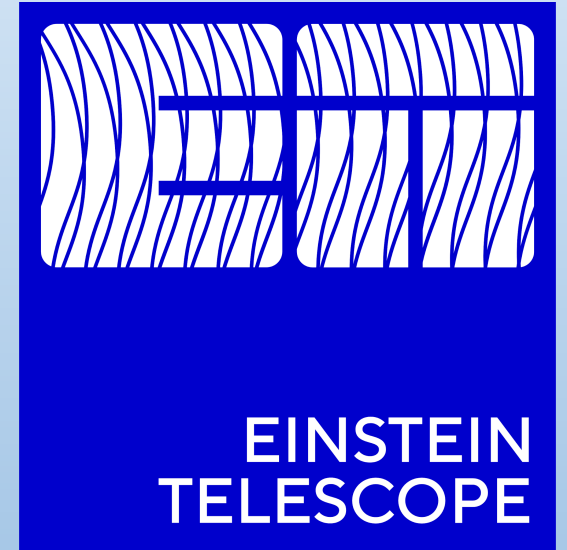




Horizon Europe:
Coordination and Support Actions



ET-PP WP3 2nd review meeting (RP2)

15/05/2025
Grant agreement: N° 101079696

WP 3: Introduction and Objectives

FINANCIAL architecture WP — Define the financial model for construction and operation

- Investigate the funding architecture to ensure construction, operation and decommissioning of ET considering different legal status, designs and construction settings.
- Set a strong financial model and a common tool for all financial data
- Define guidelines with fair sharing of costs and scientific, industrial and socio-economic returns among all parties



Chiara Arina

Universite Catholique De
Louvain (UCL)

UCLouvain lead institution



Veronica Buccheri

Istituto Nazionale Di Fisica
Nucleare (INFN)



Thomas Berghoefer

Deutsches Elektronen-
Synchrotron (DESY)

And Lisa Kamlade (DESY)

WP 3: Deliverables and milestones

D3.1 - M36 - Handbook for design and construction phase

D3.2 - M42 - Handbook for operation phase

D3.3 - M48 - Financial Plan and Scenario Analysis

M3.1 - M33 - Constitution / first meeting of the resource board, accompanied by a workshop

There are no deliverables nor milestones planned during RP2 of the project

Details about the activity of WP3 can be found here: <https://indico.cern.ch/category/16340/>

WP 3: Tasks

The three deliverables are mainly interlinked and require

D3.1 - M36 - Handbook for design and construction phase

D3.2 - M42 - Handbook for operation phase

D3.3 - M48 - Financial Plan and Scenario Analysis

WP 3: Tasks

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Define guidelines with fair sharing of costs and scientific, industrial and socio-economic returns among all parties

Investigate the funding architecture to ensure construction, operation and decommissioning of ET considering different legal status, designs and construction settings.

During RP1:

- 1) Analysis of the existing RI to capitalize experience (documents etc...)
- 2) Interviews with people from other RI to know pro/cons/problems/solutions/...

WP 3: Tasks

The three deliverables are mainly interlinked and require

D3.1 - M36 - Handbook for design and construction phase

D3.2 - M42 - Handbook for operation phase

D3.3 - M48 - Financial Plan and Scenario Analysis

Define guidelines with fair sharing of costs and scientific, industrial and socio-economic returns among all parties

Investigate the funding architecture to ensure construction, operation and decommissioning of ET considering different legal status, designs and construction settings.

During RP1:

During RP2:

- 1) Joint WP2/WP3 workshop to gather experience from SKAO, CTAO, ELI-ERIC, ESS, XFEL
- 2) Participation and talk to the BGR workshop

WP 3: Tasks

Joint WP2/WP3 workshop in Warsaw
(3rd annual ET meeting) 15 Nov 2024

- In person meeting for one day during the annual ET meeting (to avoid unnecessary travelling)
- Very heterogeneous audience: 30 participants from research infrastructures, ETO, collaboration, ET-PP and experts from BGR



WP 3: Tasks

Joint WP2/WP3 workshop in Warsaw
(3rd annual ET meeting) 15 Nov 2024

Block 1) Integration of in-kind contribution (IKC) in pre-construction and construction phases	Chair: Patrick Werneke	<ul style="list-style-type: none"> - Cash and in-kind ratio - Mass production - Quality responsibility - Risk ownership and management 	Speakers: <ul style="list-style-type: none"> - Antonio Bonucci (XFEL) - Florian Weissenbach (ESS) - Allen Weeks (ELI, vice-chair of ERIC forum)
Block 2) Procurement policy	Chair: Mauro Morandin	<ul style="list-style-type: none"> - Outcome of the survey WP7 - Flexibility - Fair return - Exemptions pros and cons 	Speakers: <ul style="list-style-type: none"> - Ian Hasting (SKAO) - Rob van der Meer (WP7)
Block 3) Human resources	Chair: Chiara Arina	<ul style="list-style-type: none"> - Being an attractive and competitive employer - Recruitment: hiring and seconding (in kind) - Employment conditions: pension scheme, salaries, other 	Speakers: <ul style="list-style-type: none"> - Nadia Defrancesco (CTAO) - Ian Hasting on behalf of Theresa Devaney (SKAO)

WP 3: Tasks

Joint WP2/WP3 workshop in Warsaw
(3rd annual ET meeting) 15 Nov 2024

Building a research infrastructure relying on IK
is like building a pan-European bridge



Conclusions/Take away

Block 1. In kind contributions

- Beware of **VAT**
- Crucial role of the **IK contribution manager** and industrial liaison officer. From the pre-construction throughout the construction and operation phases
- **Risk ownership**, the importance of WBS/technical annexes
- IK Contribution: relates with **ecosystem of institutes**. Suppliers are interested in the implementation of the results, develop and retain the know-how. Beneficial for cutting edge projects
- Procurements: relate with **supplier companies**, interested in the market/commercial operation. Bound to trade secret. Beneficial for standard projects

WP 3: Tasks

BGR workshop @ Nikhef
Amsterdam, 9-10 April 2025

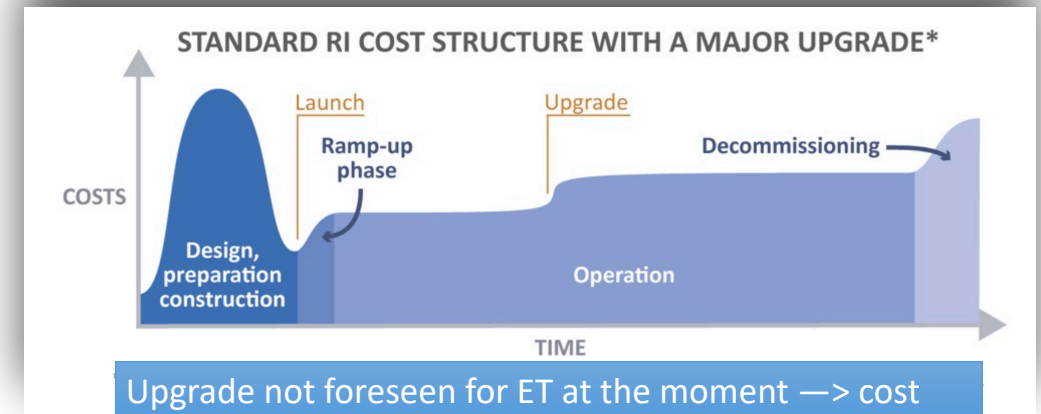
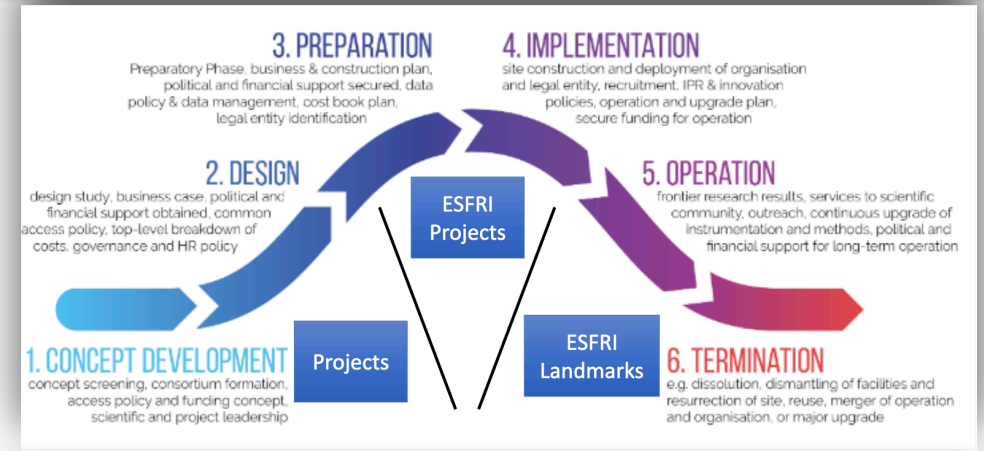
Resource/financial board is necessary

Establishing a finance resource board is essential for providing strategic oversight, ensuring financial sustainability, and facilitating transparent allocation of resources throughout the project's lifecycle.

WP 3: Tasks

BGR workshop @ Nikhef
Amsterdam, 9-10 April 2025

Phase	In-Kind Contributions (IKC) Role	In-Cash Contributions Role	Favored IKC/ Cash Ratio
1. Design & Preparatory Phase	- R&D by national labs/ universities - Prototype components - Conceptual & technical studies - Expertise from partner institutions	- Administrative & legal setup - Staffing & coordination - Site selection & permitting - Travel & collaboration costs	IKC-heavy (~70% IKC / 30% cash)
2. Construction Phase	- Major equipment & infrastructure (accelerators, detectors, telescopes) - Software & data systems - Technical workforce from partner institutions	- Project management & governance - Contracts for non-member procurement - Contingency & risk management	Balanced (~50% IKC / 50% cash)
3. Early Operation Phase (Commissioning)	- Continued software/hardware upgrades - Knowledge transfer & training - Support from national institutions	- Core operational costs (salaries, utilities, computing) - Facility management & logistics	Leaning towards cash (~40% IKC / 60% cash)
4. Full Operation Phase (Exploitation)	- Ongoing maintenance by partners - Access to partner facilities (e.g., computing, analysis)	- Salaries, maintenance, user access programs - Energy & operational costs - Outreach & governance	Cash-heavy (~20-30% IKC / 70-80% cash)
5. Decommissioning Phase (if applicable)	- Dismantling expertise from partners - Technical support for repurposing	- Site remediation - Legal & safety costs	Mostly cash (10-20% IKC / 80-90% cash)



Upgrade not foreseen for ET at the moment —> cost during operation stays constant until decommissioning


WP 3: Tasks



This chain of rules calls for a strong central lab that manages the IKC from the EoI until the very end, including the quality control when delivering the IKC

IKCs are preferred for


- Custom-built, high-tech components
- Leveraging national expertise & industry
- To ensure industrial return to member states (especially for an ERIC legal status)

Stage	ESS (ERIC Model)	XFEL (National Non-Profit Model)	SKAO (IGO Model)
1. Initial Proposal	- IKC work packages are defined & valued. - Expression of interest from IK partners .	- Contribution proposed by partner countries (via institutes or companies). - XFEL Council evaluates feasibility.	- Member states commit to specific work packages as part of their financial obligations.
2. Agreement Drafting	- IKC Agreements & Technical Annexes drafted. - Reviewed by IKC Review Committee (IKRC) .	- IKC Agreements include milestones, quality control, & delivery schedules.	- SKAO signs formal agreements with partners, ensuring compliance with its governance rules.
3. Review & Approval	- IKRC recommends approval to the ESS Council . - ESS Council grants final approval.	- XFEL's Administrative & Finance Committee (AFC) makes recommendations. - XFEL Council approves.	- SKAO Technical & Financial Boards review submissions before Council approval.
4. Manufacturing & Delivery	- Partner manufactures/ delivers equipment. - Factory Acceptance Test (FAT) & Site Acceptance Test (SAT) conducted  .	- Partner oversees production. - Milestone-based performance reviews conducted  .	- Partner delivers hardware/software. - SKAO monitors milestones to ensure compliance.
5. Validation & Ownership Transfer	- Final review by ESS. - Council credits the IKC value to the contributing member state . - Ownership transfers to ESS.	- XFEL verifies final acceptance criteria . - Ownership is transferred only after formal validation .	- SKAO signs off on IKC deliverables & credits value to contributing nation.
6. Financial Recognition	- IKCs are booked as capital contributions (assets) . - ESS follows auditor-approved accounting rules  .	- XFEL uses a milestone-based tracking system to recognize IKCs in financial statements.	- SKAO credits IKCs as financial contributions in national balance sheets.

WP 3: Tasks

Deliver Milestone M3.1 (M33 - May 2025)

- The milestone has been met
- BGR has been approached to advocate the need of a resource board during the workshop in April
- Funders group constitute already the kernel of a financial board for the stakeholders that are currently supporting with in-cash contribution ETO
- Report is being written and is scheduled on time




Preparatory Phase for the Einstein Telescope Gravitational Wave Observatory

Milestone M3.1

Constitution / first meeting of the resource board

Lead beneficiary: UCLouvain
Delivery Date: May 2025
Dissemination level: internal
NAME: ET-PP-Milestone-M3.1
Version: 0.1



This project has received funding from the European Union Horizon programme under grant agreement 101079696.

Document information

1 Introduction

Establishing a Financial Resource Board is a foundational element in the governance model of large-scale research infrastructures. Such a body plays a central role in coordinating financial planning, overseeing expenditure, and fostering a culture of accountability and transparency among the various stakeholders involved. Experience across European research infrastructures has shown that the early implementation of structured financial oversight mechanisms is key to ensuring continuity of commitment and trust during the critical phases of preparation and

M3.1 Constitution/first meeting of the resource board

Grant Agreement Number	101079696
Acronym	ET-PP
Start date of project (Duration)	01/09/2022 (48 months)
Document due date	31 May 2025
Authors	Chiara Arina, Thomas Berghoefer, Veronica Bucheri, Lisa Kamlade
Milestone number	M3.1
Milestone name	Constitution / first meeting of the resource board
WP	3

Version	Date	Author	Description
v 0.1	13/03/2025	Chiara Arina	Creation
v 0.2	6/05/2025	Andreas Freise, Addis Koeck and Daniela Tratal	Revision
v 0.3			Revision
v 1.0			Revision including all partners contributions. Final approval by ET-PP coordinator

EXECUTIVE SUMMARY

This document, M3.1 Constitution/first meeting of the Resource Board, is a milestone of the ET-PP Project, which is funded by the European Commission Framework Programme Horizon Europe Coordination and Support action under grant agreement 101079696. The report will outline the steps taken toward the establishment of a Financial Resource Board. A clear and consistent understanding of the Einstein Telescope (ET) project's finances and costs, along with a fair policy for distributing industrial returns among contributing countries, will be essential both to secure the necessary construction funding and to sustain long-term commitment from national funding agencies. A functional Financial Board, operating during the ET-PP phase, will serve this purpose by providing comprehensive, transparent, and consistent financial information to all members of the ET consortium.

WP 3: Critical risks, deviations from Annex I, contingency plans

No major risks have been identified

To increase impact and coherence of WP3 tasks good collaboration with ETO, WP5, WP2 and WP7 is currently being established

WP 3: Contribution from each partner

INSTITUTION		PM as per Annex I	PM in the RP2 period	PM in the RP1 period
UCLouvain	CONTRIBUTIVES	11	3.2	2.6
	REQUESTED EC	6	1.8	1.2
DESY	CONTRIBUTIVES	24	2.18	0
	REQUESTED EC	9	12	0
INFN	CONTRIBUTIVES	10	2.3	2.75
	REQUESTED EC	14	0	0
Total Person Months	CONTRIBUTIVES	45	7.68	5.35
Total Person Months	REQUESTED EC	29	13.8	1.2
		74	21.48	6.55

% PMs used RP2 = 29 %

% PMs used RP1 = 9 %

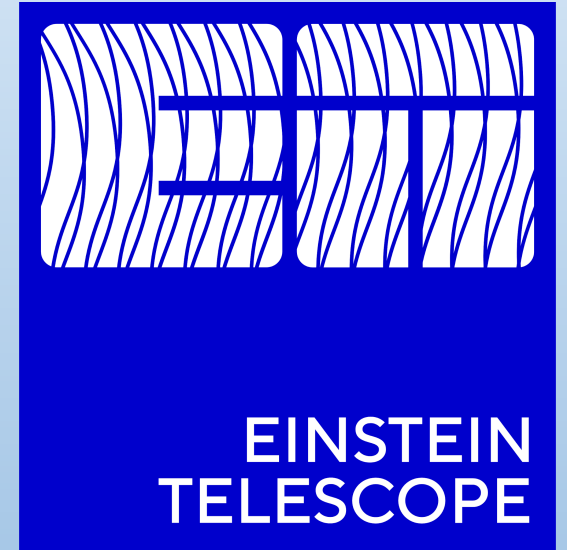
% PMs used tot = 38 %

WP 3: Outlook and perspectives

- WP3 is on schedule
 - Milestone M3.1 is foreseen on time (M33)
 - Material for D3.1 has been collected —> on the way to prepare the deliverable for M36
-
- Engaged discussion with ETO and BGR about financial model, IKC, in-cash vs IKC preferred ratio during preparation/construction
-
- Constructed so far very good and fruitful collaboration with WP2 and WP7
 - Currently building and reinforcing collaboration with ETO and WP5 (Project Office)



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