



Horizon Europe: Coordination  
and Support Actions



# ET-PP 1<sup>st</sup> review meeting

14/12/2023

Grant agreement: N° 101079696

# WP 5: Introduction and objectives

The goal of WP5 is establish the ET **project office** and the corresponding **engineering department**. The role of this WP is to set-up a project management environment for the ET research infrastructure construction project. This environment will be supported by consultative and executive bodies equipped with means to monitor, control, coordinate and report on the technical design, the engineering, the technical specifications, the risks, the budget and the schedule.

WP5 co-chairs:

- Raffaele Flaminio, CNRS
- Roberto Saban, INFN
- [Andreas Freise, Nikhef](#)

# WP 5: Tasks

We are in the process of creating a **research infrastructure** complete with a governance, a collaboration of scientists, the procurement service, the resource management, the technical and the engineering departments, etc.

Which in turn has the **project** of designing, procuring, installing, building, commissioning and operating a **gravitational wave detector with all the associated technical and infrastructure systems.**

WP5 will setup a **project office**, and **engineering department** and provide documentation about the mandate and structure.

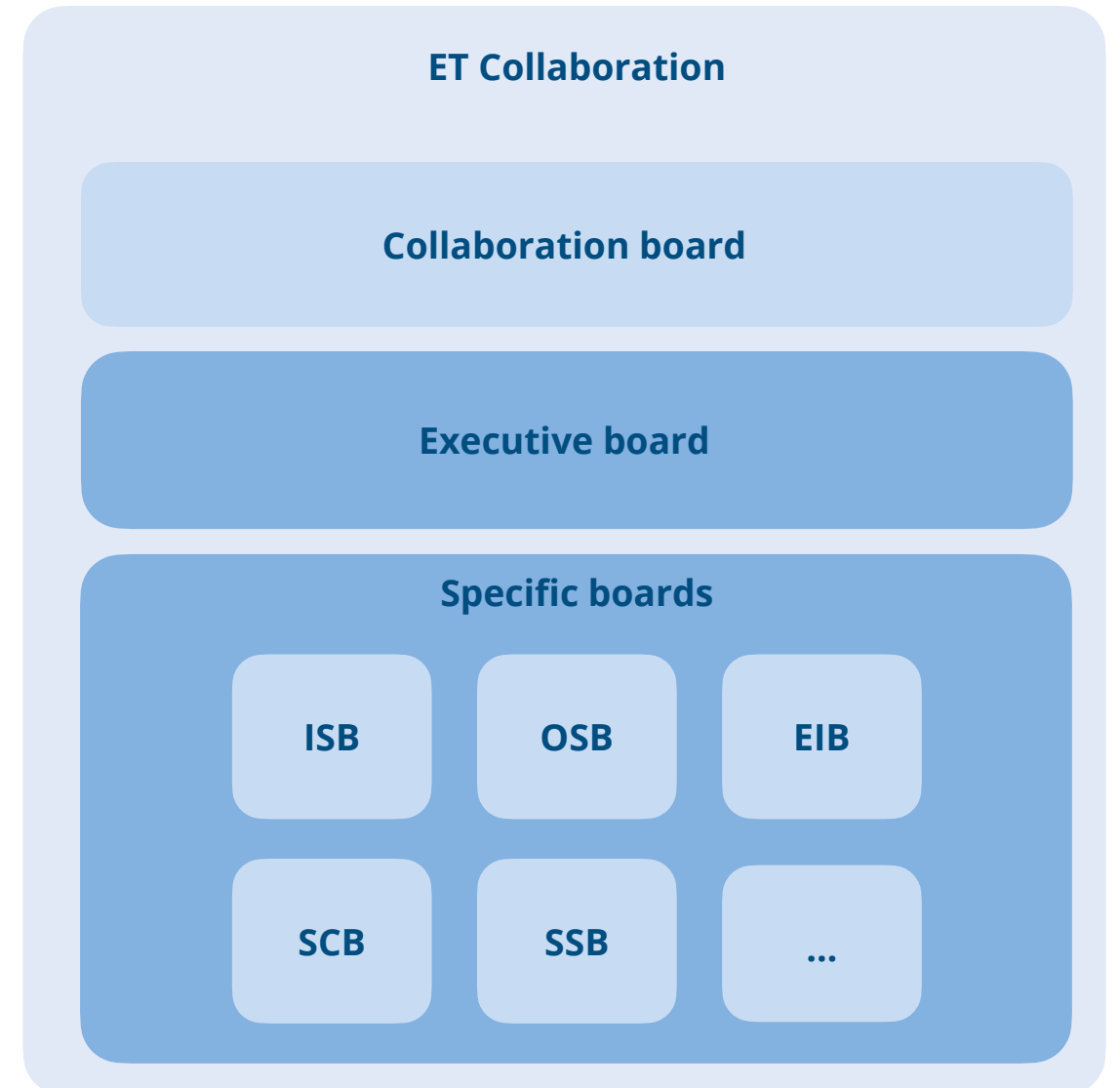
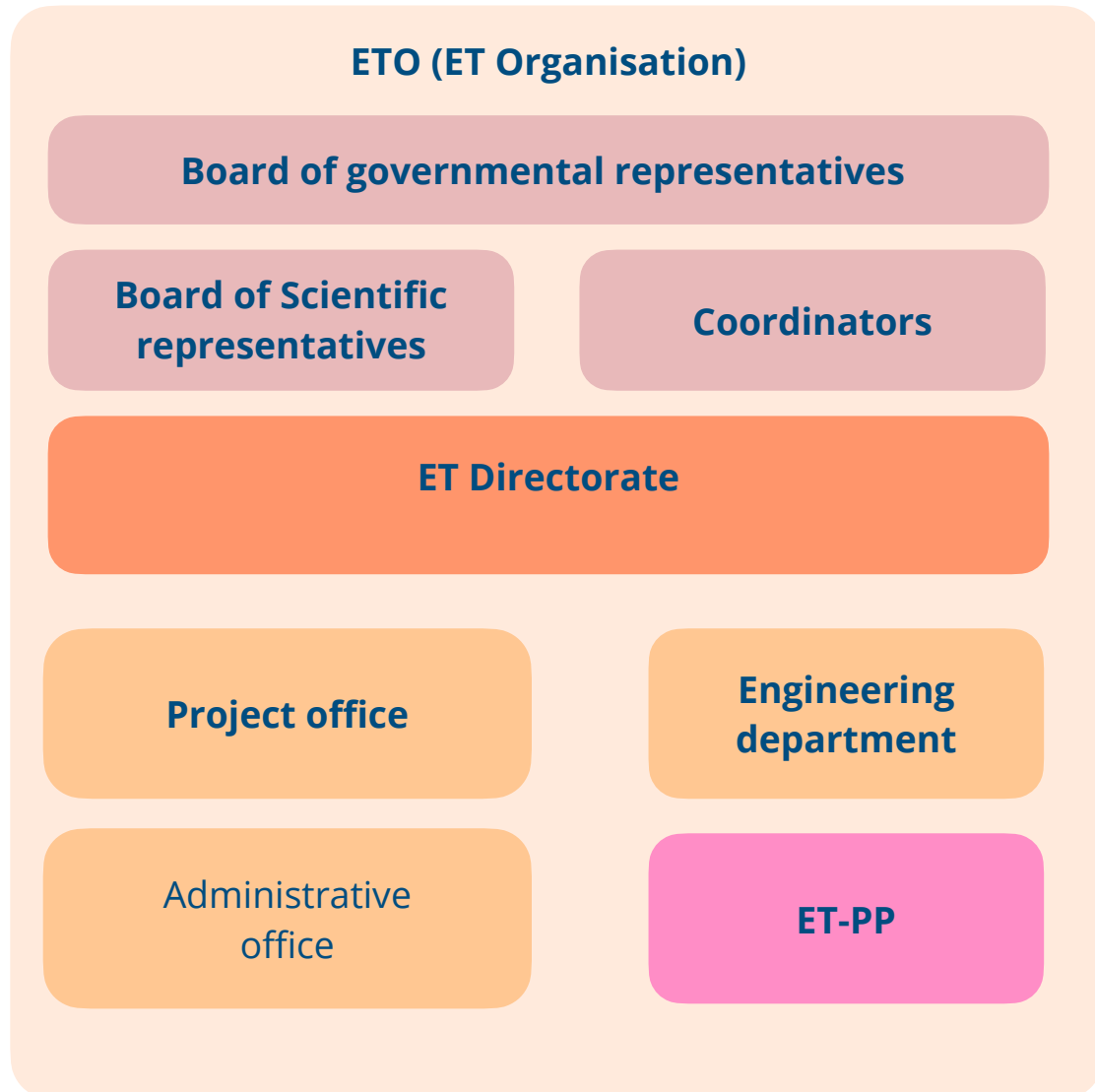
# WP 5: Tasks

WP	Task	Objectives for the period	Activities carried out in the period (please include a short description of the activities carried out)	Significant results (e.g. deliverable submission, milestone, achievement, publication, etc)
5	5.1	Establishing functional Project Office (PO) and Engineering Department (ED) units	Regular WP5 management meetings	Regular team meetings of base PO and ED teams
5	5.2	Create documents with the structure and mandate of PO and ED	Regular WP5 management meetings	First version of documents about the structure and the mandate of PO and ED
5	5.3	Documenting the tool requirements for our project management	Meeting of dedicate working group + Meeting with CERN to explore CERN support	Issue of document about Project Office IT Tools Requirements

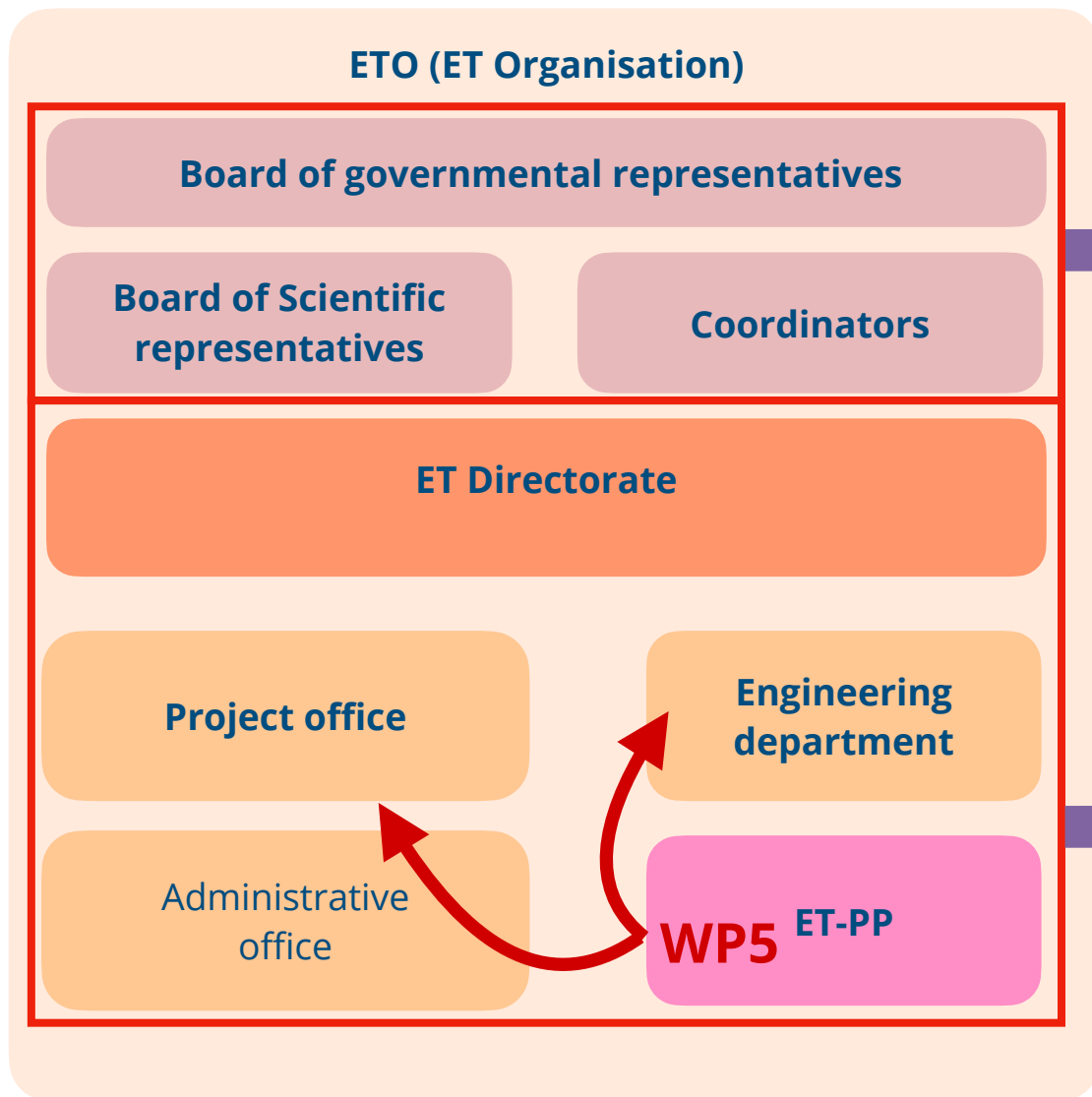
WP5 is coordinated via regular management meetings with the WP5 chairs with the leads of the engineering department and project office.

# Larger context: two international pillars of ET:

1) project management and 2) scientific collaboration



# ETO: an organisation for realising ET

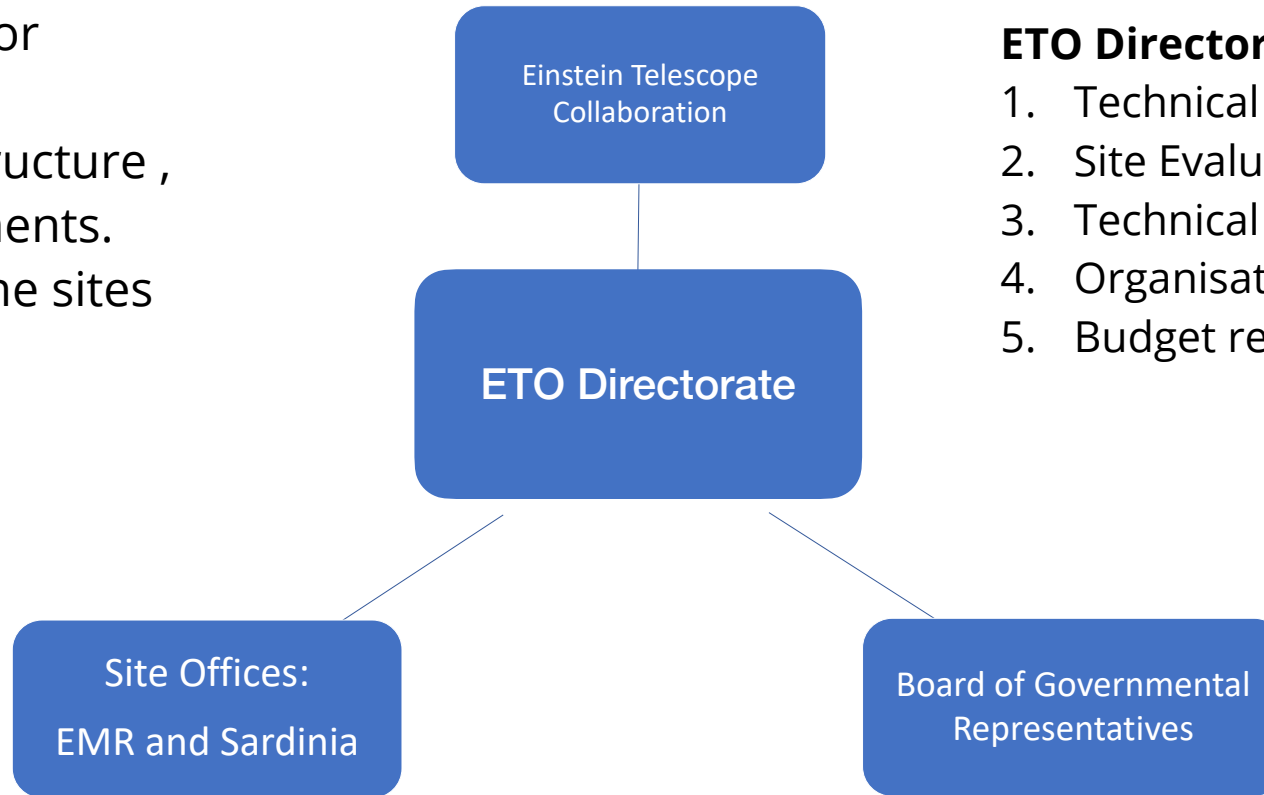


Temporary groups, working towards becoming the ET governing body, such as a Council. **Our most important link to governments and funding agencies** (Austria, Belgium, France, Italy, Netherlands, Poland, Spain, UK are members with Germany as observer).

An small but active organisation with the formal responsibility to realise of ET. **A future legal entity for ET would be based on this structure.**

# ETO Directorate scope and relations

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



## **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)

## **Local teams:**

Feasibility studies civil engineering, installations  
Feasibility studies subsurface  
Feasibility studies environment and legal

## **BGR:**

Site selection  
Governance  
Finance

# From the mandate of the directors

<https://apps.et-gw.eu/tds/ql/?c=16590>

- The ET ESFRI Project Coordinators [...] are in charge and responsible for the creation of the ET Research Infrastructure. Their authority is recognised by the BGR in their Terms of References.
- The ET Coordinators nominate two ET Directors: [...] Fernando Ferroni (INFN) and Andreas Freise (NIKHEF) [...]. Mario Martinez (IFAE) is responsible for the INFRA-DEV project. He operates under the responsibility of the two ET Directors and is a member of the ET Directorate.
- This mandate covers the '**Design and Preparation Phase I**\*'. The main deliverables during this phase are reports addressed to the BGR, suggesting them to give a first approval for:
  - the construction of the ET Research Infrastructure and its location(s)
  - a budget and a schedule which both cover the procurement process, the installation, the commissioning, the operation and finally the dismantling,
  - for the establishment of a legal entity for the Implementation Phase.

The final report as delivered by the Directors should include a comparison of two scenarios, namely the baseline consisting of one triangle versus an alternative option based on two L-shaped infrastructures, in scientific potential, risk analysis and costs.

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



# WP 5: Critical risks, deviations from Annex I, contingency plans

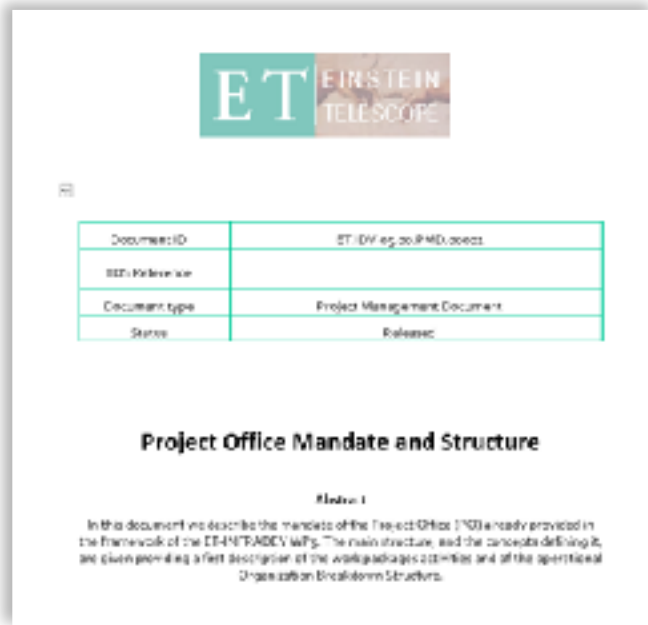
Risk Number	Description of Risk	WP	Proposed risk-mitigation measures	Did your risk materialise?	Did you apply risk mitigation measures?	Comments
1	Delay in completing hiring process for new full-time engineering positions (low, medium).	5	Assign existing part-time personal from partner institutes to assist in the start-up phase.	Yes	Yes	Working more with CERN and requesting additional in-kind support from ET-PP partners. KU Leuven has pledged up to 4 FTE in support.
2	Difficulties to find personnel in the participant institutions for the leadership and the collaborator positions required for the Project Office and the Engineering Department (low, medium).	5	Provide temporary support from the collaboration and invite experts from external institutes.	No		Both the head of the PO and of the ED as well as several key collaborators were appointed thanks to the contribution from the participant institute

No deviations from Annex I in this period.

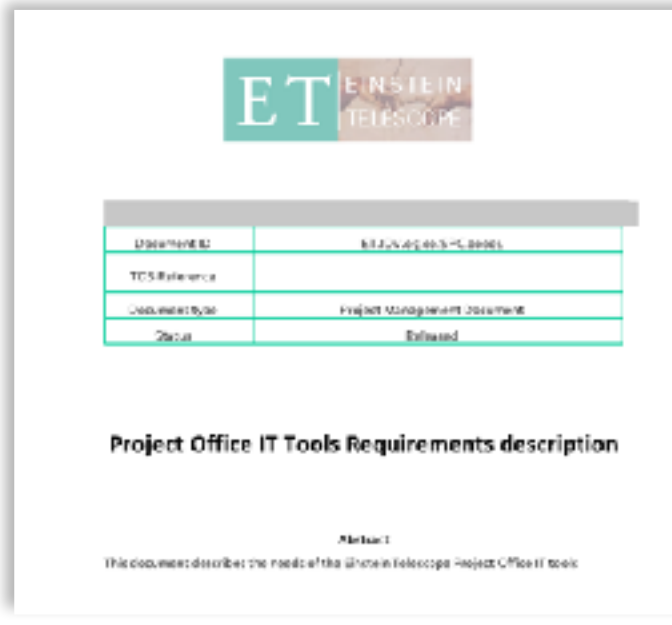
# WP 5: Deliverables and milestones

On track to complete the upcoming deliverables and milestones (there were no WP5 deliverables and milestones in this period):

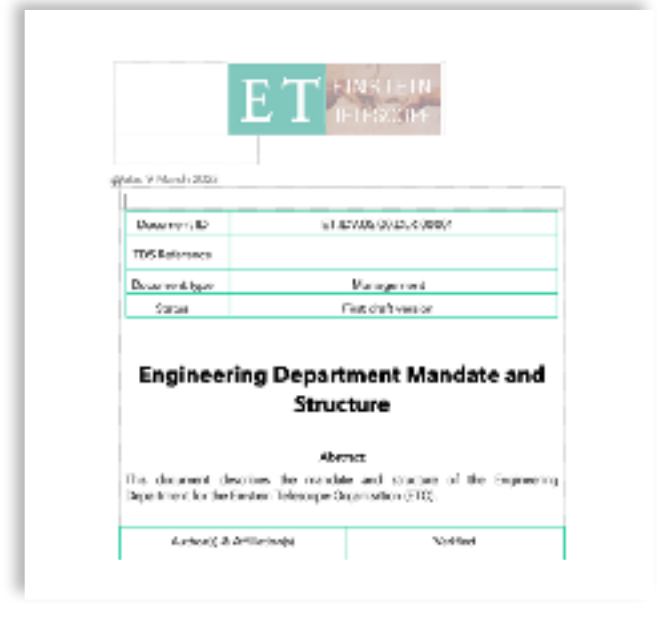
- WP5-D1 A document which defines the structure and the mandate of the Project Office.
- WP5-D2 A document describing the functionalities required from the tools in support of the project management activity used across all the project units
- WP5-D3 A document containing the structure and the mandate of the Engineering Department.
- WP5 Milestone month 15: recruitment of project office is complete



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# ETP project office and engineering department, staffing beyond ET-PP

Engineering Department staffing today

Name	Institute	Role
Guillaume Deleglise	CNRS	Vacuum/Mechanical Engineer
Romain Bonnand	CNRS	Optical Engineer
Alexandre Lacroix	CNRS	Vacuum Engineer
Rafael Garcia	IFAE	Integration and Infrastructure
Patrick Werneke	Nikhef	Head of Engineering Department
Marije Barel	Nikhef	Vacuum Engineer
Jonathan Bratanata	Nikhef	Civil Engineer
Max Majoor	Nikhef	Mechanical Engineer
Maria Marsella	INFN	Head of Civil Engineering
<b>yet to be recruited</b>	INFN	Integration and Infrastructure Engineer
Andrea Paoli	EGO	Civil Engineer
Wissam Wahbeh	FHNW	BIM specialist

Project Office staffing today

Name	Institute	Role
Alessandro Variola	INFN	Project Office Head
Alessio Rocchi	INFN	Technical Coordinator
Luca Latronico	INFN	Quality Management Coordinator
Leonardo Orsini	INFN	Quality Manager
Leonardo Lucchesi	INFN	Quality Manager
Sandro Vescovi	INFN	Safety Manager
Lucia Lilli	INFN	Assistant
Patrice Verdier	CNRS	IT Coordinator
Christian Olivetto	CNRS	Configuration Management Coordinator
Joseph Martino	CNRS	Risk Management Coordinator
Ghada Mahmoud	CNRS	Risk Manager
Remi Barbier	CNRS	IT Manager
Oussama El Mecherfi	CNRS	IT Manager
Romano Meijer	NIKHEF	Requirements Manager

# WP 5: Contribution from each partner

The 5 partners in WP5 provide contribution to the staffing of the engineering department and project office. Leadership positions were successfully filled quickly with Alessandro Variola (INFN, lead of project office) and Patrick Werneke (Nikhef, lead of engineering department).

Contributions to the tasks of both departments could not all be started straight away. The initial period was spend instead on defining the mandates and roles of the new bodies. We are currently developing a work plan. Therefore the low percentage of contributions was expected in this period.

% PM used = 13.15

INSTITUTION		PM as per Annex I	PM in the period
1 IFAE	CONTRIBUTIVES	24	6
	REQUESTED EC	0	0
2 INFN	CONTRIBUTIVES	141	25,5
	REQUESTED EC	36	0
4 CNRS	CONTRIBUTIVES	121	13,3
	REQUESTED EC	108	12,81
5 NIKHEF	CONTRIBUTIVES	124	7,9
	REQUESTED EC	36	11,76
7 UAntwerpen	CONTRIBUTIVES	5	1
	REQUESTED EC	0	0
Total Person Months	CONTRIBUTIVES	<b>415</b>	<b>53,7</b>
Total Person Months	REQUESTED EC	<b>180</b>	<b>24,57</b>
		<b>595</b>	<b>78,27</b>

# WP 5: Outlook and perspectives

- We will complete the recruitment of the resources funded by INFRA-DEV.
- We will continue to develop the activities of the Project Office and the Engineering Department.
- We aim at a transition from ET-PP kick-starting the departments, to the departments fully functioning in the ETO context..
- As we progress with the definition of the modus operandi of the Project Office and of the Engineering Department, we need more human and material resources than provided via ET-PP. We are discussing with the Board of Governmental Representatives (BGR) a proposal for 'ETO funds' (€3.5M p.a. plus 6.5 FTE p.a.).

# The Goal of the Project Office

Guarantee, that the as built research infrastructure, comprising

- the gravitational wave detector
- the technical systems
- the infrastructure systems

fully complies with

- the requirements
- the parameters
- the layout

detailed in the Technical Design Reports

- **without having undergone changes which were not endorsed by the stakeholders**
- **within the schedule and the budget**

# Project Office already active, example: PBS

- Following the initiative from the project office, an ad-hoc working group was appointed
- Made of both project office and Collaboration members (Mandate/Composition - [ET-0026A-23](#)), the WG met (mostly) in presence four times in different locations with monthly cadence. All presentations and meetings executive summaries available in the ET Wiki:  
<https://wiki.et-gw.eu/Main/PBSWorkingGroup/WebHome>
- The Product Breakdown Structure (PBS) is a first step in a formal project management process:
  - PBS will define the structure of the requirements and consequently of the configuration
  - PBS shall represent the backbone of the WBS (Work Breakdown Structure)
  - PBS is triggering the OBS (Organization Breakdown Structure) via the definition of the WBS
  - PBS shall produce the Hardware Project Object costing

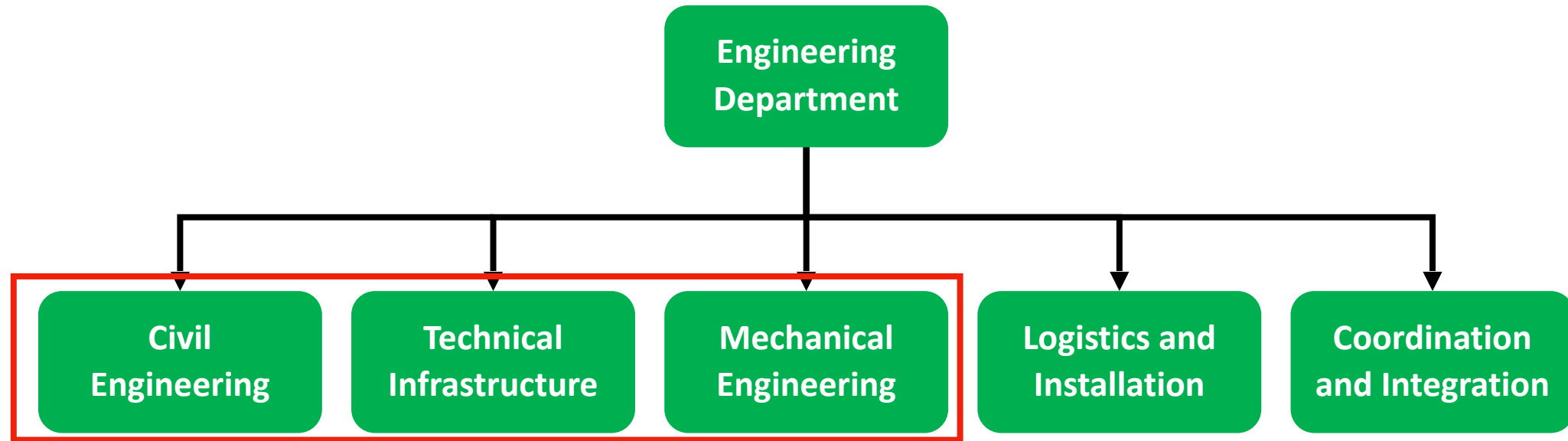
# Goals of the Engineering Department

The Engineering Department will eventually **design, procure, install, commission, operate, maintain and, eventually, dismantle**

1. **the special systems** (e.g. vacuum, cryo, etc) associated with the gravitational wave detector, and
2. **the technical infrastructure systems needed to operate the interferometer** (e.g. civil engineering, cooling, ventilation, electricity distribution)



# Focus on civil engineering and technical infrastructure



- **We are working with CERN** to get support from their team for these topics. For most topics the CERN teams do not have the capacity to write the TDRs, but can help as consultants.
- Major parts of the design require the involvement of companies. We need to have in-house expertise in order to define the required work and to write correct tenders.
- This also requires coordination between the ET Collaboration, ETO and the national teams doing technical work for preparing the candidate sites.

# Engineering department already active: working with CERN

- **Vacuum tube:** A first appendix to a basic MOU (CERN, INFN, Nikhef, IFAE) describes a first joint work that started in 2022: a team led by CERN will deliver the Technical Design Report (TDR) for the vacuum pipe in 2025.
- **Civil engineering:** an second appendix to the MOU has been agreed on and formalised: CERN will provide consultancy and technical support towards the creation of the TDR for the civil engineering and technical infrastructure. That project has started in fall 2023 and runs for 3 years.
- **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 are organising a first meeting with Katy Foraz, the Head of the Engineering Department at CERN, and her Group Leaders to explore other opportunities for collaboration. Several detailed meetings are taking place these weeks.
- **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.



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