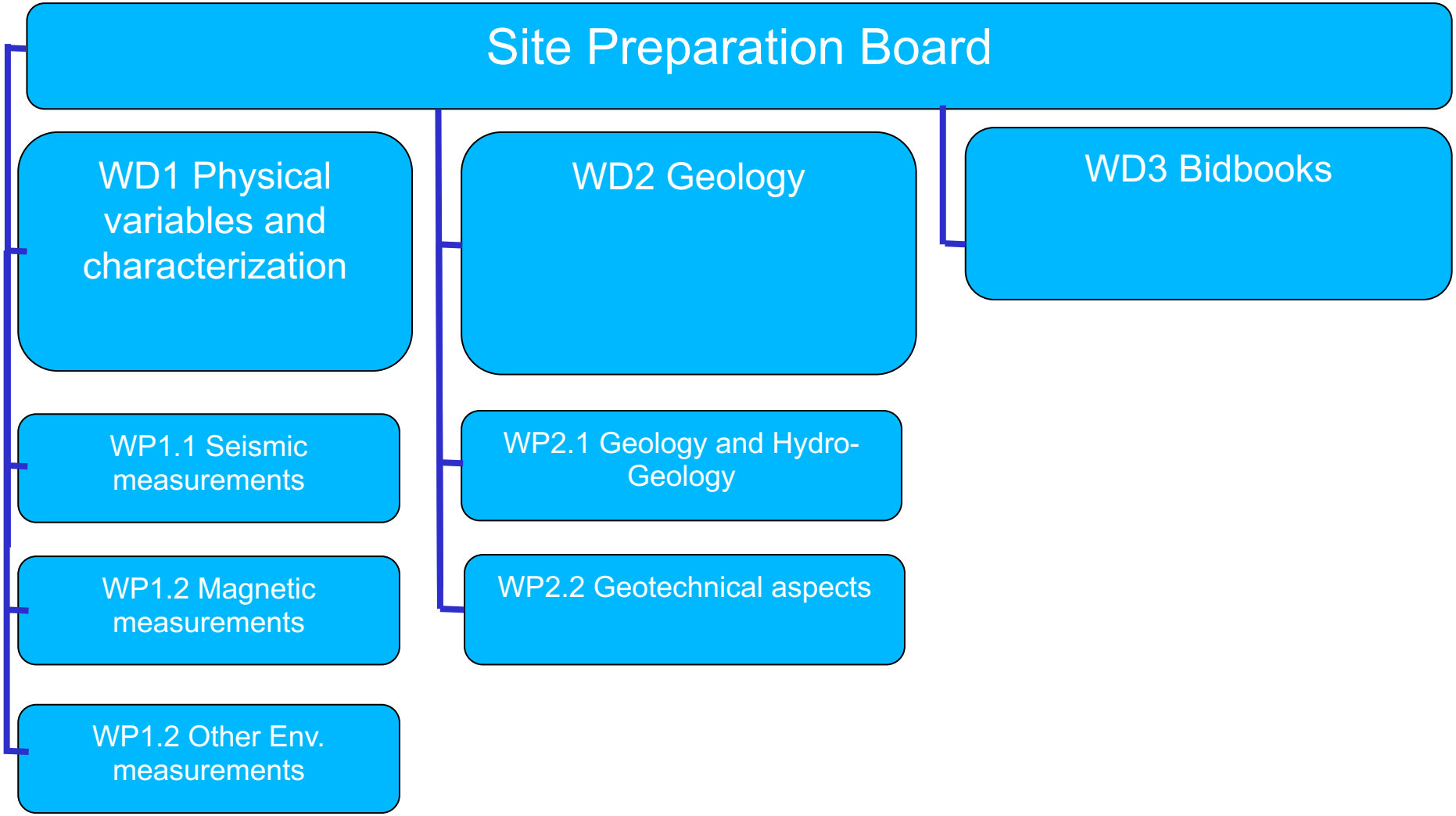
- A set of standards in the computation of the socio-economic-environmental impact
  - common multipliers in the computation of the economic impact, or multipliers based on shared criteria
  - definition of a set of common categories to define the social impact
  - definition of a set of common categories to define the environmental impact

Bidbook Standards

The SPB defines the standard format of the ET bidbook and its content

- needed legal documentation
- procedures to realize the ET infrastructure
- timing and cost according with the infrastructure team, the collaboration and the Host Teams
- financial plan
- site related risk assessment
- …..

SPB WBS


Site Preparation Board
WD1 Physical variables and characterization
WD2 Geology
WD3 Bidbooks
WP1.1 Seismic measurements
WP1.2 Magnetic measurements
WP1.2 Other Env. measurements
WP2.1 Geology and Hydro-Geology
WP2.2 Geotechnical aspects

EU/INFRADEV – ET Preparatory Phase

WP4 - Site Preparation *- is responsible for collecting and processing, from each potential site, all the required information necessary for site qualification. This includes site specific characteristics that might impact the ET scientific performance, socio-economic impacts, legal implications, and civil engineering costs. The information will be treated in a coherent and transparent manner, with the aim of facilitating a site selection process in a timescale consistent with ET anticipated schedule. M. Campinelli (INFN) and F. Linde (NIKHEF) act as co-coordinators of WP4 in this proposal.*

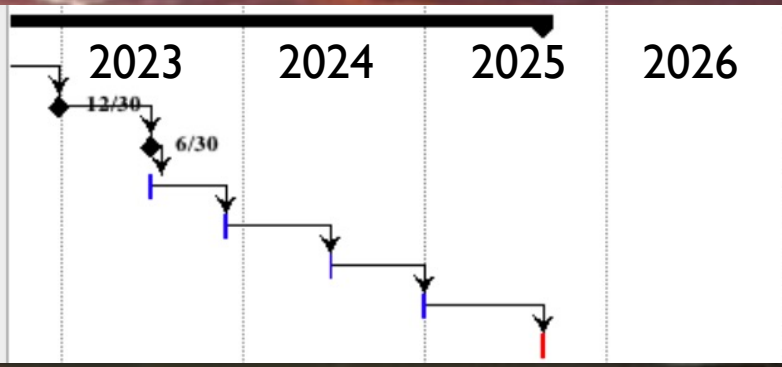
Participating institutions: INFN, Nikhef, UW (Warsaw) & Wigner RCP (Budapest)***(and anyone else is of course more than welcome!)***

Available funding: 200 k€ for professional consulting expenses related to civil engineering costs and socio-economic impacts.

ET EINSTEIN TELESCOPE

WP4 Gantt chart. Starting date assumed to be 1-Sept-2022.

WP4. Site Preparation
Start of ET-PP
M4.1 Document detailing the site-specific characteristics
M4.2 Common methodology to estimate impact of site characteristics on ET sensitivity
D4.1 Scan of legal procedures
D4.2 Updated socio-economic impact studies
D4.3 Complete quantification of all the aspects impacting the Einstein Telescope perform
D4.4 3D geology, hydrology, etc. model
D4.5 Robust and complete cost and schedule estimates of the excavations



Milestones *(months from ET-PP start date)*

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***

My take:

Both Milestones should be formulated in close collaboration with the ISB and OSB and we should start the discussions with these boards soon.

Deliverables *(months from ET-PP start date)*

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.***