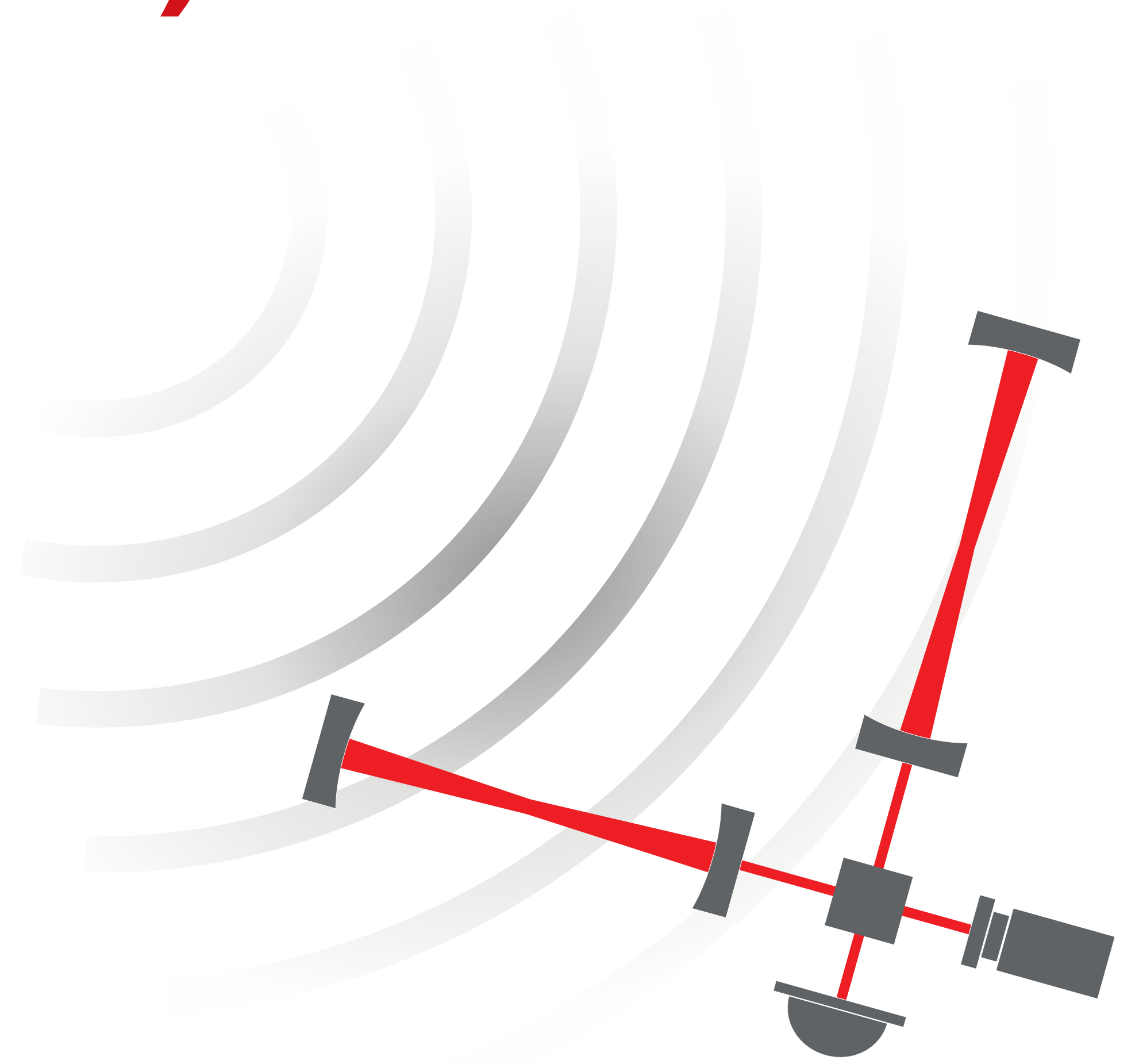


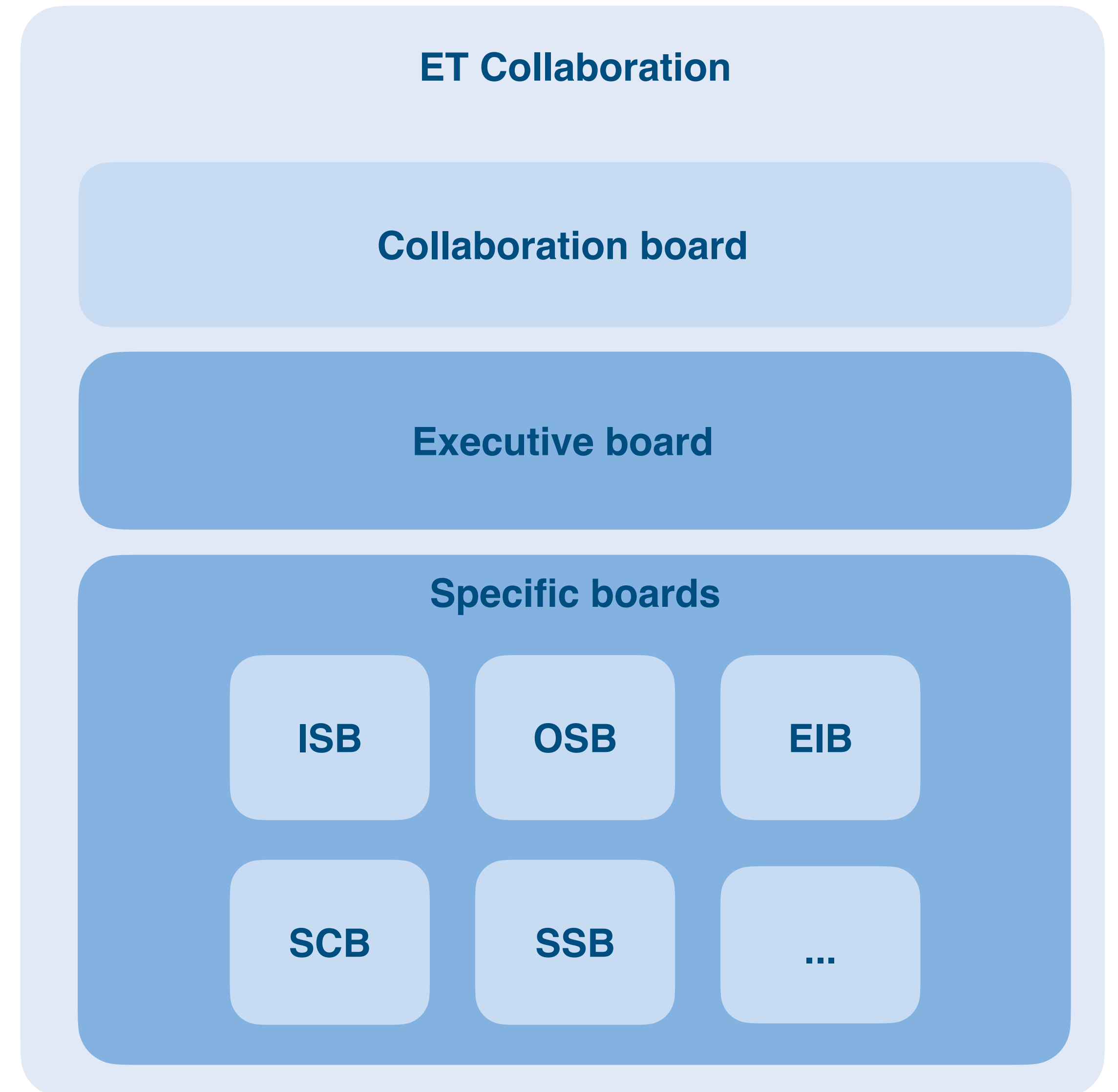
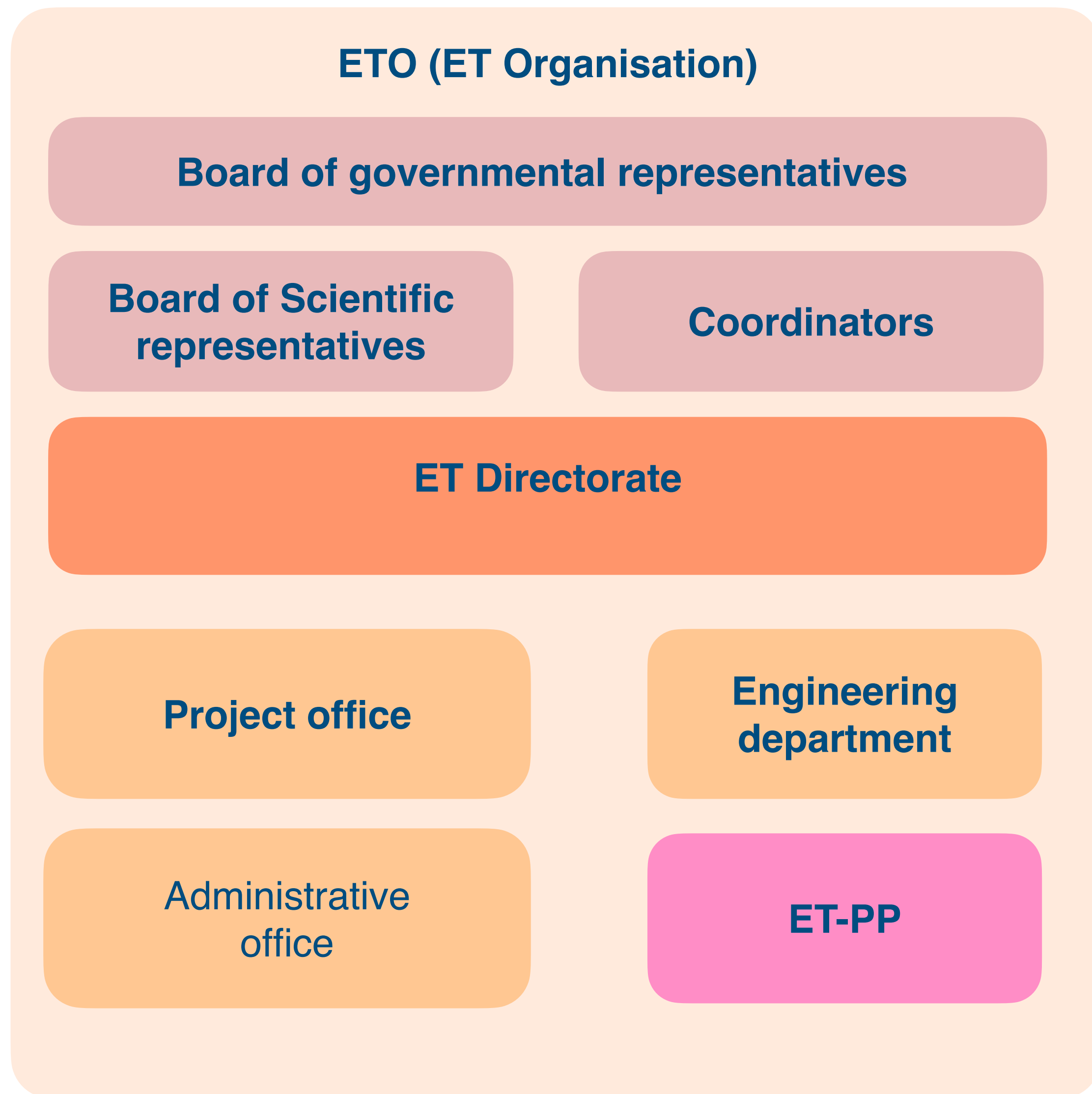
ET Organisation (ETO)



Ferroni, Freise, 14.11.2023

Two pillars of ET:

1) project management and 2) scientific collaboration



Directors' mandate

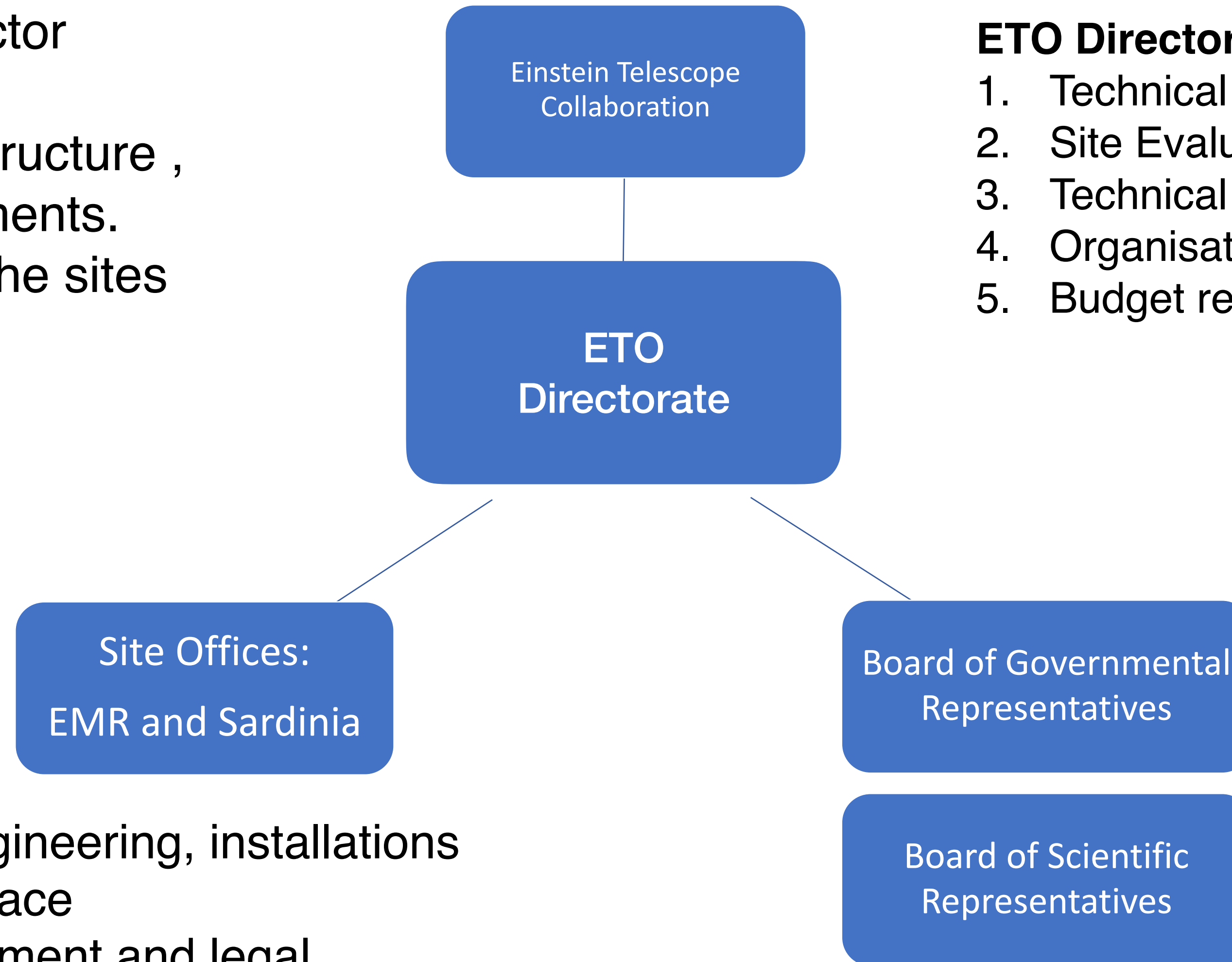
- 1. *Set up the organization and the operations of the ETO (organization chart) below: ETO Project Organization during Phase I). This implies **defining the structure of the ETO (Phase I)**, giving mission statements and work programs to the work units, **naming staff members in the various work units**, setting deadlines and quality control criteria.*
- 2. *Compare the triangle geometry with the geometry of two L-shaped infrastructures in scientific potential, risk analysis and costs.*
- 3. *Develop a budget plan and schedule for the **Design and Preparation Phase**. Control the budget and account for the funds allocated to the ETO (Phase I) by the ET Coordinators.*
- 4. *Steer and oversee the studies and the **production of the documentation necessary to the BGR** and to the associated working groups in the ministries, for the BGR to be in a position to review, modify, update and approve the report and finally set-up the organization for the construction and operation of the gravitational wave detector.*

Phase I end with the site decision and the principal approval for construction of ET.

ETO Directorate scope and relations

ET Collaboration: detector design, requirements for technical and civil infrastructure , E-infrastructure requirements. Common standards for the sites

Local teams:
Feasibility studies civil engineering, installations
Feasibility studies subsurface
Feasibility studies environment and legal



ETO Directorate deliverables:

1. Technical Design Report
2. Site Evaluation Report
3. Technical Plan report (Phase 2-4)
4. Organisation report (Phase 2-4)
5. Budget report (Phase 2-4)

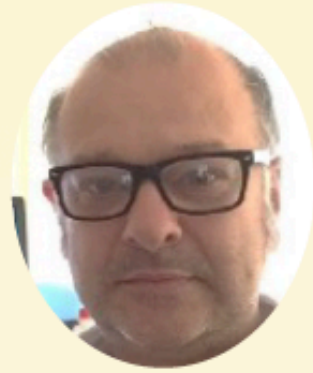
BGR:

Governance & Legal entity
Site selection process
Finance

BSR:

Agencies
Finance

ETO today (still evolving)



Alessandro Variola: Super project manager



Alessio Rocchi: Keen eye on technology



Roberto Saban: Wise advisor



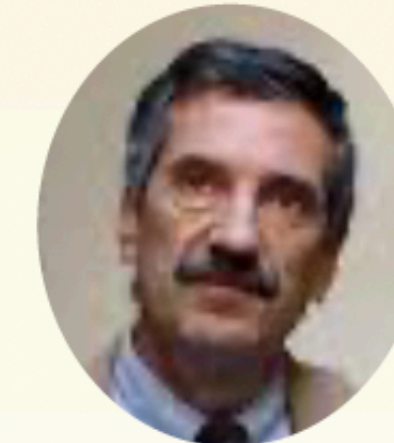
Martine Oudenhoven:
Smart organiser



Lucia Lilli: Absolutely essential support



Patrick Werneke & Maria Marsella:
Rocking engineering!



Fernando Ferroni:
Director, experienced president



Mario Martinez:
front man for ET-PP



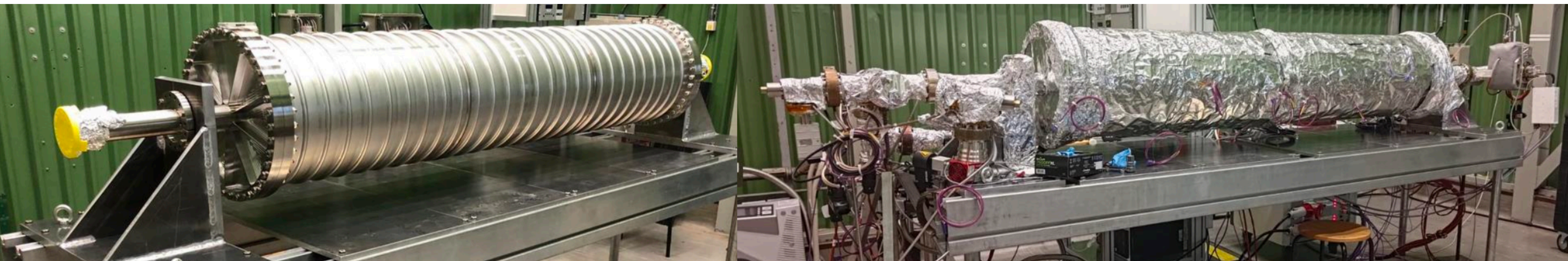
Andreas Freise:
Director, ET at heart

Activities required on three fronts

- **ET Collaboration (international)**
 - Define **scientific vision and detector requirements**. For example: science case for ET, which are the key characteristics of a good ET site.
 - **Research and development the technology** required for ET. For example, silicon mirrors, cryogenic suspension systems, ...
- **ETO (international project organisation)**
 - Provide **project management and all engineering work**.
 - Decide on **governance**, type of legal entity and financial frameworks, ...
 - **Engineering work and technical design** of the research infrastructure.
- **Local teams**
 - **Site characterisation** with seismic and geological studies.
 - Deliver design and implementation plans that are **unique to the region**.
 - Develop **economic case** and deliver socio-economic impact plan.

Engineering, help from CERN

- We obtained support from technical teams at CERN who can provide extremely valuable expertise for urgent topics, such as vacuum pipe systems and the construction of underground infrastructures.
- The first project started in 2022 and will deliver the **Technical Design Report (TDR)** for the vacuum pipe in **2025**.
- A second project has been approved to support delivering a preliminary TDR for the underground infrastructure in **2026**.
- More contracts with external partners still to be started, expected duration is also **3 years** per contract.



CERN vacuum project, the CERN team

See Paulo Chiggiato's talk later today

Name	Competences	Workpackage
Cedric Garion	Structural mechanics	WP1
Carlotta Accettura	Mechanical design	WP1
Ana Teresa Perez	Metallurgy	WP2/WP8
Gilles Favre	Manufacturing	WP2
Audrey Vichard	Welding	WP2
Stefano Sgobba	Metallurgy	WP2
Manjunath Dakshinamurthy	Metallurgy	WP2
Leonel Ferreira	Surface treatments	WP3
Mauro Taborelli	Surface analysis	WP3

Name	Competences	Workpackage
Luigi Scibile	Premises and logistics	WP4&WP5
Gregory Pigny	Vacuum control	WP6
Giuseppe Bregliozzi	Vacuum engineering	WP6
Carlo Scarcia	Vacuum engineering	WP2/WP6
Jose Ferreira	Vacuum modeling	WP6/WP7
Alice Michet	Vacuum measurement	WP6
Jan Hansen	Mechanical engineering	WP7
Ivo Wevers	Vacuum measurement	WP6/WP7
Paolo Chiggiato	Coordination	WP8

By contract, during the three-year agreement, two FTE/y of CERN staff and two CERN fellows work for ET.

CERN, next steps

- **Health and safety:** technical designs at CERN are usually done by a large interdisciplinary team, including for example the safety group. We had a first exploratory meeting with CERN's Occupational Health & Safety and Environmental Protection Unit (HSE) on 04.04.2023. To be continued.
- **Engineering support:** we had a successful first meeting (October 18) with Katy Foraz, the Head of the Engineering Department at CERN, and her Group Leaders to explore other opportunities for collaboration.
- **Document management:** project management requires specific tools, we are investigating the use of the CERN tool EDMS. Hosting and support could be add/by CERN or from another partner.

Einstein Telescope / CERN meeting - 18 Oct 2023 - 18 Oct 2023, CERN.
Daily Programme: Wednesday, 18 October 2023

Contribution: Introduction to EN department
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)
Presenter: : Katy Foraz

Contribution: ACE - Coordination of projects in large scale scientific facilities
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)
Presenter: : Jean-Philippe Tock

Contribution: IM - Engineering Information Management for Large facilities
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)
Presenter: : Jurgen De Jonghe

Break: Coffee Break
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)

Contribution: MME - From design to installation of Large scale project
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)
Presenter: : Said Atieh

Contribution: MME - Material science
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)
Presenter: : Stefano Sgobba

Contribution: AA -Access and safety systems for large scale projects
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)
Presenter: : Pierre Ninin

Break: Lunch Break
Time and Place: Restaurant 1 Glassbox (18 Oct 2023 - 18 Oct 2023)

Contribution: HE - logistics aspects of large scale projects
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)
Presenter: : Caterina Bertone

Contribution: CV - Cooling and ventilation of large scale projects & sustainability
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)
Presenter: : Francesco Dragoni

Contribution: EL- Electrical aspects
Time and Place: 42/3-032 (18 Oct 2023 - 18 Oct 2023)
Presenter: : Jan De Voght

EN- the dream team

However, it comes with a cost (modest)

	Total integrated resource needs for ETO over 3 years	Cash M€		In-kind FTE
		CERN	Commercial	
1	Vacuum pipe design 2 CERN fellows + material + studies	1.55 ¹		
2	Civil engineering design - CERN consultancy 1 CERN fellow - CE Studies - Site evaluation (studies, analysis)	0.36 ²	1.5 0.5	1.5
3	Detector technical design studies - Cryogenics - Tower Vacuum		0.5 0.5	1.5 1.5
4	Engineering design studies for the electricity distribution, the ventilation, the cooling, the transport, access control, the coordination, information management 4 CERN fellows	1.44	1.5	3
5	Studies and setting-up of a unit for Health, Safety and Protection of the Environment during construction, installation and operation 1 CERN fellow	0.36	0.3	1.5
6	Coordination of sustainability and energy consumption studies 1 CERN fellow	0.36		1.5
7	Risks, schedule and cost management		0.5	3
8	The organisation and support to the management of ETO 1 CERN fellow	0.36		6
9	Software licenses for the Engineering Department and the Project Office		0.5	
10	Support for Communications Unit		0.2	
	Totals	4.5	6.0	19.5 ³

Comments:

- 1) CERN includes mainly fellows and some consumable
- 2) Commercial are contracts and licenses
- 3) In-kind are skills needed to complete PO and EN departments and, of crucial importance, people following the activities at CERN with the perspective of bringing back the competences inside the project

This document, endorsed by the coordinators, will be submitted both to BSR and BGR

The CERN collaboration with ET

5 March 2020

Deliberation Document on the 2020 update of the European Strategy for Particle Physics

*The European Strategy Group
(prepared by the Strategy Secretariat)*

5. Synergies with neighbouring fields

There are many synergies between particle physics and other fields of research. Clear examples are nuclear and **astroparticle physics**, which address common fundamental questions and use common tools.

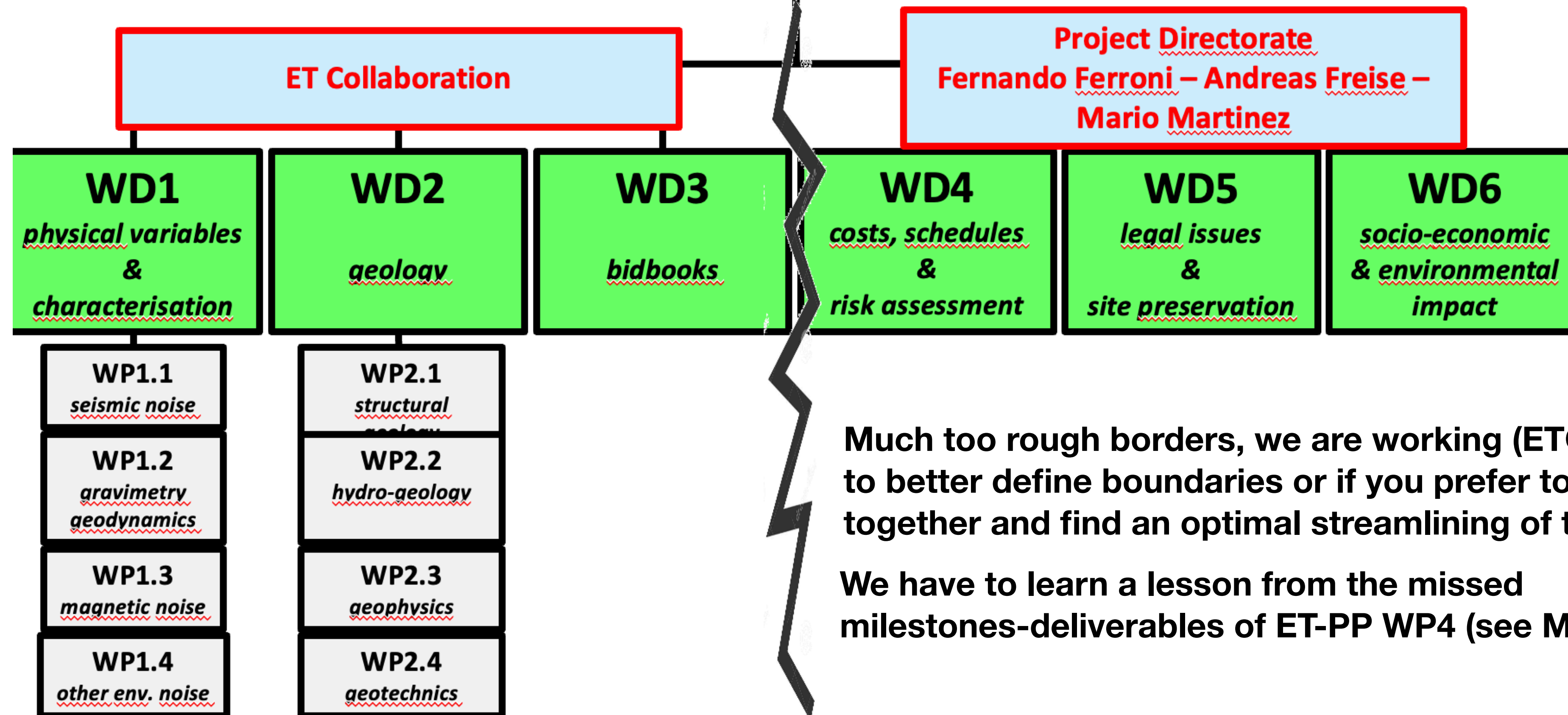
b) Astroparticle physics, coordinated by APPEC in Europe, also addresses questions about the fundamental physics of particles and their interactions. **The ground-breaking discovery of gravitational waves** has occurred since the last Strategy update, and this has contributed to burgeoning multi-messenger observations of the universe. Synergies between particle and astroparticle physics should be strengthened through scientific exchanges and technological cooperation in areas of common interest and mutual benefit.

1

CERN's "Recognised Experiment" status allows collaborations whose experiments do not take place at CERN but are in fields relevant to its scientific goals, to make use of CERN's infrastructure, e.g. to hold meetings, use offices or receive administrative support. It would be appropriate to establish a new procedure for such collaborations seeking CERN's **technical support, which should be limited to providing technical expertise and infrastructure services in a cost-neutral way for CERN.**

SPB-WP4-ETO ++

Site Characterisation/Preparation Board



Much too rough borders, we are working (ETO/SPB) to better define boundaries or if you prefer to work more together and find an optimal streamlining of the process.

We have to learn a lesson from the missed milestones-deliverables of ET-PP WP4 (see Mario's talk)

News on SPB/WP4 front

- Delivering inputs for the bidbook phase (complex interaction BGR/ETO/ET Collaboration/ Local Teams)
 1. Provide list of required documents/measurements
 2. Collect results from WD1/2 and review with regards to 1)
 3. Compile or identify common repository of reports
 4. Write Site Characterisation Summary, as a summary and overview of the work done.
Write summary reports on interpretation of the result a) impact of the data on risk and mitigation with regards to detector noise (together with ANM from ISB) b) impact of the data on risk and mitigation with regard to cost

Summary

- **The establishment of ETO, including an active Board of Governmental Representatives and engagement from funding agencies in the Board of Scientific Representatives is an extremely positive step forward for ET.**
- Go toward proceeding the documents for eventual approval of an ET construction by a strong group of international patterns.