

Report from the  
**ET Collaboration**

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# ET Collaboration formed



<https://indico.ego-gw.it/event/411/>



ET EINSTEIN TELESCOPE  
XII Einstein Telescope Symposium



## Official Birth of the ET Collaboration

XII ET Symposium, Budapest on June 7th - 8th

More than 400 scientists,  
out of >1200 members of the Collaboration,  
attended the meeting in person or remotely.

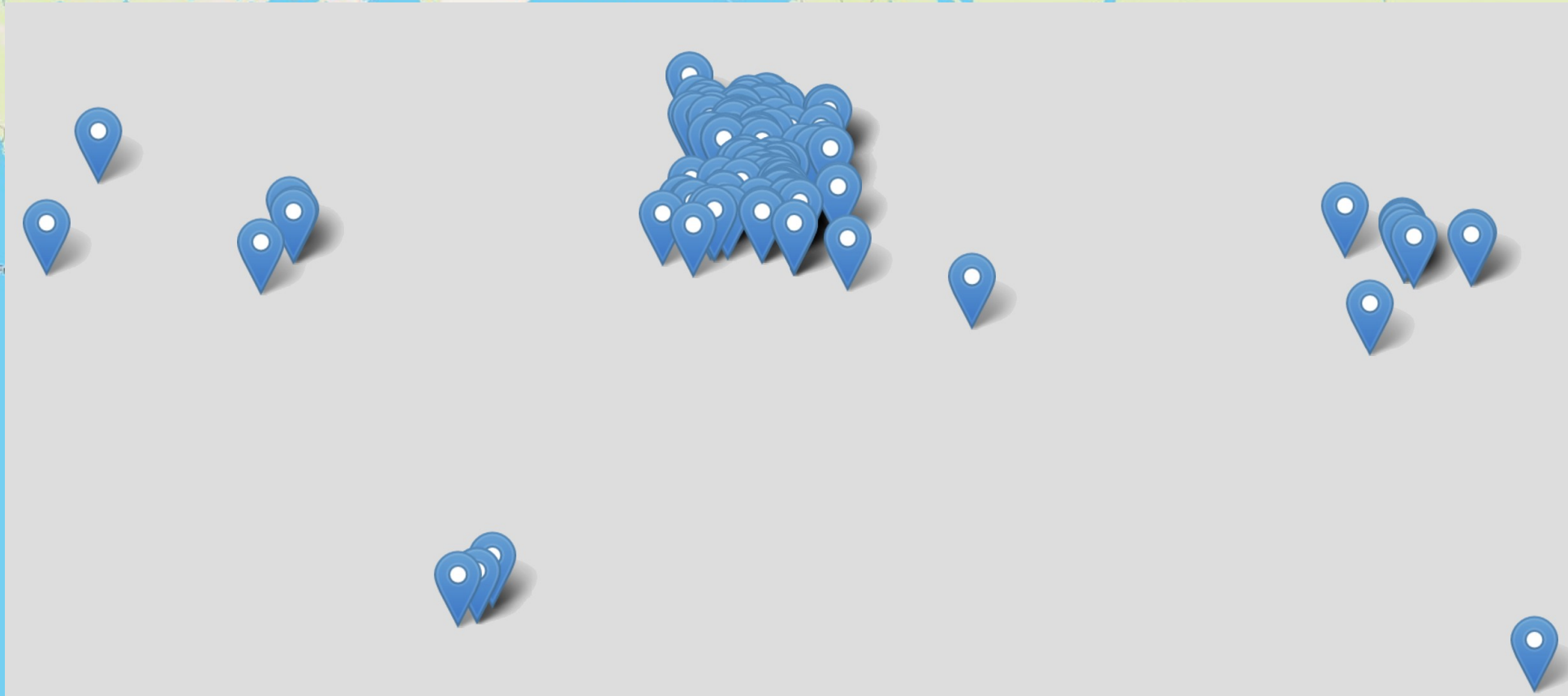
One Year ago



# The Einstein Telescope Collaboration

## ET Member's affiliation map

- ET member database (<https://apps.et-gw.eu/etmd/>)



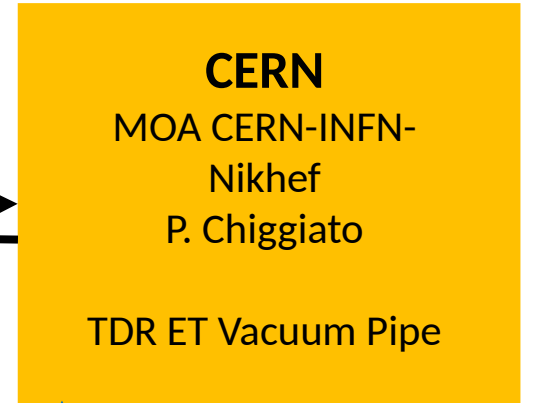
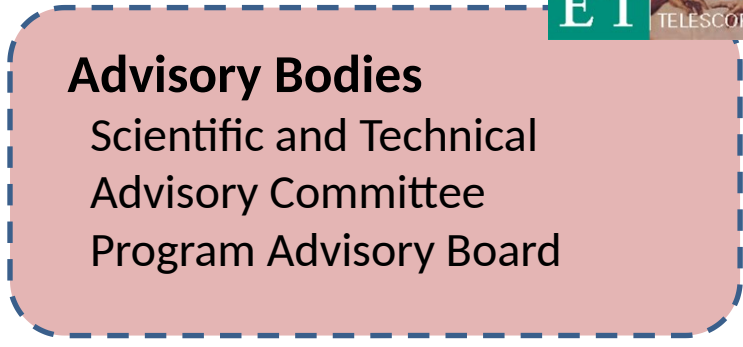
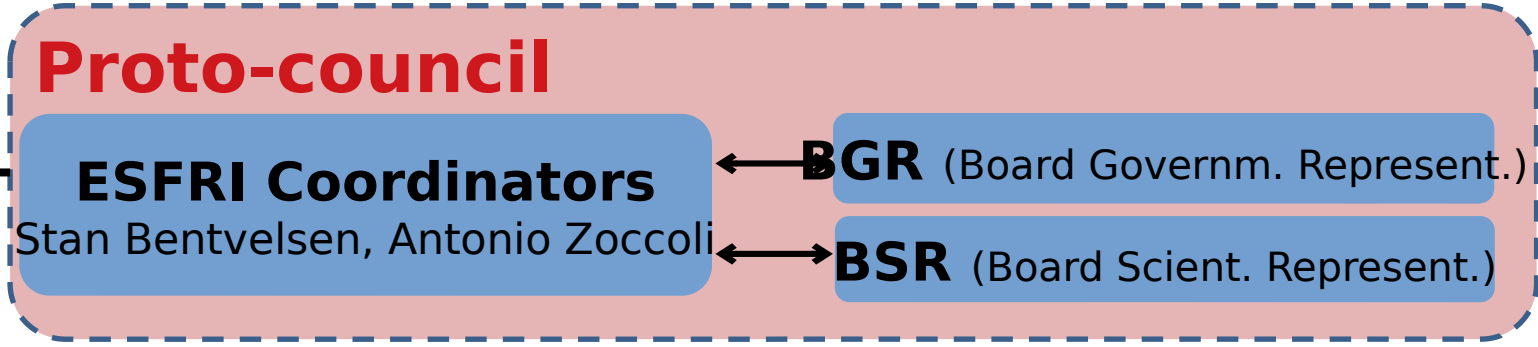
- Total: 211 Institutions in 23 Countries

- The data in the ETMD suffer a certain level of inaccuracy:
  - Some RU leaders have not inserted their RU members
  - A few ET members are not updating their information

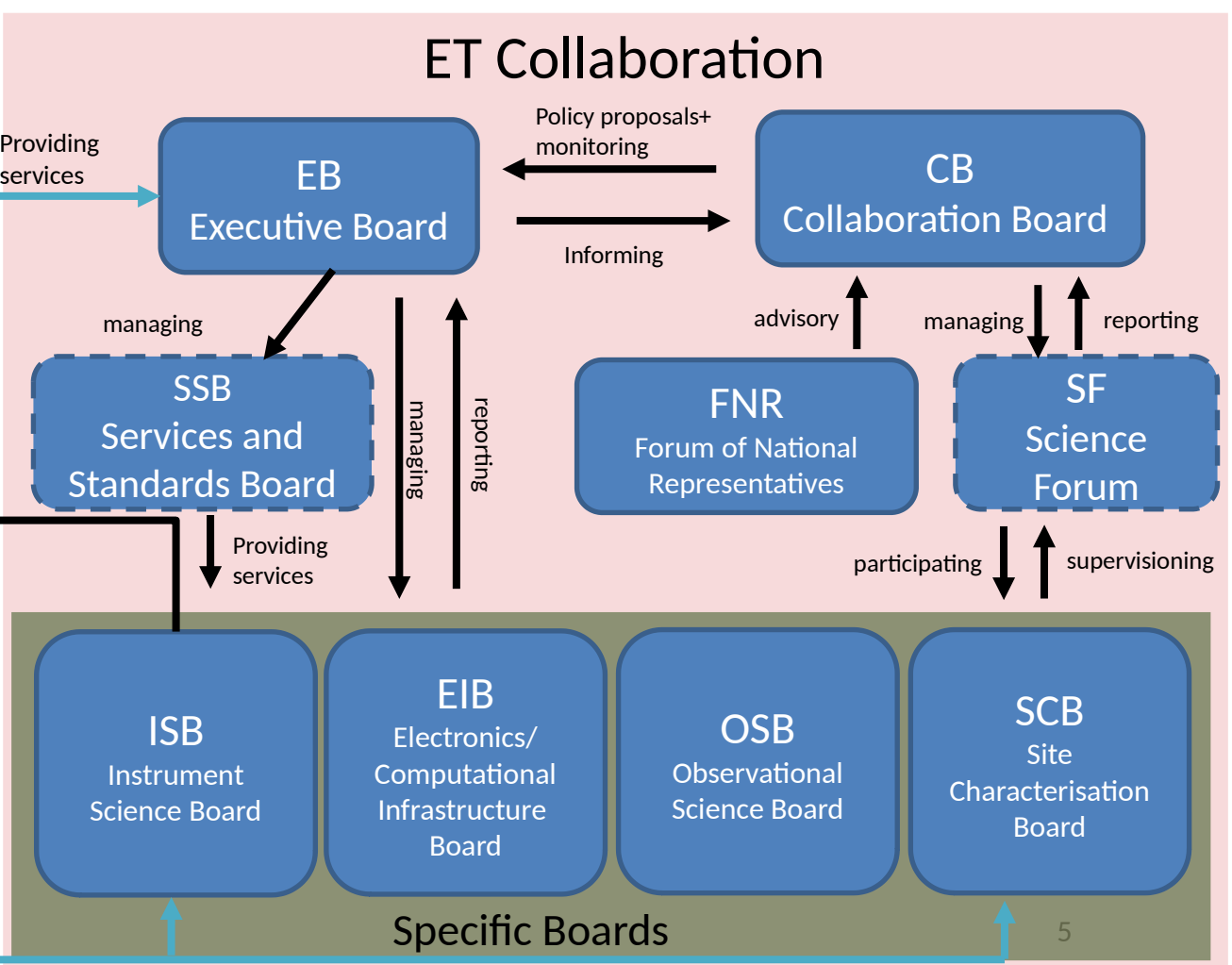
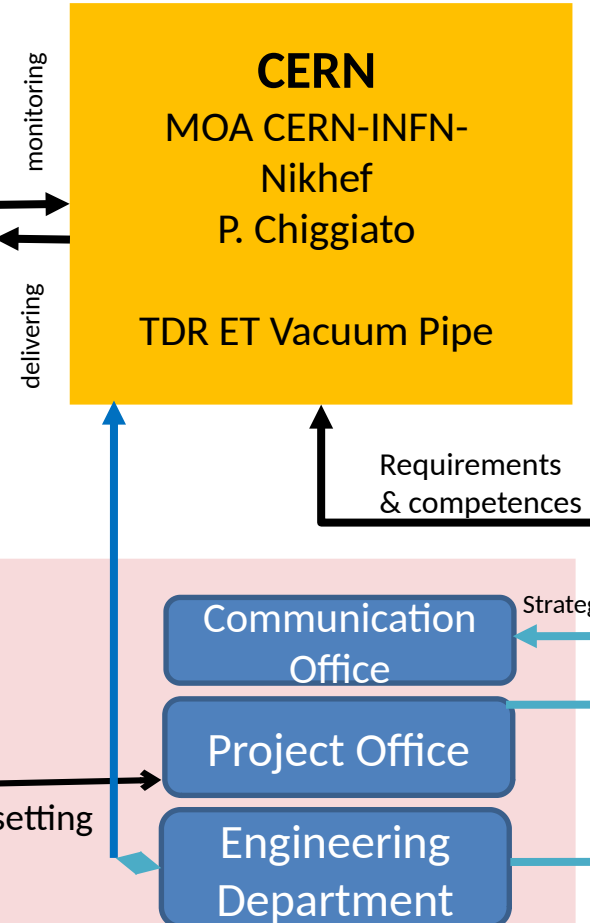
Data from the ET Member Database (ETMDB), tool based in EGO, governing the Authorization and Authentication to the ET collaboration resources:

<https://apps.et-gw.eu/etmd>

- We adopted a “particular” flavor of FTE: FRTE (full research time equivalent)
- The declared FRTE need to be matched to an effective activity
    - This will be a major effort in the next years and we should find a realistic method in the Bylaws
  - Currently we have about 295 FrTE →24% on average per member - quite low

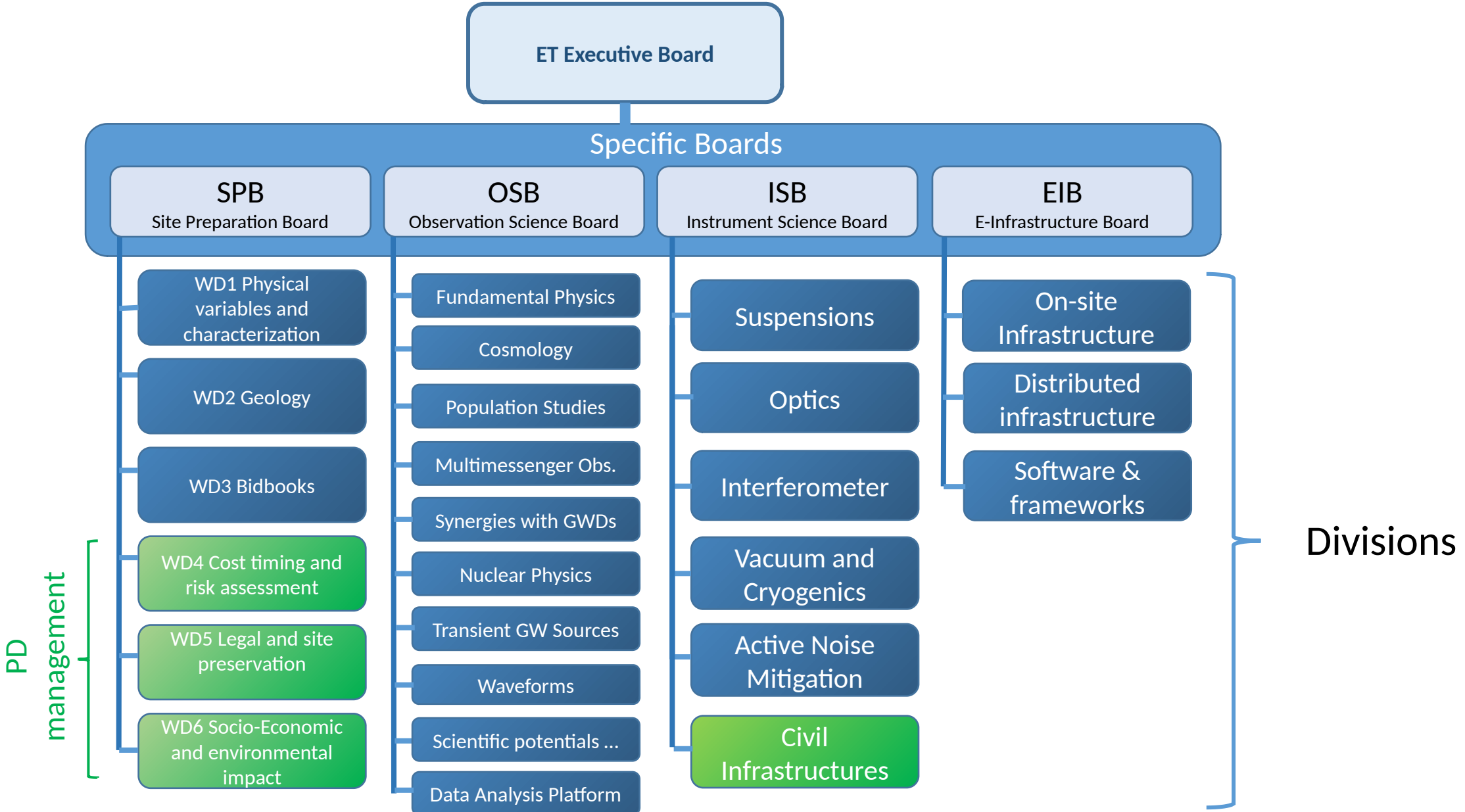


Deliverables:  
Beam pipe vacuum  
Site Preparation  
Civil Infrastructure



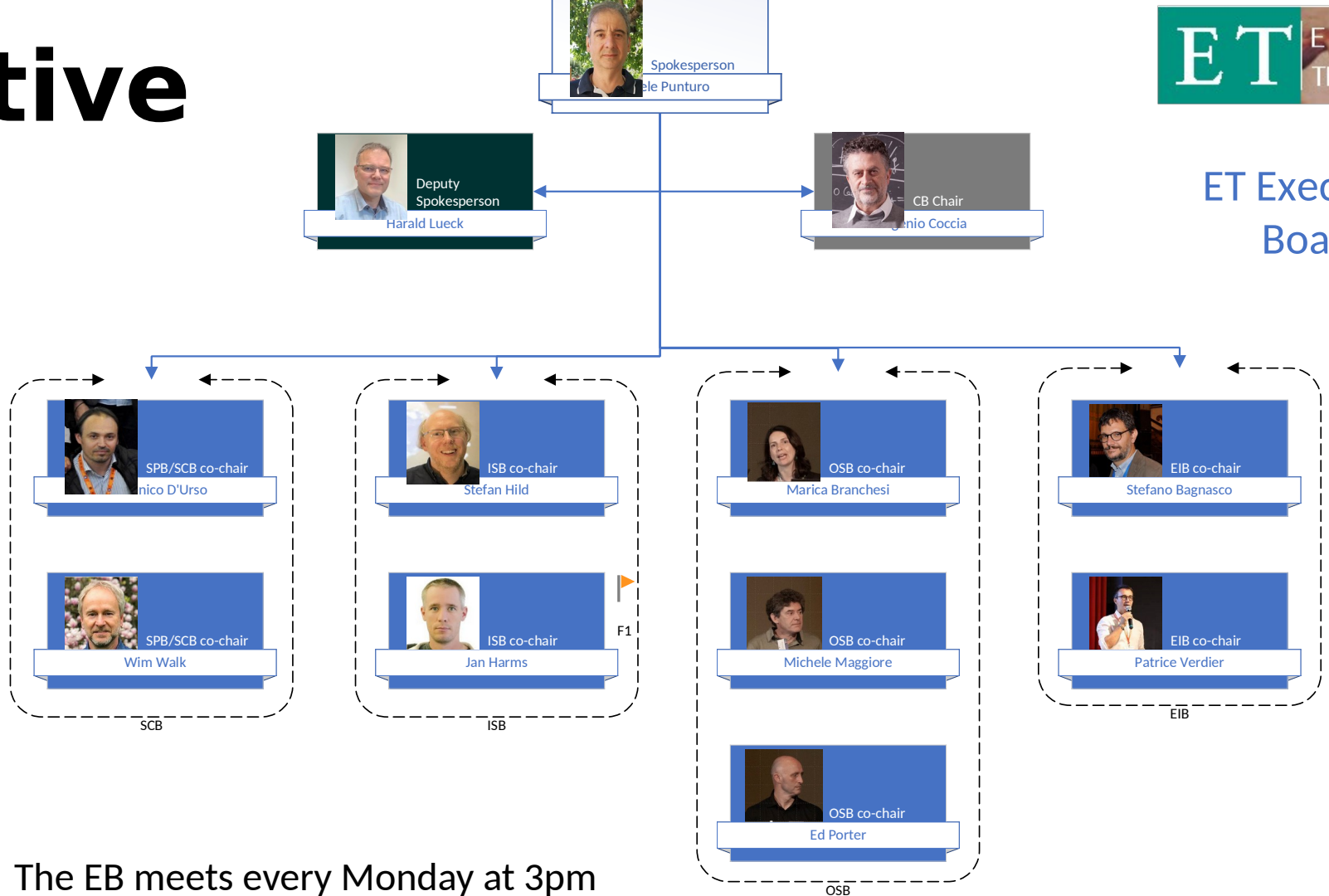
**ET Organization**

# ET Specific Boards



# The Executive Board

- On the 23<sup>rd</sup> of March, 2023 the ET Collaboration elected the Spokesperson/Deputy Spokesperson team

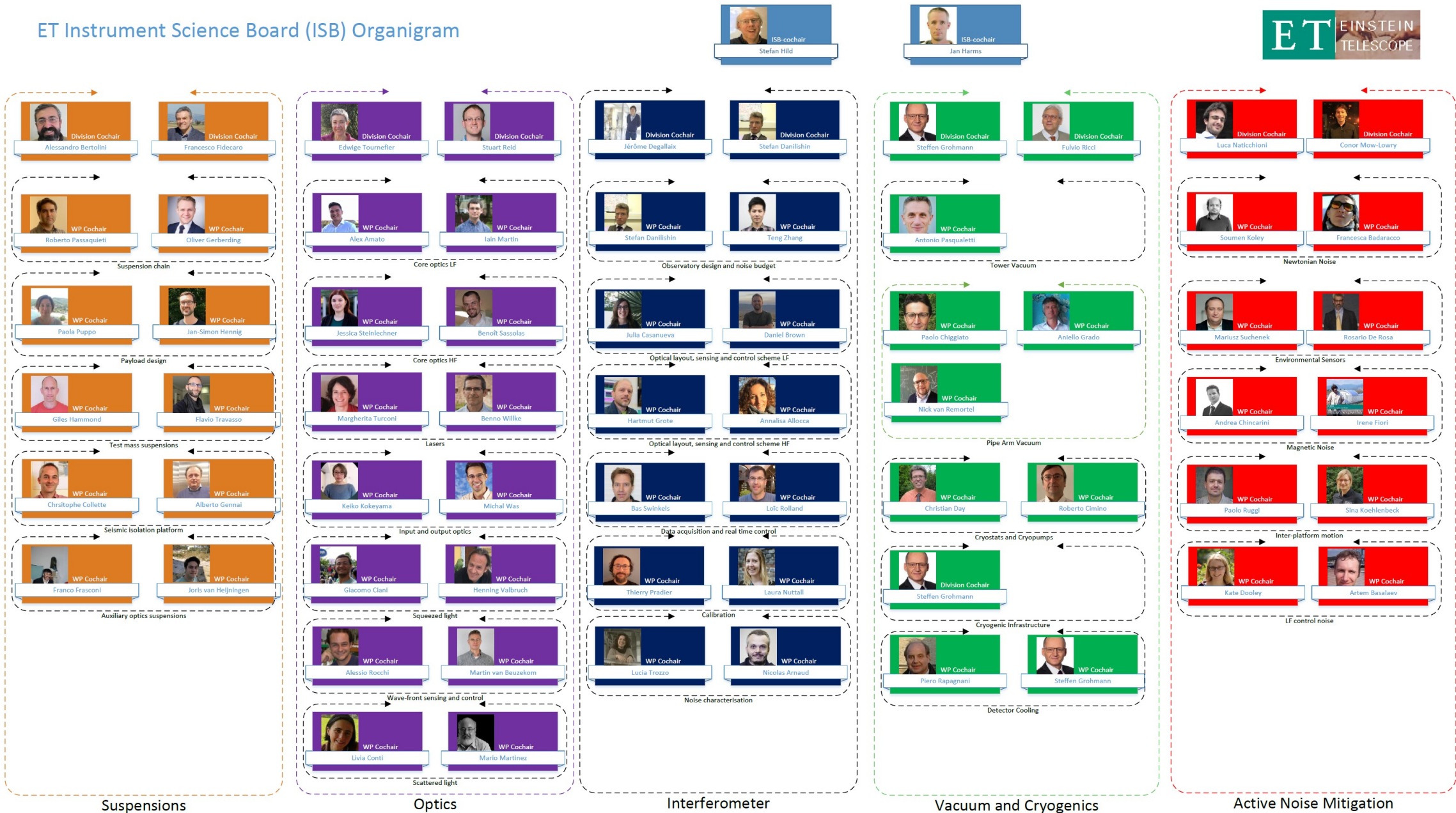


Einstein Telescope  
Scientific Collaboration  
leadership elected

- The EB meets every Monday at 3pm
- You can follow its activities through the meeting minutes on the ET Collaboration Technical Documentation System (TDS): <https://apps.et-gw.eu/tds/> \*
- More info here: <https://wiki.et-gw.eu/EB/WebHome> \*
- ET Collaboration web site (since 2008): <https://www.et-gw.eu/> \*
- Indico (all international ET coll. meetings): <https://indico.ego-gw.it/category/23/> \*

(\*) Services provided by EGO, based on the ETMDB service (Active Directory)

# ET Instrument Science Board (ISB) Organigram



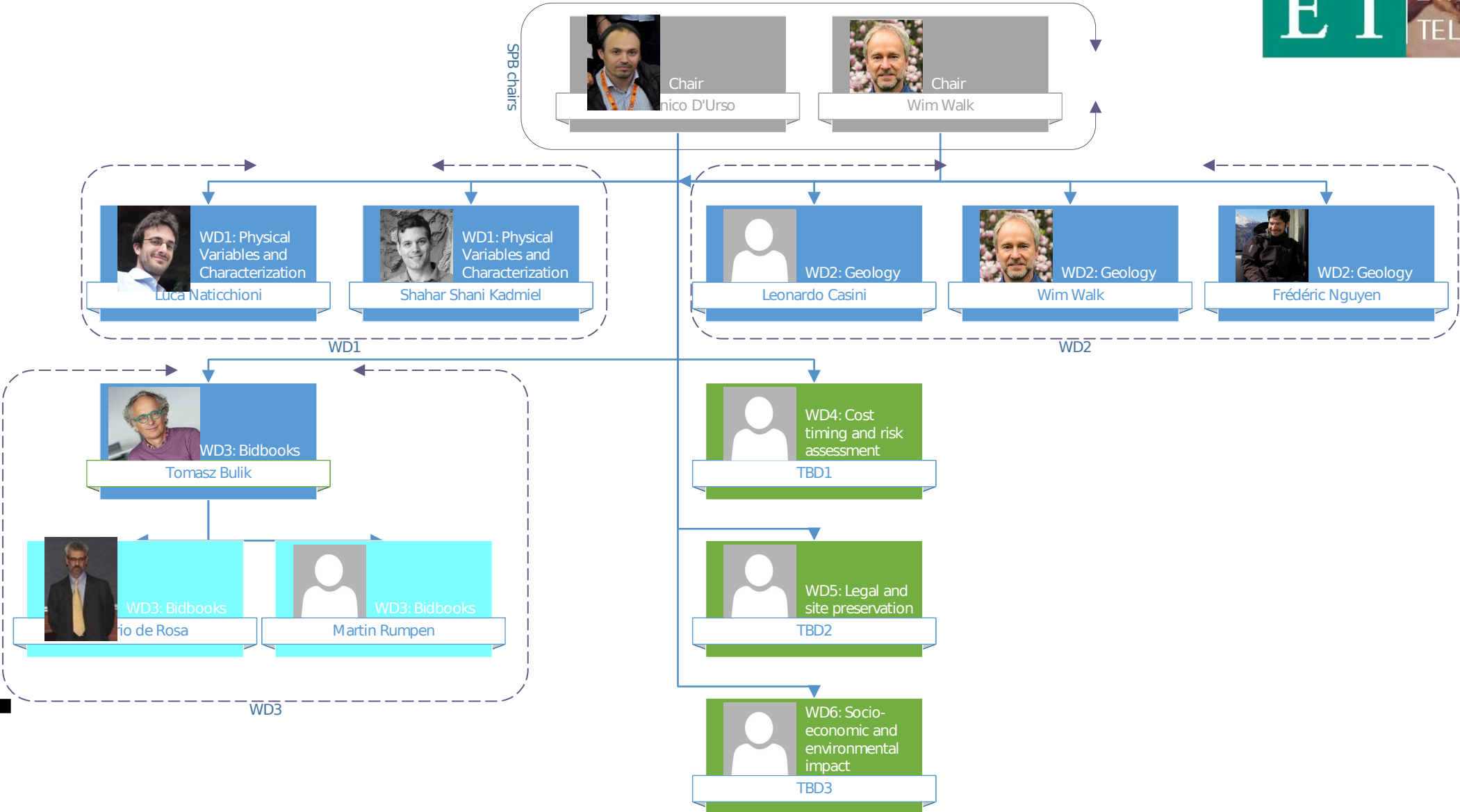


# The Observational Science Board OSB



# **The E-Infrastructure Board**

# The Site Preparation Board



The activities of the ET collaboration in the last year are progressing along two parallel lines:

1) self-structuring (Bylaws, SSB committees, new RUs), ...

- Under the responsibility of the Collaboration Board chaired by Eugenio Cocchia

2) contribute, in synergy with the ETO, to all the needed steps toward the realization of the ET observatory

- Optimize the science return
  - Define optimal ET geometry and localization
- Evolve the ET CDR toward TDRs:
  - PBS (Product Breakdown Structure)
  - WBS (Work Breakdown Structure)
- Develop the Enabling Technologies
  - R&D activities (see Harald's Talk)

In 2021 we started a process named CoBA (Cost Benefit Analysis)

Multi-Step process:

Optimization science return: CoBA Science document



ET-0084A-23: <https://apps.et-gw.eu/tds/ql/?c=16584>

Differential comparison of the (technical, commissioning, operation) risks of the interferometers in the possible geometrical configurations

ETRAC (ET Risk Assessment Committee)



Work in progress (see later)

Evaluate Risk Mitigation Strategies

The next steps are formally under the ETO responsibility

Civil Infrastructure construction solutions and costs (Engineering Department)

Political and financial implications (BGR & Coordinators)

An impressive document of about 200 pages, realized in more than one year of work by about 80 ET collaborators and endorsed by the Executive Board

Main target, also requested by the ET Project Directorate in order to accomplish its mandate, is the comparison of the science return for different geometries («L» vs « $\Delta$ ») and orientations (aligned, misaligned).

Main achieved results are summarized in few concrete statements in the conclusions of the document

Obviously the CoBA output impacts on the TDR (mainly on civil infrastructures)

In early 2023, the EB appointed an **ET Risk Assessment Committee (ETRAC)**  
Its mandate has been:

- 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 explicitly 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 is chaired by a non-ET person

The ETRAC decided to only evaluate “differential” risks

The EB received the output report that is compliant with the mandate we assigned:

We decided to internally review it in order to evaluate its completeness and correctness

The EB also has the duty of implementing the second step of this **RE-MS** process:

**R**isk **E**valuation – **M**itigation **S**trategy

An offline review has been started

It may be finalized in a full-day F2F meeting on the 14<sup>th</sup> of July at the Frankfurt airport conference center (PO invited)

Name
Edwige Tournefier
Enrico Calloni
Piero Rapagnani
Bas Swinkel
Matteo Tacca
Alessio Rocchi
Christian Olivetto
Hartmut Grote
Benno Willke
<b>Lisa Barsotti (Chair)</b>

The first step towards the ET **T**echnical **D**esign **R**eports (**TDRs**) is the realisation of the **P**roduct **B**reakdown **S**tructure (**PBS**)

This activity has been driven by a committee (PBS team) composed by the Project Office and some of the chairs of the ISB and EIB (in collaboration with the SPB)

This activity heavily involved competences and human resources of the ET Collaboration, whose members filled up the PBS files

Several talks are scheduled in this meeting on this subject, please have a look at them

A. Variola

A. Rocchi

P. Verdier

P. Werneke

C. Olivetto

G. Gemme

D. D'Urso

S. Hild



# R&D in ET

From the candidature talk→

## Collaboration targets in the next 3 years



- See Harald's talk
- In the next few days we will launch a **questionnaire on the R&D activities**, on the received funds, on the active multi-annual R&D programs
  - An ET-PP questionnaire on Industrial Liaison and Technology Transfer (see M.Morandin) has been attached to this questionnaire
- The target is to **realize a DB** with all these info
- The aim is
  - 1) to see if all the **enabling technologies** are covered,
  - 2) if we have an **unnecessary duplication of efforts**,
  - 3) what are the **R&D activities** to be «offered» to **new potential RUs** in ET?
  - 4) to prepare an **international R&D plan** to be presented to the funding agencies

- R&D:
  - *Some ET enabling technologies are still uncertain. We need a coordinated effort to:*
    - *Realise a complete prioritised list of ALL R&D tasks, starting from the ET enabling technologies*
    - *Define of a roadmap for all R&D tasks*
    - *Define a clear assignment process for R&D responsibilities*
    - *Attract new knowledge and skills from neighbouring research communities*
- Currently, we have national funds for R&D in some countries
  - The “common funds” for R&D are currently limited to the vacuum research (allocated to CERN)
  - We need to fund **all** R&D. It is essential to define a **scenario of the needed R&D activities needed**, their **priorities and a roadmap**, in order to present a coherent plan to the agencies in support of the requests from the national teams.
  - Knowing “what we need to do” is a pre-requisite for attracting new groups

The ET Collaboration is **continuously growing**. This is a positive fact:

- Human resources, young scientists
- Consolidated and new competences
- We have already a global horizon (whole Europe, South America, Asia)

But it has important **requirements**:

- **Organization:**

- The organization of the ET collaboration needs to be well structured, monitored and continuously updated

- **Effectiveness:**

- The effective contribution of each member of the ET collaboration needs to be evaluated

- Metric (FRTE vs FTE)

- Tools

Probably this is a point we will touch on during these two days :

- The success of the Einstein telescope is based on a strong synergy between the ET Collaboration and the ETO, as these two bodies nicely complementing each other.