

Einstein Telescope Preparatory Phase

Horizon Europe proposal

Preamble

A Research Infrastructure (RI) project, being admitted in the ESFRI roadmap, enters in the so-called preparatory phase. The European Commission allocates a certain amount of money to support specific activities of the preparatory phase that should push the project toward the implementation phase. The access to this budget is on competitive basis through specific Horizon Europe Calls

This document defines a proposal scheme for the call addressed to the new projects in the ESFRI roadmap. The aim is to use this EU call as the main tool to define key elements of the ET project:

1. the ET legal entity,
2. the ET observatory organisation,
3. the site selection procedure
4. ...

These are actions within the realm of the ET council and of the ET project directorate. But this call is addressed also to define the key elements of the ET RI¹ TDR and ET detector TDR, that need a major involvement of the ET collaboration through the steering committee and the ISB. These considerations are resulting in to the organisation of the proposal, composed by (at least) 9 Work Packages and in to the suggestion that the proposal (and the resulting EU project) should be managed directly by the institutions through the council and the PD.

It is also suggested to use the Consortium naturally generated by the EU grant² as first proto-council of ET; the beneficiaries of this project will participate to the ET proto-council and will use the consortium to inject their financial support to ET (the EU grant should be about the 50% of the cost of the project; the remaining part should be the direct contribution of the beneficiaries).

In the next section the key information about the call is reported

General information on the EU call

Programme: Horizon Europe Framework Programme (HORIZON)

Call: Developing and consolidating the European research infrastructures landscape, maintaining global leadership (2021) ([HORIZON-INFRA-2021-DEV-02](#))

Type of action: HORIZON-CSA HORIZON Coordination and Support Actions

Planned opening date: 30/09/2021

Deadline Date: 20/01/2022

Total call budget: 36M€

Grant range per project: 1.6 - 3M€, but 4.5M€ possible per ET

ET Timeline

The following figure describes the ET timeline, submitted to ESFRI.

¹ We define (using the EU jargon) RI as the complex of civil infrastructures, services, plants hosting the interferometers (detectors)

² This kind of EU project requires the formation of a Consortium regulated by a Consortium Agreement

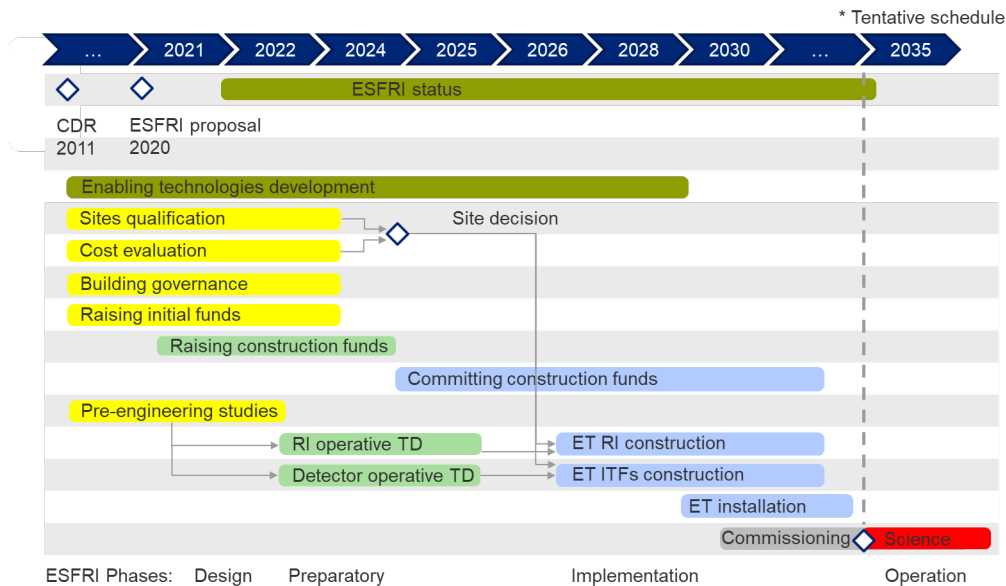


Figure 1 - ET project reference planning, as submitted to ESFRI

A more detailed plan has been realised in mpp, but the progresses are so turbulent to make it obsolete. It is important to identify key milestones:

- 1) Q4 2022: delivering of the RI preliminary reference common design
- 2) Q1 2024: delivering of the RI regional designs contained in the bid books
- 3) Q4 2024: Site selection thorough the bid books
- 4) Q3 2025: kick-off of the ET legal entity
- 5) Q4 2026: start of the excavation

The above timeline and milestones match the 3-4 years duration of the EU project.

Scope of the proposal (from the EU call)

This proposal aims to the support of the preparatory phase of the ET project (in the ESFRI roadmap).

The proposal will tackle all key questions concerning legal, financial and technical issues leading to the establishment of a new research infrastructure and ensuring commitment of Member States/Associated Countries to their long-term operation and use in all fields of science.

In particular, the proposal will address³:

1. the development of legal and financial frameworks/plans of the research infrastructure as well as its Governance structure;
2. the preparation of legal and financial agreements, including site, governance, internal rules, financing of the new research infrastructures;
3. the establishment of plans for logistics and human resources management
4. the relevance of the RI for science and society, including its socio-economic impacts at local/regional level and links with the smart specialisation strategies at regional level.
5. the completion of the final technical design of the infrastructure
6. the identification of strategies for the realisation of a sustainable and low emission infrastructure, with particular attention also to the preservation and the valorisation of the environment and of the natural landscape.

³ These points are copied & pasted from the EU call page

7. the development of plans for the provision of RI services to identified scientific user communities.

Deliverables (Product Breakdown Structure)

The final deliverables of this project are expected to be (at least) the following products:

- P1) Design of the Legal structure of ET (deliverable: statute of ET)
- P2) Financial architecture for ET (deliverable: financial agreement)
- P3) OBS (organisation breakdown structure) of the RI. Human resources determination
- P4) Delivering of the TDR of the RI and of the preliminary TDR of the detectors
- P5) Detailed environmental evaluation (ET low carbon)
- P6) Detailed Socio-economic impact (studies and plans)
- P7) Plans for the provision of RI services

Human Resources of the PPP

The main use of the resources given by this proposal is the recruitment of technical and management figures, contracts with external consultants and companies. In particular, the following figures of the ET Project Management Plan (PMP) are (immediately) needed in order to obtain the above mentioned deliverables:

HR1. Technical coordinator:

- a. He/she coordinates all the technical activities of the project with special focus to the RI design
- b. He/she is the first member of the PD project office

HR2. Technical integration manager:

- a. System engineer to support the organisation of the ET project and of the ET observatory
- b. He/she will define and handle the procedures to manage interfaces between divisions, boards
- c. He/she is responsible (at this stage) of the quality management
- d. He/she is member of a future Technical Integration Office

HR3. Project Control Manager

- a. He/she follows step-by-step the evolution of the activities.
- b. He/she verifies the compliance with the schedule
- c. He/she is the top member of a future Project Office

HR4. Secretariat support

- a. He/she acts as Document System Manager
- b. He/she acts as Logistic Manager
- c. He/she is the first member of a future Project Office
- d. He/she is a member of a future Project Office

HR5. Administrative support

- a. He/she acts as Financial Officer
- b. He/she acts as Procurement Manager
- c. He/she is a member of a future Project Office

HR6. Civil engineer for the RI

- a. Reference full time person devoted to the design of the RI infrastructure
- b. He/she will play the role of Infrastructure Design Coordinator
- c. He/she will play the role of interface with external consultant and companies for the infrastructures

HR7. Risk manager

- a. Reference person to evaluate the risk management strategy in ET
- b. He/she will define a common methodology for ET
- c. He/she will interact with all the technical and planning bodies in order to introduce standard risk evaluation methods

HR8. External contracts with civil engineering company

HR9. External consultant on legal issues

HR10. External consultant on Technology transfer and innovation

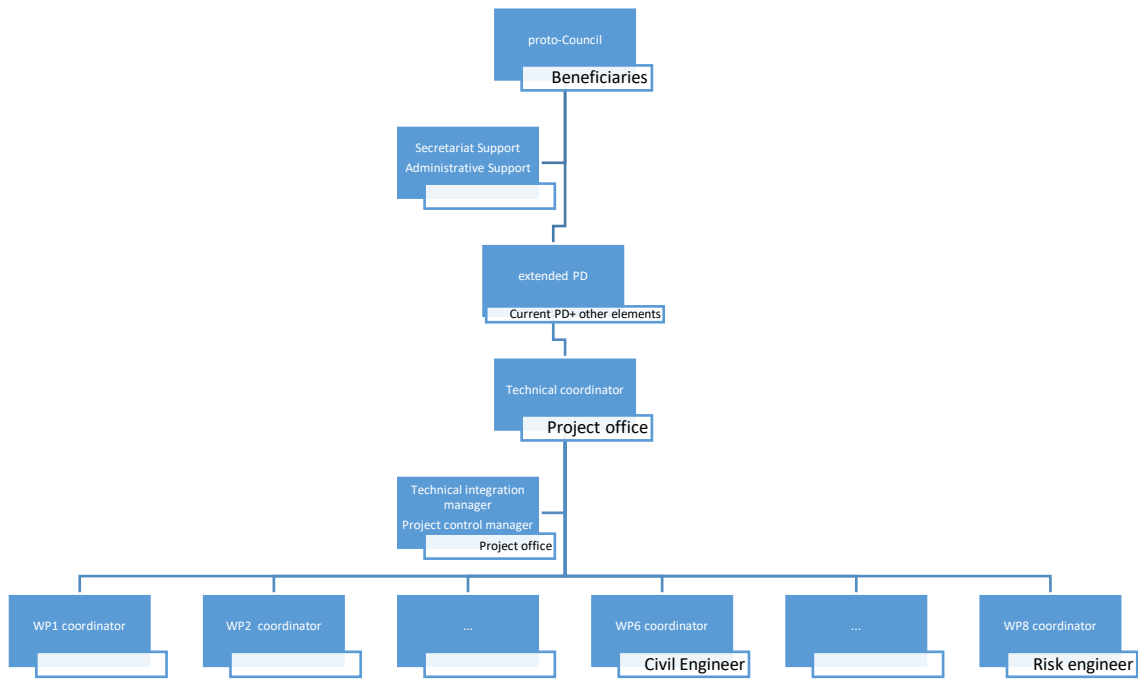


Figure 2 – Organisation Breakdown Structure of the ET PPP. This figure shows the organisation of the Preparatory Phase Project **AND NOT** of the ET Project that is more complex, having other structures belonging to the collaboration (OSB, ISB, ...) and to the ET project. Note that here the proto-Council is composed by the representative of the beneficiaries, a way to enlarge the participation to countries that haven't signed the ET ESFRI proposal.

Draft Structure of the proposal

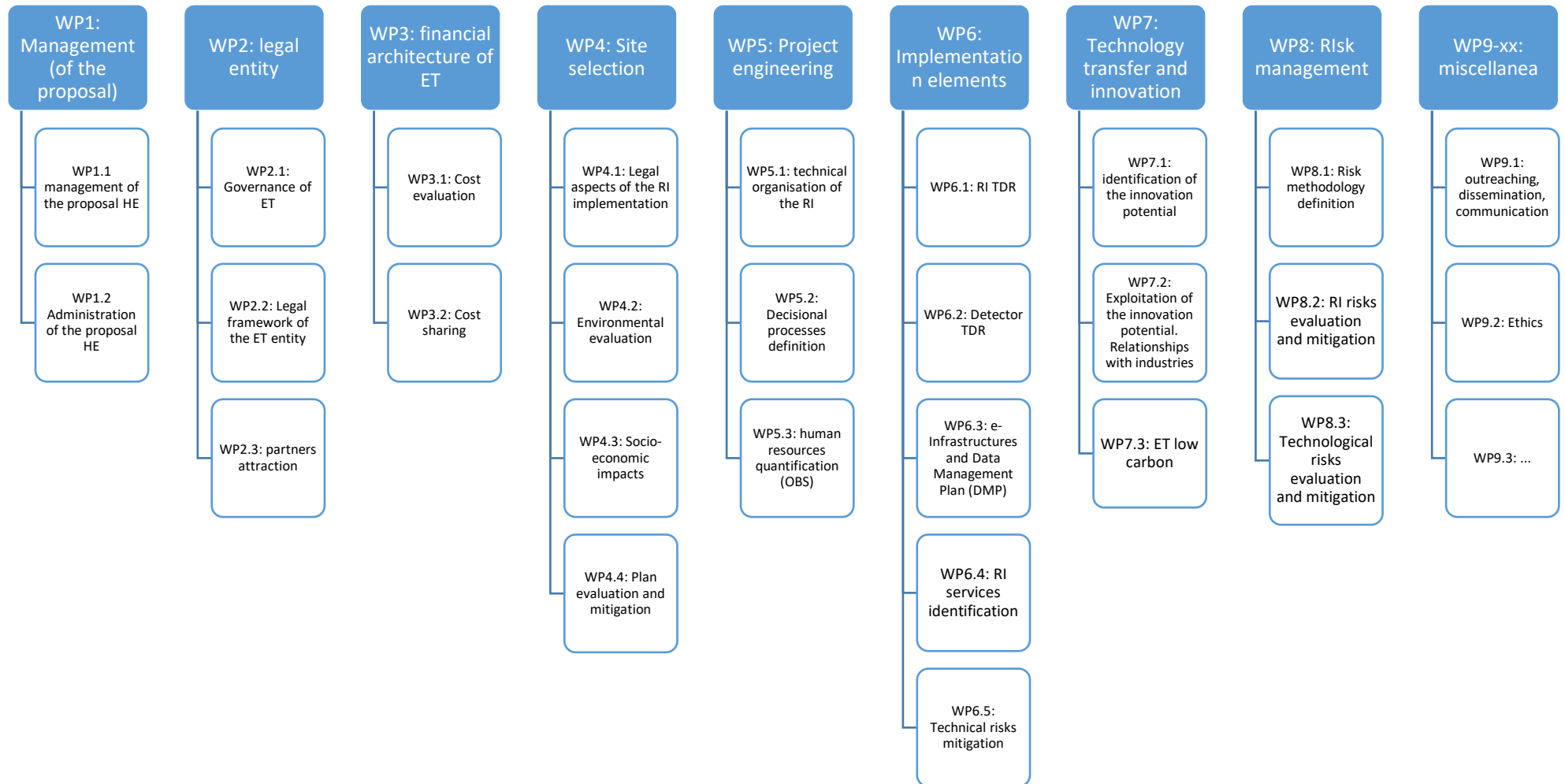


Figure 3 - Work Breakdown Structure of the Preparatory Phase Project

Final Remarks

Guiding ideas

#1: The proposal is the main instrument to accomplish the achievement of the PP (Preparatory Phase) targets requested by ESFRI.

#2: The cost of the project should be about 2 times the EU grant ($\leq 4.5\text{M€}$)

#3: The Consortium of this project realizes the first proto-council of ET

#4: WP1 is administrated by EGO (WP1.2), day-by-day managed by an enlarged version of the PD (WP1.1) and the whole project chaired by the proto-Council.

#5: W2 and WP3 coordinators should be indicated by the Council. They will outsource part of the activities. WP6 is mainly under the ET collaboration responsibility and the chair(s) should be indicated by the ET steering committee. For the other WPs we need interaction and iteration in order to define the persons and the activities.