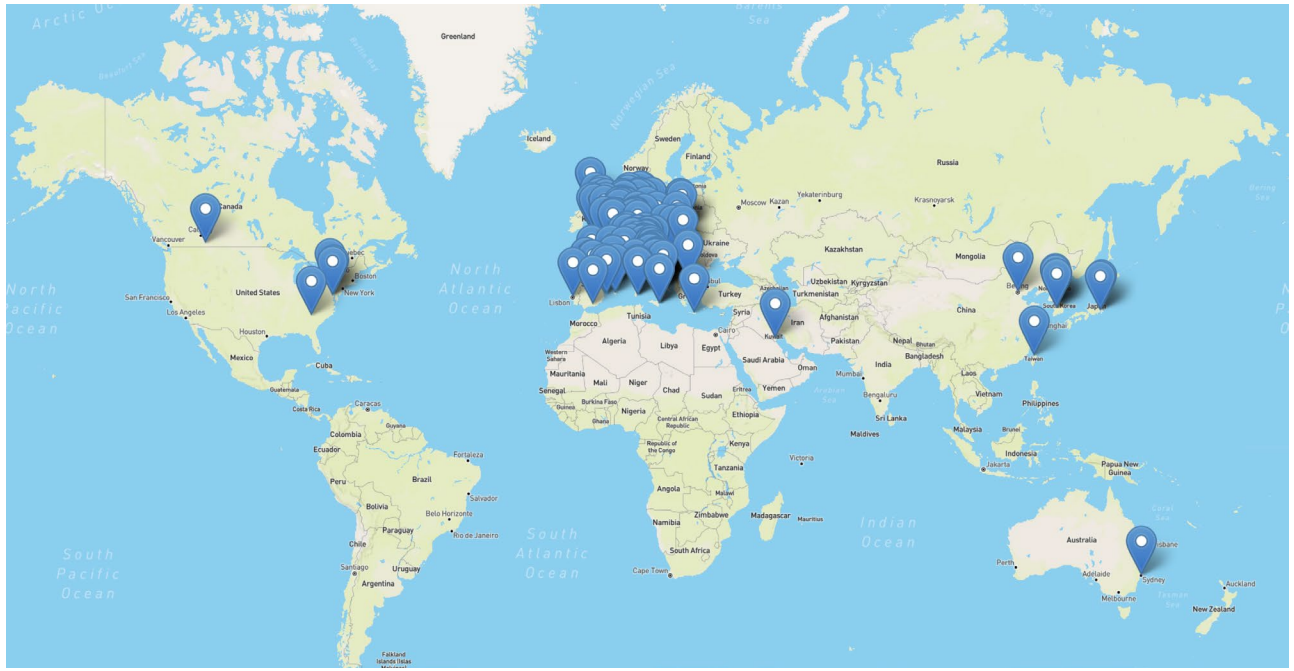
ET Collaboration Activities

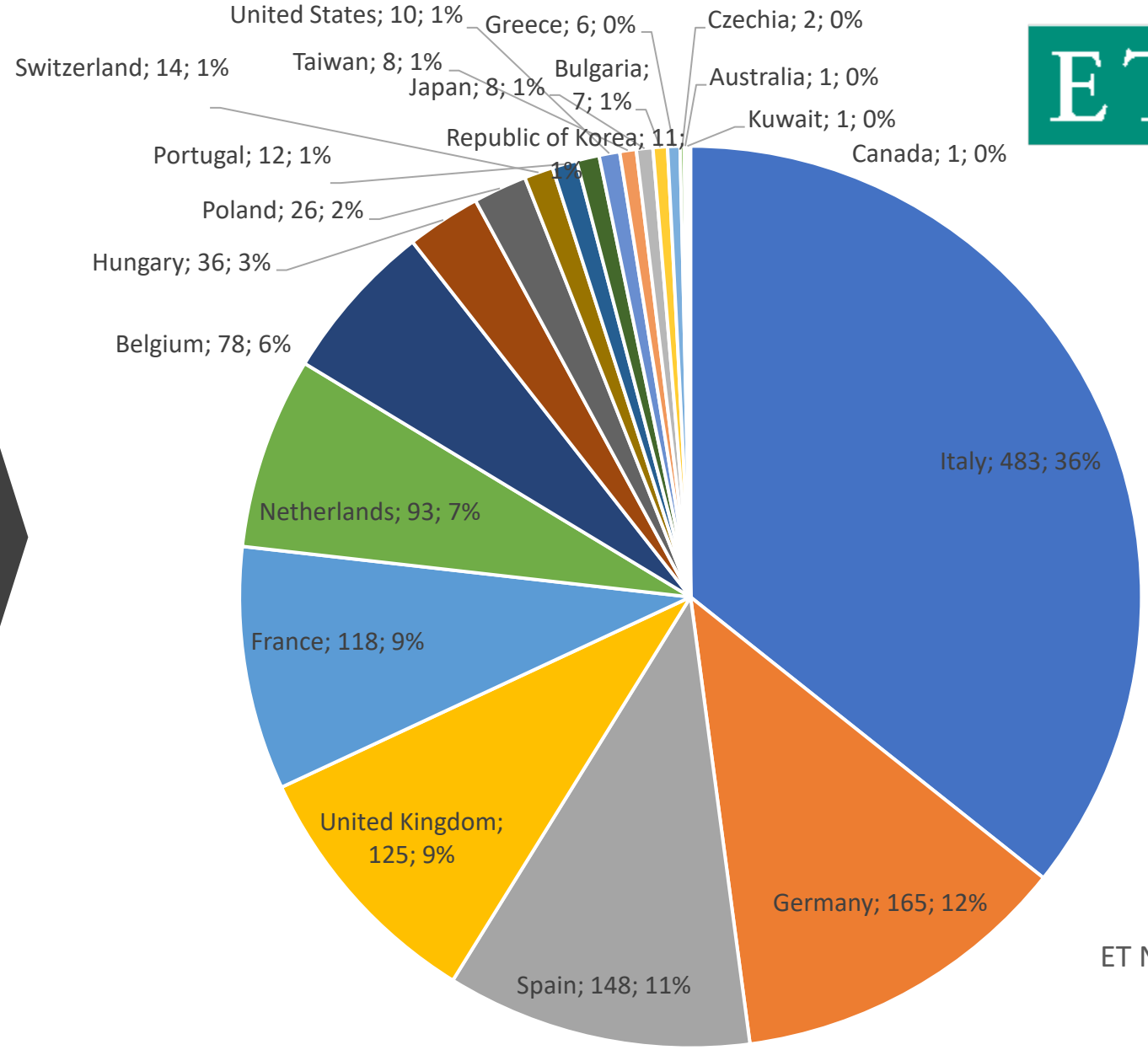
Michele Punturo

ET Collaboration

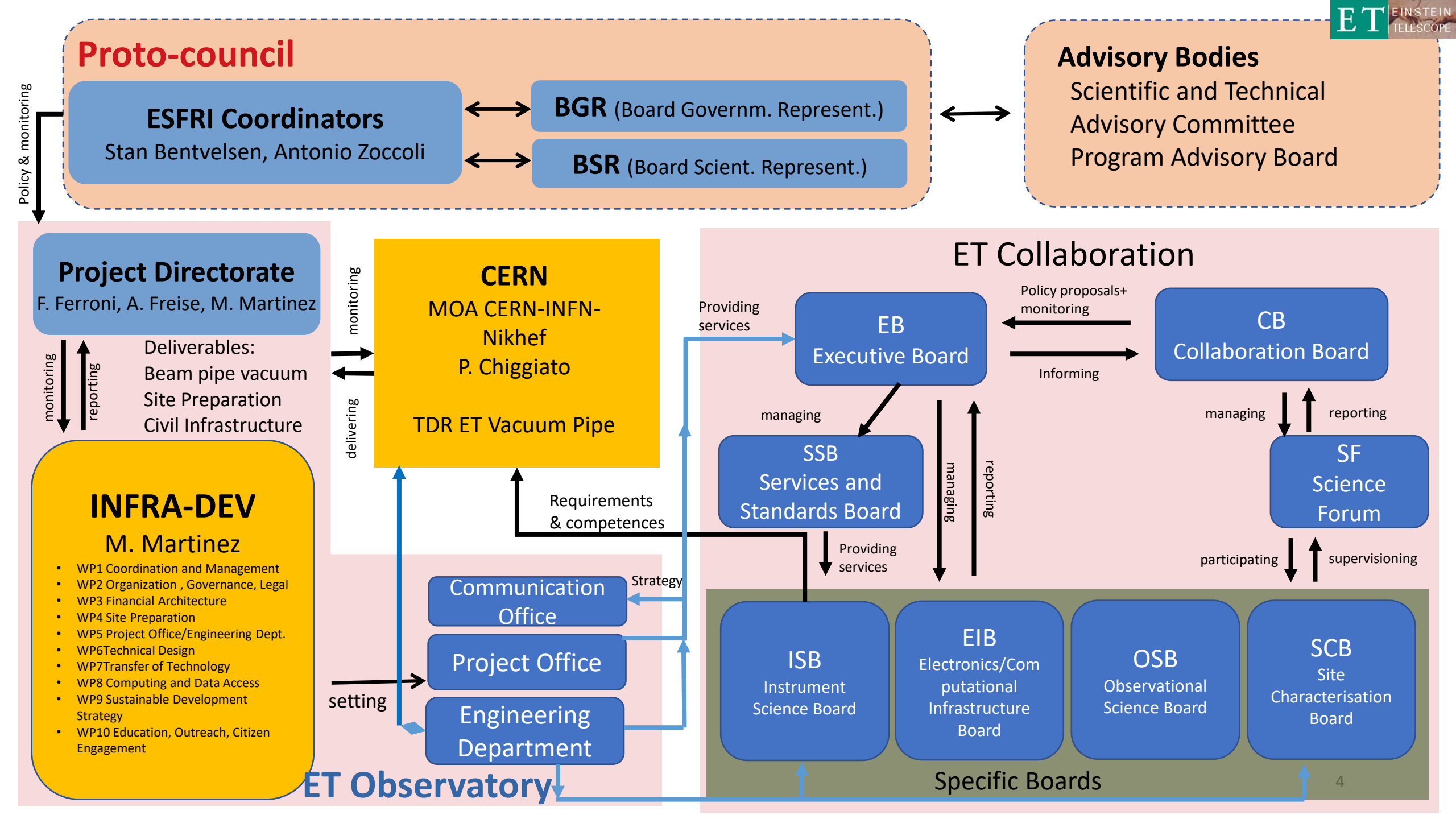
- Currently the ET collaboration is composed by 1360 members, organized in 80 Research Units, affiliated to 202 institutions distributed over 23 countries
- Applications for new RUs are regularly submitted and new RUs will enter soon



Country distribution of the ET members



ET Nationalities


Proto-council
ESFRI Coordinators
Stan Bentvelsen, Antonio Zoccoli
BGR (Board Governm. Represent.)
BSR (Board Scient. Represent.)
Policy & monitoring
Advisory Bodies
Scientific and Technical Advisory Committee
Program Advisory Board
Project Directorate
F. Ferroni, A. Freise, M. Martinez
monitoring
reporting
Deliverables:
Beam pipe vacuum
Site Preparation
Civil Infrastructure
monitoring
delivering
CERN
MOA CERN-INFN-Nikhef
P. Chiggiato
TDR ET Vacuum Pipe
Requirements & competences
INFRA-DEV
M. Martinez
WP1 Coordination and Management
WP2 Organization , Governance, Legal
WP3 Financial Architecture
WP4 Site Preparation
WP5 Project Office/Engineering Dept.
WP6Technical Design
WP7Transfer of Technology
WP8 Computing and Data Access
WP9 Sustainable Development Strategy
WP10 Education, Outreach, Citizen Engagement
Communication Office
Project Office
Engineering Department
Strategy
setting
ET Observatory
ET Collaboration
Providing services
EB
Executive Board
Policy proposals+ monitoring
Informing
CB
Collaboration Board
managing
SSB
Services and Standards Board
monitoring
reporting
managing
reporting
SF
Science Forum
Providing services
participating
supervisioning
ISB
Instrument Science Board
EIB
Electronics/Computational Infrastructure Board
OSB
Observational Science Board
SCB
Site Characterisation Board
Specific Boards
4

Activities of the ET Collaboration Board

- Setting up of all the committees and boards needed for an ordered and efficient life of the collaboration:
  - Editorial Board, speaker bureau, election committee … (SSB Services and Standard Boards)
- Reviewing the ET collaboration by-laws
  - Current version is “intentionally” an incomplete draft text
  - A reviewing committee has been formed
- Election of the next spokesperson + Deputy SP team

Activities of the Executive Board and Specific Boards

- The activities of the EB and of all the Specific Boards are (or should be) addressed to answer to three main questions on ET (and many sub-questions):
  - What?
    - What do we want realize?
    - What are the science targets?
    - What is the ET design and what are the possible configurations?
    - What is the cost?
  - When?
    - When the ET design will be defined?
    - When the site selected?
    - When the construction starts and ends?
    - When the integration starts?
    - When commissioning starts?
    - Do we will adopt a staging strategy?
  - Where?
    - Where is the ET optimal site (or sites)?
    - How to select it/them (criteria and procedure)?

What?

- The final answer to this question will be given by the ET Technical Design Report in synergy with the science Blue Book.
  - How to achieve it?
  - First, we need to define the ET configuration
    - In the ESFRI proposal the countries signing the proposal stated as reference configuration the Triangle, but leaving the door open to other configurations that where under discussion at that time (the 2 L) but impossible to insert for many reasons: time, readiness, convenience, …
    - Different configurations impact on ET on different aspects:
      - Science targets
      - Technical and engineering solutions
      - Localization(s)
      - Cost
      - Timing
      - Risks
      - Financial architecture
      - …
    - With a certain level of difficulty, we started this process, named Cost Benefit Analysis (CoBA) process

Defining the ET configuration: CoBA process

- Started early in 2021, it had its first workshop in November 2021 (the Cortona Workshop)
- Recently we obtained the first deliverable of this process:
  - The CoBA science document (Monday Talk by Michele M.)
- Next steps are:
  - Configuration Risk assesment
  - Civil Infrastructure construction solutions and costs (ED department)
  - Political and financial implications (BGR & Coordinators)

Configuration Risk Assessment: ETRAC

- Recently the EB appointed a ET Risk Assesment Committee (ETRAC)
- Its mandate is
  - 1) Define a set of risk categories and populate them by risks
  - 2) Define a «quantitative» metric for each of these risk categories
  - 3) Apply the metric to the risk categories comparing the ET configurations

- Risks explicitely excluded: Political and financial because outside the ET collaboration realm
- The ETRAC is composed by members having a long standing experience in assembling, commissioning, operating and upgrading GW detectors and chaired by non-ET person
- The output is expected in April-May 2023

Product Breakdown Structure

- In parallel to the definition of the configuration, are started the activities toward the ET TDR(s)
- The first step is the realization of the Product Brakdown Structure (PBS)
- This is driven by a committee (PBS team) formed by the Project Office and some of the chairs of the ISB and EIB (with the collaboration of the SPB)
- Target of this activity is to create a hierarchical tree of “products” defining the ET systems, subsystems and elements
- The PBS team meets monthly and the activities are performed weekly in the ISB and EIB
- The first version of the PBS is expected in April-May
- The PBS will provide inputs for the costing and is a preliminary step for the preparation of the Work Breakdown and Organization Breakdown

ET vacuum pipes

- Vacuum pipe studies are under the Project Directorate hat
  - Coordinated by CERN thanks to a CERN-INFN-Nikhef agreement
  - Choice related to particulare cost relevance of this ET system
  - Involving ISB people and organized in WPs
  - Next workshop:
    - Beampipes for Gravitational Wave Telescopes, CERN, 27 - 29 March, https://indico.cern.ch/event/1208957/
      (mostly focused on engineering topics: materials, production techniques, cleanliness…)

EIB Status

EIB organization is in place:

EIB Chairs: Stefano Bagnasco (INFN), Patrice Verdier (IP2I Lyon - IN2P3)

ET-PP WP8 leaders: Achim Stahl (U. Aachen), Sergi Girona (BSC) + Nadia Tonello (BSC)

Division 1: Software, frameworks, and data challenge support
Andres Tanasijczuk (Université Catholique de Louvain)

Division 2: Services and Collaboration Support
Antonella Bozzi (EGO)

Division 3: Computing and data model, Resource Estimation
Gonzalo Merino (PIC)

Division 4: Multimessenger alerts infrastructure
Steven Schramm (Université de Genève)

TTG: Technology Tracking working Group
Sara Vallero (INFN Torino)

Liaison with OSB Div. 10: John Veitch (University of Glasgow)

Joint WP8+EIB weekly call for coordination

Action list for the next months

1st Mock Data Challenge: Data will be provided through CVMFS and documentation through ET wiki

Develop a WBS for the preparation of the Computing Model and Cost Estimates

Services and Collaboration Support : ETMD, mailing lists, …
Deploy Identity Access Manager AAI for ET

Organize regular seminars on Computing technologies

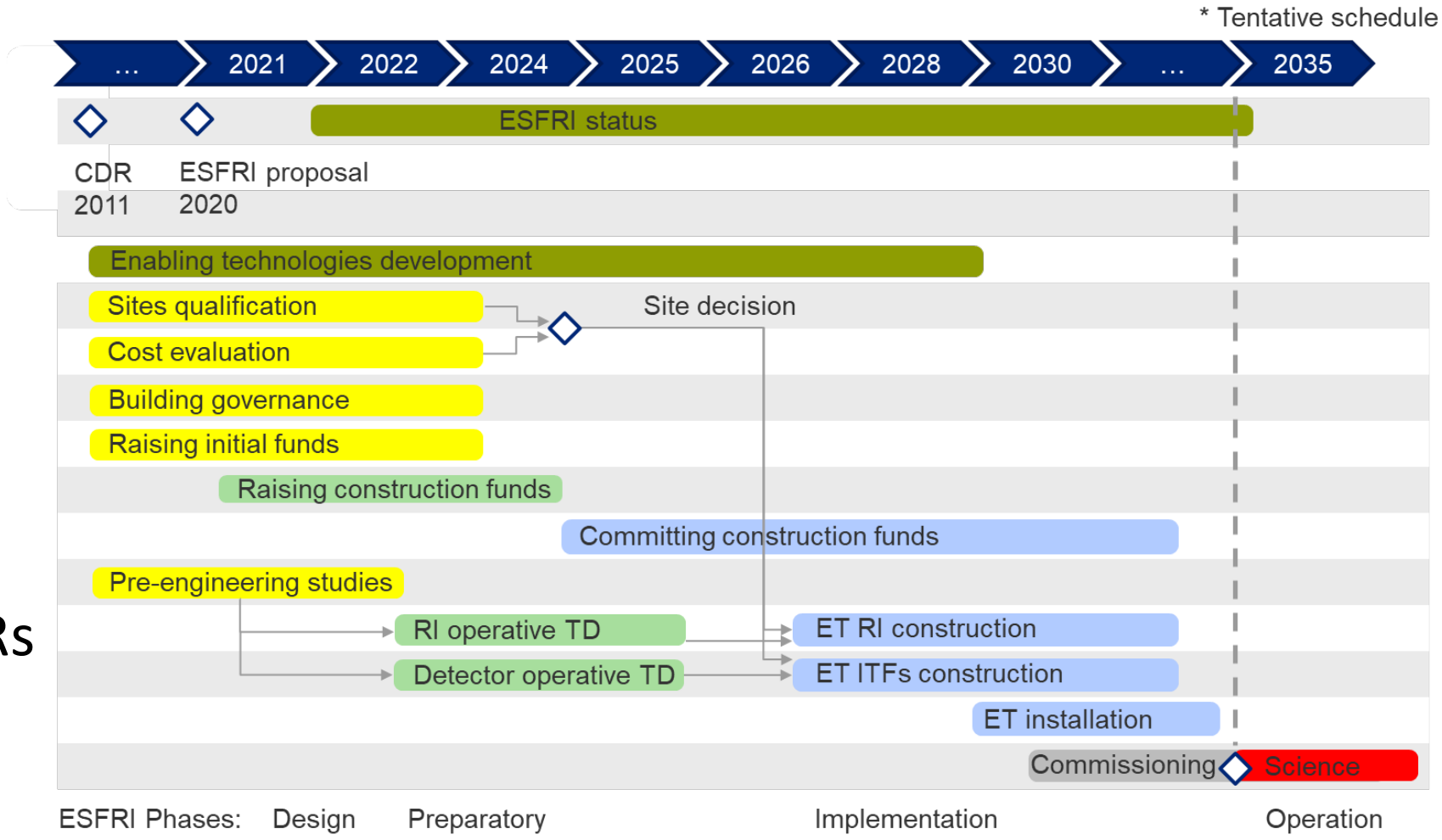
Prepare the PBS for EIB deliverables to be included in the TDR

Active survey and contributions for the preparation of European project (Infratech, EOSC, …)

When: ET roadmap

- ET has a roadmap, defined in the ESFRI proposal, quickly obsolescing

- But the ET evolution is tumultuous and the TDRs are still absent: a robust timeline must still be defined



Reviewing the ET timing

- Many parameters are impacting on ET timing
  - Configuration selection
  - Site selection
  - Design definition
  - R&D activities
  - Excavation time
  - Procurement of the ET apparatuses
  - Integration
  - Commissioning
  - Costs

To be elaborated together the Project Office

Personal view on the ET timeline (undiscussed)

- In absence of a operative timeline, we can make a guess:

Conclusions

- Obviously in this brief report I have neglected the SPB activities, because you know them better than me
  - National host teams have now the budget to independently qualify each site
  - SPB has a crucial role: it musts stimulate the collaboration and it musts give to the whole collaboration and to the agencies the scientific, technical, legal, organization framework where to compare the proposed sites
- Many activities are going on in the collaboration
  - Several of them are interlaced with the Project Office and the “Observatory”
  - This complexity is sometimes slowing down the activities, but at the end it is necessary to realize a so large enterprise
- See you at the ET symposium, 8-12 of May 2023, Cagliari.

Coherently