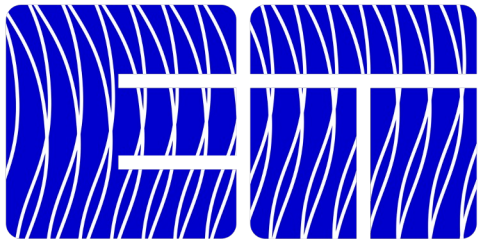


Programme Spokesperson - Deputy Spokesperson

Michele Maggiore - Angélique Lartaux

ET monthly meeting

Who we are? A complementary team

Candidate spokesperson:
Michele Maggiore

- Theorist
  - Co-chair of the Observation Science Board (OSB) since 2020
  - Co-coordinator of the Blue Book (The Science of the Einstein Telescope)
- Long experience in gravitational wave experiments since the mid-1990s
- I created and led the Research Unit of the Geneva group (Switzerland)
- Member of the ET Steering Committee and then Executive Board since 2019
- …

Candidate deputy spokesperson:
Angélique Lartaux

- Instrumentalist
  - Co-chair of Squeezed Light Working group since 2025
  - Contributor of the pre-TDR (preliminary Detector Technical Design Report)
- Experience in gravitational wave experiments since the mid-2010s
- Research Unit Leader of the IJCLab group (France) since 2022
- Member of the Early Career Support Committee since 2024
- …

Our vision of the Einstein Telescope …

Much has been accomplished in the last few years:

- successful application to the ESFRI Roadmap for european research infrastructures, 2020
- formal creation of the ET Collaboration (ETC), June 2022
- ET has grown from the small group of people that initiated it, to a Collaboration with almost 2000 members organized in 97 RUs, across 34 countries

First of all, a big THANKS to all the people that brought ET to this stage, and particularly to the previous SP/DSP Team !

… and of the next 3 years

During the next SP-DSP term, the ETC will face challenges that will shape its future

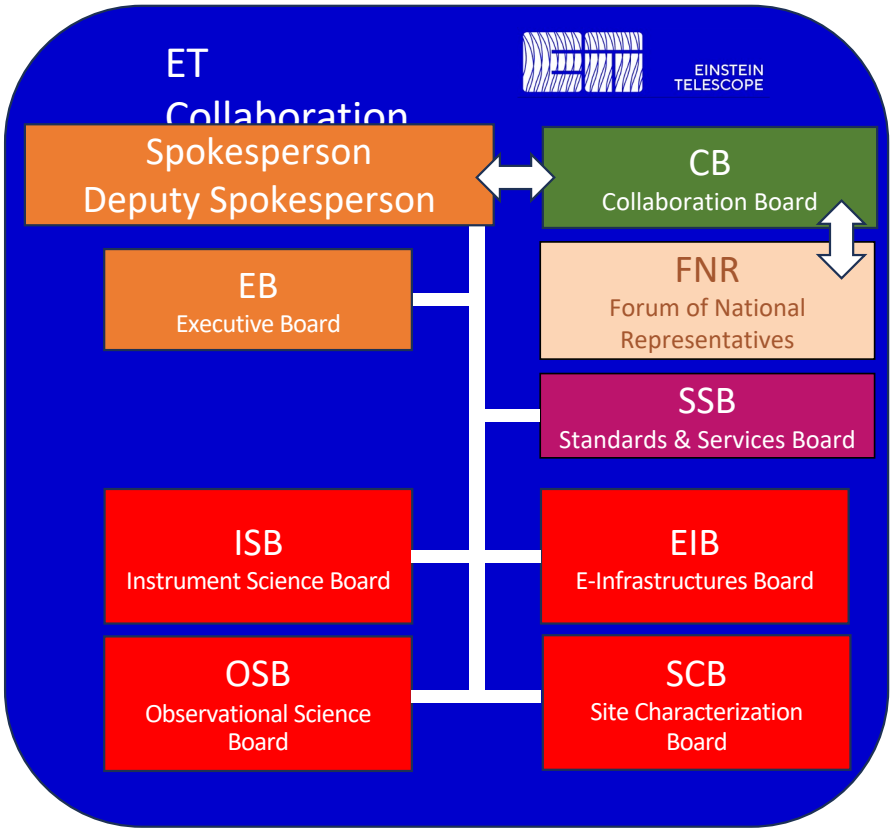
- Defining the geometry (triangle vs. 2L), comparison report to be completed by the end of 2026
- Choice of the site(s), third quarter of 2027

Decisions taken by the Board of Governmental Representatives, following a process steered by the ET Organization (ETO) and informed scientifically by the ETC

- The ET Design: from the actual stage of preparation of a preliminary Technical Design Report (TDR), to a full TDR
- The structures of the Collaboration will also likely evolve, to efficiently support this new phase which will bring the ET project to full maturity

Structure of the Einstein Telescope Collaboration (reminder)

- The Collaboration Board is the representative and governing body of the Collaboration.
- The Executive Board manage the daily and technical core activities of the Collaboration.
- The Forum of National Representatives has an advisory role.
- 8 Committees in the Standard and Services Board address tasks related to the functioning of the Collaboration.
- 4 Specific Boards (ISB, OSB, EIB, SCB) are operative elements dealing with the definition, implementation and management of specific aspects of the project



Main scientific challenges/priorities for the next term / 1

ISB: design of the detector

- Finalize and significantly improve the quality of the current Product Breakdown Structure (PBS), to be followed by the WBS (Work Breakdown Structure) and the OBS (Organization Breakdown Structure)

  goal: to have the full TDR of the *first* ET implementation

- Produce an up-to-date and well organized R&D plan. Needed for:
  - finalization of the current TDR
  - planning of future upgrades of ET
  - a tool for allowing new groups to find their way in ET
  - sharing of human resources with Virgo

Main scientific challenges/priorities for the next term / 2

OSB/ISB: understanding which scientific objectives can be obtained with different evolutions of the sensitivity

- To drive the choice of the best realist technical design to start to reach the first scientific goals

SCB: sites characterization should be concluded at last by mid 2027

- Then, refocusing of SCB activities on the selected site(s) with interaction with the ISB and OSB to fully assess the impact of the local noise on the ET detector design and subsequent science outcome

Main scientific challenges/priorities for the next term / 3

OSB/EIB: development of the Mock Data Challenge

- Essential tool for the data analysis development, and to inform instrumental choices and strategies

EIB: finalization of the ET Computing Model

- The design will have to evolve following the evolution of computing solutions

Interaction with the astronomy community

- Ensure that electromagnetic observatories that can work in synergy with ET will be operative at the time that ET will start observing runs

ET Collaboration Challenges / 1

The next period will involve delicate choices on geometry and site(s). It will be important that the process will be conducted with the highest standards of scientific correctness and transparency, and that all members of the Collaboration will feel welcome and motivated to contribute to the project, whatever form (geometry, site(s)) it will eventually take.

We reaffirm the importance, as stated in the ET Bylaws, for the ETC to create a workplace that is welcoming to all participants, creating a collegial, inclusive, and professional environment, and the special care that must be devoted to creating and maintaining a welcoming and stimulating environment where early-career scientists can thrive and grow scientifically

ET Collaboration Challenges / 2

The ETC has undergone an “explosive” growth to its actual size, but it is clear that currently most of the work is done by a small fraction of the ETC members

After this initial “inclusive” phase where it as been important to create a large ET community, it is now time to move to a phase where individual engagement is more strongly stimulated and recognized.

Our proposals:

1. Move to an organization where ETC members can sign up either as “core members” or as “community members”

(as done recently in the reorganization of the LISA Consortium)

Core/community members

Core members: "engage themselves to deliverables"

- will be asked to perform work needed for ET
- declare FRTE (or FTE, see next slide)
- their individual contribution will be periodically reviewed
- their effort is recognized by their core member status, the right of opting-in for authorship of Collaboration papers, representing ET at conferences, etc.

Community members: "involved and informed"

- have full access to ET internal documents, meetings, etc.
- no obligation, no FRTE declared, no review of their contribution
- no automatic right to opt-in to authorship of Collaboration papers
- are not associated to a RU

Core/community members - other implications

- FTE should replace FRTE as already stated in the Bylaws:
  "After the Collaboration's third year of existence, i.e. from July 2025, the transition between FRTE and FTE will take place."
- FTE, and restricted to core members only, can be verified (not really the case now)
- We can implement the Bylaws: number of delegates of each RU in the CB as proportional to its FTE contribution
- The minimal requirement for forming a RU will be lowered
  (since only core members and FTE count)

Our proposals (contd.)

2. All ET Divisions will be asked by the EB to regularly report their progress at the ET Monthly meeting.

- At each Monthly meeting there will be
  - one 10' report from the eIB (4 divisions + 1 more working group),
  - one 10' report from the SCB (3 divisions + 3 host teams),
  - one 10' report from ISB (6 divisions)
  - two 10' reports from OSB (10 divisions)
  - a 10' slot for a presentation from an early career scientist of the Collaboration

  => Recognize high-quality work/monitor more closely the progress

The internal wiki pages must be significantly reworked to provide, especially to new groups, a clear path for how to best contribute to the ET activities

Our proposals (contd.)

3. Standards and Services Board (SSB) are important committees providing services to the whole ETC.

- While some of them are already fully operating, special attention must be paid to the final establishment of all committees.
- During the mandate, the plan of activities of each committee will be reviewed by the EB, followed by a renewal of each committee after their first mandate.

Each SSB should regularly report its work to the CB

Our proposals (contd.)

4. R&D coordination

The coordination and planning of the ensemble of R&D activities represents a significant challenge. We propose to appoint an ETC R&D coordinator (proposed by the EB and approved by the CB), with the mandate of:

- compiling and supervising the R&D activities of the Collaboration
- providing (with the help of a support team) updated information in dedicated ETC internal wiki pages

The ETC R&D coordinator will report to the EB, and will be the single point of contact with all the stakeholders engaged in the ET technology development (Agencies, ETO and private company partners).

The ETC R&D coordinator is invited (without voting right) at the EB meetings

Our proposals (contd.)

5. Coordination with electromagnetic/neutrino facilities

- Needed to ensure that EM observatories that can work in synergy with ET will be operative at the time when ET will start observing runs
- OSB--Div4 is in charge of developing the synergies from a scientific point of view. However, a coordination at a more “political” level is also necessary
- We propose to appoint an ETC MMO coordinator (proposed by the EB and approved by the CB), with the mandate of coordinating the interaction with EM/neutrino facilities
- The ETC MM coordinator is invited (without voting right) at the EB meetings

Our proposals (contd.)

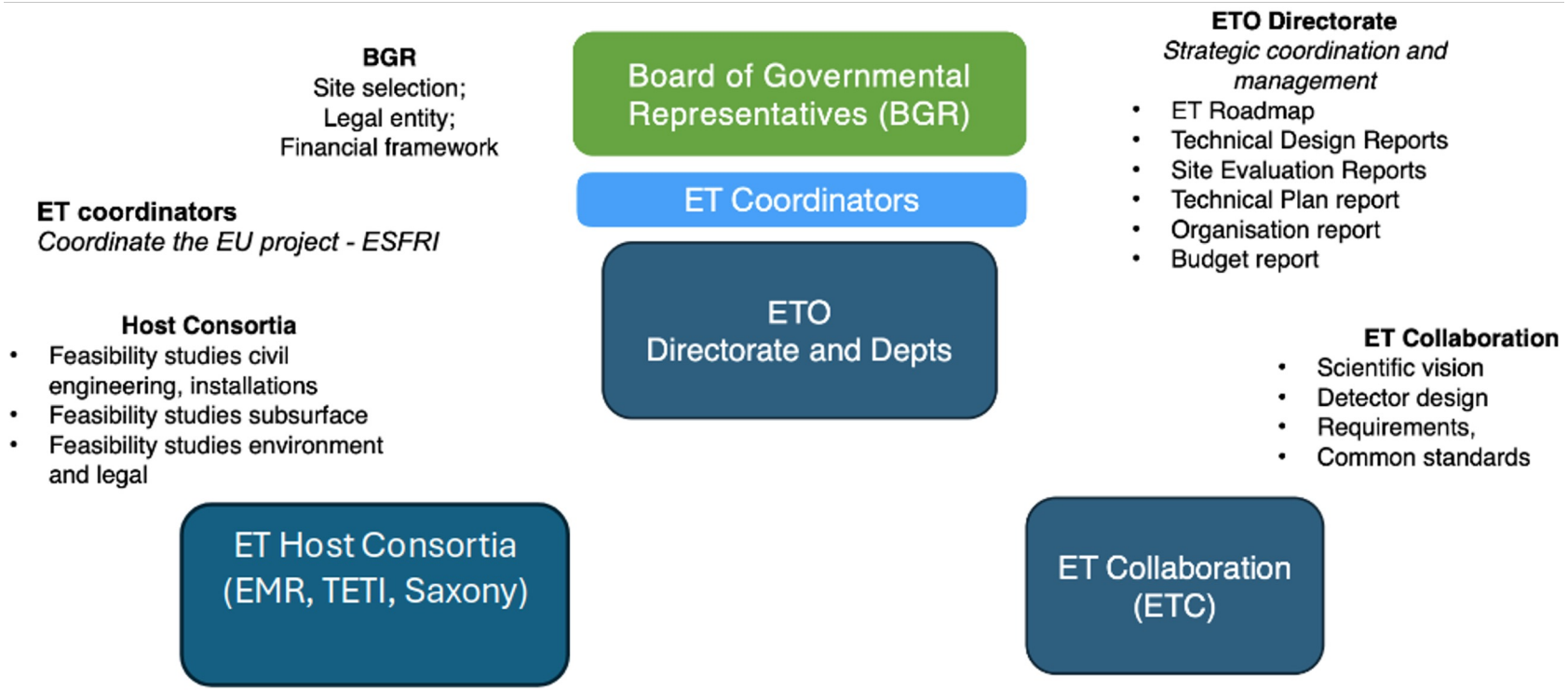
6. AI-for-ET

AI techniques are already showing their potential for ET both in the OSB and ISB activities and, very likely, their importance will significantly grow in the future

We propose to create a dedicated working group (“AI-for-ET”), transversal to the specific Boards, which the aim of:

- investigating AI applications to ET
- providing the scientific environment where such competences can grow, and new ideas can be stimulated

ETC in the Einstein Telescope framework



From R. Cimino BGR presentation at 4th ET Annual Meeting

Interactions of the ETC with other organizations / 1

The interaction of the ETC with the ET Organization (ETO) is of utmost importance for the success of the whole ET project, and should be fluid and productive.

It is important to have a clear understanding of the respective responsibilities and competences

- ETO has the crucial task of providing the framework for a modern and professional management of the ET project
- ETC is the only provider of the scientific competencies needed by the ETO and by the BGR to take informed decisions

The ETC is the sole responsible for the scientific paths, scientific boundary conditions, and responsibility chain, chosen for providing answers to the scientific issues of relevance for the ETO activities.

Interactions of the ETC with other organizations / 2

- Interactions with CERN

They are also of great importance, given CERN remarkable scientific competences and organizational experience. Currently ET is a recognized CERN experiment and has a MoU with CERN on vacuum pipes, civil engineering and safety studies (whose ex-tension, signed on Feb. 2025, terminates on Dec. 2027), corresponding to common know-how required for ET and CERN

CERN has explicitly mentioned ET in its recent European Strategy for Particle Physics:

"The European particle physics community, in coordination with APPEC and NuPECC, should maintain its scientific diversity via strong collaboration with nuclear and astroparticle laboratories and research infrastructures in Europe and beyond, including the Einstein Telescope in Europe and the Electron–Ion Collider in the US."

As ETC, we will operate to broaden and strengthen the collaboration with CERN

(e.g. MoU on the model of the CERN-SKA agreement)

Interactions of the ETC with other organizations / 3

- Interactions with National Host Teams

The National Host Teams will have a strong interaction with ETC through the SCB. They will have the mandate to release to ETC transparent and reliable data that will be used to evaluate the site specific impacts on the detector layout and achievable science return

- Interaction with the European Southern Observatory (ESO)

ESO is launching the Expanding Horizon process. ET is currently participating to this Call with a set of white papers relative to the science. If selected among the projects of scientific interest to ESO, ET could apply for creating a partnership with ESO, benefiting from its organizational and legal structures. As ETC, we will follow and encourage the scientific aspects of the process

Interactions of the ETC with other organizations / 4

- Interaction with Virgo

It is important to understand how the planned upgrades of Virgo will impact the ET development and schedule, and in particular the impact on the distribution of human resources among the two experiments.

From the ETC point of view what can be done is to understand already now, in close collaboration with Virgo, how to distribute in time the various activities, so to make the most efficient use of the available human resources and competences. Our R&D Roadmap (discussed above) will be a first essential step toward this coordination with Virgo

Interactions of the ETC with other organizations / 5

- Interaction with KAGRA

It can be extremely fruitful, in particular for R&D on underground infrastructures, cryogeny, optics and optical coatings, electronics, suspensions and seismic noise filtering, Newtonian noise evaluation, and environmental noise monitoring

ET and KAGRA have already signed in 2019 a Letter of Intent to collaborate in the development of the technologies needed to realize third-generation GW observatories such as ET (although, for the moment, this has not been much developed yet)

We aim at significantly strengthening the the development of common R&D activities

Interactions of the ETC with other organizations / 6

- Interactions with IGWN

IGWN has been realized by the LVK labs and collaborations with a specific focus on the current detectors. Current “bylaw” of IGWN excludes the 3G observatories

ETC always offered its availability to discuss the definition of a certain level of integration or relationship between ET and IGWN. E.g.:

- accounting of the time spent by ET scientists and engineers in the IGWN framework
- respect of the ET timing
- consideration that many ETC members are not LVK members

we need to state again our availability in order to start a discussion phase, to identify common interests and objectives

Interactions of the ETC with other organizations / 7

- Interactions with Cosmic Explorer (CE)

A crucial partner in a 3G network. At present there are common activities between ET and CE:

- on the ISB side, a series of common meetings is organized between ET and CE teams on specific topics that have a strong impact on the detector infrastructure (eight Next Generation Collaborative Design meetings up to now)
- on the OSB side, a scientist proposed by CE is among the coordinators of the OSB--div5, with the role of ensuring the scientific exchange and coordination with CE

From slides by L. Barsotti (CE Management Team) “we wish to see collaboration [with ET] in all aspects”

We wish so, too!

Conclusion / 1

Our vision is that ET will become one of the main actors in the European and world-wide scientific landscape, with the ultimate goal of producing results of extraordinary scientific quality that will have a profound impact on many fields of physics and astronomy, and that it will maintain and develop this leadership position for decades

To reach these goals, much work is needed in the next few years!

- We have outlined what we believe are the main scientific priorities
- Need of reorganizing the Collaboration to make efficient use of the large number of scientists involved and stimulate/recognize active participation (core/community members)
- Importance of the relations with many other bodies, organizations and Collaborations
  ET should be a motor of progress and collaboration in the international framework

Conclusion / 2

Last but not least, ET is made by all the people that, with their dedication and enthusiasm, make this extraordinary scientific adventure possible

Great attention must be devoted to creating and maintaining a welcoming and inclusive environment for all participants, where in particular early-career scientists can thrive and grow scientifically

THANKS!