



Horizon Europe: Coordination  
and Support Actions



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

14/12/2023

Grant agreement: N° 101079696

# WP7: Introduction and objectives

- The objective of this WP is to address all connections between ET and industry, namely:
  - involvement in R&D for innovation (new technologies and products)
    - supporting early engagement of industry and identifying procurement best practices to foster innovation
    - exploiting opportunities for Technology Transfer
  - and place orders, including:
    - making sure we know the right companies, that they can produce what we need, that they are interested in our innovation and possible spin-offs
    - exploring strategies for pursuing a balanced industrial return for the ET participating countries.
- WP co-coordinators:
  - Mauro Morandin (INFN-PD)
  - Rob Van der Meer (NIKHEF)

# ET-PP WP7 tasks

- Task 7.1 - **Promotion of innovative technologies**
  - coord. by Isaac Esparbe - IFAE
- Task 7.2 - **Liaison with industry**
  - coord. by Rob Van der Meer - Nikhef
- Task 7.3 - **Technology transfer and IP**
  - coord. by Ilaria Giammarioli - INFN

## Collaborating Institutions:

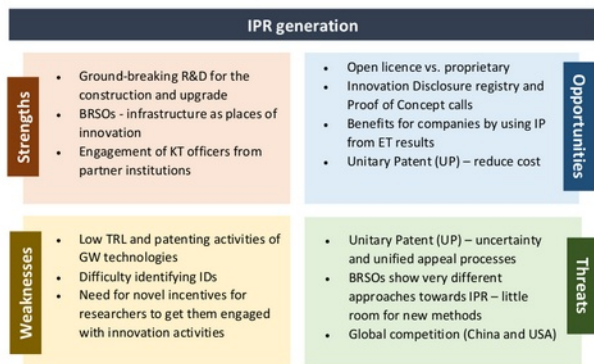
- **IFAE, INFN, NIKHEF, UW, CDTI (third party)**

# WPI Task 1: Promotion of innovative technologies

- SWOT Analysis of innovation promotion strategies derived by experiences and best practices in similar Big Science projects/organization.  
[M7.1]
- Define appropriate objectives that ET could establish to support and enhance the development of innovative technologies and incorporation of new ventures in the implementation of the ET project. Develop plan of action to be executed in C&O phase of ET. (Innovation plan)  
[D7.1]

# SWOT analysis

- **first document** reporting the **SWOT analysis of the innovation promotion strategies** was delivered in April
- the SWOT analysis was carried out with reference to 4 different perspectives
  - ~ **collaborative research, IPR generation, procurement, entrepreneurship**
- and was mainly based on existing experiences in other Scientific Organizations



14/12/2023

Project: 101079696 — ET-PP, 1st review



Preparatory Phase for the Einstein Telescope Gravitational Wave Observatory

## Milestone 9

Analysis of Promotion Strategies Accomplished

Lead beneficiary: IFAE  
Delivery Date: 28/04/2023  
Dissemination level: internal  
Version: 1.0



This project has received funding from the European Commission Framework Programme Horizon Europe Coordination and Support action under grant agreement 101079696.

# WP7.1: Innovation plan

- The original plan was to produce the Innov. Plan by summer '23 and a first version of the document, dealing with one specific aspect (IPR generation), was circulated internally in March '23.
- However, this first exercise showed that, in order to develop the proposal we needed to clarify some basic assumptions defining the reference context in which the actions described in the plan would be carried out
  - ~ E.g.: what is the distribution of the R&D, and procurement activities between the ET collaboration (Univ. , Research Institutions, Funding Agencies) and the future ETO organization how will it develop with time? how will it evolve over time ?
  - ~ should the Innovation Plan deal only with the actions under the direct responsibility of the ETO or should it also consider the coordination of actions involving the ET ecosystem ?
  - ~ what will be the volume of R&D activities and the part of procurement that is more promising in terms of innovation production ?
  - ~ to what extent will the ET laboratory, managed by ETO, setup internal technology development teams working on incremental upgrades of the ET experimental apparatus in the operational phase ?
- In order to clarify these issues we asked for the help of a **panel consisting of representatives of the most relevant ET-PP WPs (Liaison Group, L.G.)**
  - WP2, WP3, WP5, WP6
  - ~ first kick-off meeting held on Apr. 21
  - ~ second meeting on May 26th
  - ~ third and final meeting on June 13 during the ET-PP annual meeting
- Results summarized in three internal reports and in the Innovation Plan itself.

# Special session organized during the first Annual meeting



<b>17:00</b> → 18:30	<b>Parallel Session: KTT and Industrial Liaison</b>	<a href="#">Room 504, 5th Floor (UPF-Bar...</a>
	Conveners: Mauro Morandin (INFN), Rob van der Meer (NIKHEF)	
	<a href="#">Zoom Connections</a>	
<b>17:00</b>	<b>Introduction</b> Speaker: M. Morandin (INFN)	🕒 10m
<b>17:10</b>	<b>Innovation strategy and TT in LIGO</b> Speaker: David Shoemaker (MIT)	🕒 20m
<b>17:30</b>	<b>TT transfer in a collaborative international environment: CERN perspective</b> Speaker: Giovanni Anelli (CERN)	🕒 20m
<b>17:50</b>	<b>TT transfer in a collaborative international environment: The vision of a collaborating Institution</b> Speaker: Isaac Esparbe (IFAE)	🕒 20m
<b>18:10</b>	<b>Innovation in a regional context: the Euregio Meuse-Rhine (EMR) experince</b> Speaker: Rob van der Meer (NIKHEF)	🕒 20m

# Innovation Plan document structure

- Introduction
- Innovation Plan to be implemented by the ETO
  - KPIs derived from the innovation goals
  - Definition of the actions, estimated costs and implementation schedule for
    - Industrial Innovation Perspectives: actions to drive innovation through procurement
    - Academic Innovation Perspectives: actions to promote IP production and exploitation, entrepreneurial culture and innovation through collaborative research



Preparatory Phase for the Einstein Telescope Gravitational Wave Observatory

## **Deliverable 7.1**

Innovation plan

Lead beneficiary: IFAE  
Delivery Date: 31 July 2023  
Dissemination level: public  
Version: 1.0



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101079696.



# The context

- The Innovation Plan proposes actions to be addressed by the ETO and the future ET legal entity (also indicated as ETO in the following)
- discussions with the Liaison Group:
  - R&D is being and will be carried out mainly by the Collaborating Institutions, not by the ETO now and the future ET lab in the future
    - this fact suggests that ETO actions related to TT/KT will be mainly at the level of promotion of innovation and coordination of activities
  - ETO will be responsible for the largest part of the investment (Civil Engineering and Vacuum system infrastructure)
    - Innovation by procurement will be an important aspect

# Innovation Plan main actions

- motivated by the procurement of products and services needed by ET
  - Favor the adoption of solutions and technologies that are already available on the market, but not yet on a large-scale commercial basis or that require to be tested in new environments
    - Normal procurement procedures
  - Stimulate industry to develop solutions not yet available on the market but still based on exploitation of existing technologies
    - Competitive procedures with negotiation, Competitive dialogue, Design Contest
  - Engage companies on new technological (co-)developments
    - Pre-commercial procurement, Innovations partnership
    - in most cases, at least initially developments are carried out in the Collaborating Institutions and therefore Technology/Knowledge Transfer to Industry may take place
- motivated by the desire to exploit technologies and knowledge developed by ET in other industrial contexts
  - Stimulate the disclosure of Innovation
  - Favor IP production and protection
  - Promote IP exploitation through internal valorization funds, licensing, creation of spin-offs, diffusion of an entrepreneurship culture
  - Participate in Academia-industry R&D collaborations that are partly or totally funded by Industrial partners


# WP7 Task 2: Liaison with Industry

- Industry Engagement plan
  - Gap analysis on technology maturity and industry capabilities required
  - Mapping of existing engagement initiatives in partner countries
  - Definition of the engagement plan for national and international activities. [M7.2]
  - Execute this plan and report on activities at the end of the project [D7.2].
- Industrial return
  - Explore opportunities for a balanced industrial return in tendering procedures [M7.3].
  - Create a model and strategy for pursuing a balanced industrial return in ET [D7.3]

- Gap analysis: where in ET do we need to strengthen the involvement of industry, now in the R&D phase and, in the future, in the construction/operational phases ?
  - technology areas were identified
  - started collecting feedback from the ET experts through a detailed questionnaire
    - vacuum was the first sector studied
    - however, we run into a difficulty, i.e., in some sectors there is currently no R&D coordination structure in place, that defines whom to ask to get an overall picture of what is going on
    - we also realized that the ET collaboration had decided to conduct a survey of the R&D activities during in the summer '23
    - so we agreed with the ET collaboration management to add our questions to their questionnaire
  - the first batch of responses received from ET by September '23 were analyzed and formed the basis for the first release of the Industry Engagement Plan

# WP7.2.2


- 7.2.2 What instruments should we use to strengthen the industry involvement?
  - we decided to use the international network of Big Science Organizations ILOs by starting to involve them with a survey that could provide valuable feedback:
    - to understand how ILOs in Europe engage with their industries in the R&D and C&O phases of the different RIs they cover.
    - to identify the approaches they use and which ones work best
    - to learn about the knowledge that companies in their countries have about the Einstein Telescope
    - to gather their views on the various initiatives that could be included in the ET-PP engagement plan.
  - the survey was carried out and 18 ILOs from 16 countries provided their feedback
  - the results are summarized in an internal document

The logo for the Einstein Telescope (ET) project, featuring the letters 'ET' in a green box and the words 'EINSTEIN TELESCOPE' in a brown box with a cracked texture.

**ET-PP**  
**Preparatory Phase for the Einstein Telescope**  
**Gravitational Wave Observatory**

**ILO questionnaire on Industry Engagement Report**

Delivery Date: 12 June 2023  
Dissemination level: public  
Version: 2.0



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# The engagement plan

A working document which will be revised and updated periodically (~ every year)

## Content:

- EFFECTIVE ENGAGEMENT ACTIONS
- INDUSTRIAL GAP ANALYSIS
  - VACUUM, CRYOGENICS, SUSPENSIONS, ACTIVE NOISE MITIGATION, ELECTRONICS AND CONTROL, COMPUTING, OPTICS, PHOTONICS, INFRASTRUCTURES
- ACTION PLAN (2023-2024)
  - meetings with ILOs
  - several webinars for European industry on specific procurement and collaboration opportunities
  - participation of WP7 in industry national events to provide a global perspective on ET technical challenges and possible industry involvement; e.g.:
    - ETIC industry day in Cascina (PI) - Feb. 2023
    - ...
  - participation in BSBF 2024



## Preparatory Phase for the Einstein Telescope Gravitational Wave Observatory

### Milestone 7.2

Engagement plan

Lead beneficiary:

Delivery Date: 31 October 2023

Dissemination level: public

Version: 2.0



This project has received funding from the European Commission Framework Programme Horizon Europe

# WP7 Task3: Technology transfer and Intellectual property

- Define the principles that should underpin the ET approach to the management of Technology Transfer processes and, in particular, the management of the Intellectual property [D 7.4]
- Sub-tasks:
  - 7.3.1
    - Survey of TT and KT management and support in several RIs in Europe: CERN, DESY, EGO, STFC, INFN
    - internal document has been produced
  - 7.3.2
    - Definition of the organization and the procedures to be set up, as well as the tools and the resources to be procured to implement such an approach during the ET construction and operation phases
    - Activity is ongoing. Results will be reported in deliverable D7.4 (due in M44)
  - 7.3.3
    - Explore the possibility of supporting the exploitation of TT and KT already for R&D activities with expertise available in IFAE, INFN and UW
      - technology protection strategies, business model definition, patent analysis and market research studies

7.3.2.1. What will be the extent of requests for TT services that will originate from ET in the various phases of this scientific endeavor ?

From the preliminary analysis carried out in task 7.1, produce a preliminary assessment of:

- which of the developments to be carried out during the R&D and construction phases of the ET may generate opportunities of knowledge transfer to industry.
- what opportunities may continue to be generated in the commissioning and operation phases

7.3.2.2. What type of TT transfer should be considered, promoted and supported in ET ?

Based on the outcome from previous activities, define the TT modes to be implemented in ET; define the structure of the final Report

7.3.2.3. What organization is needed ?

Define the TT services to be provided and the organization to be setup

7.3.2.4. What is needed to implement the model ?

Define the tools and resources will be needed to implement the TT organization model, with a proposal of a possible implementation timeline

7.3.2.5. Final Report

Assemble the final report

# WP7: Critical risks

Risk		Mitigation	Status 11/23
N.	Description		
5	Limited interest on the part of industry in the preparatory phase of the ET	Monitor industry implication and enforce industry engagement plan if needed.	<b>No indication so far, but collaboration with the ILO European network now well established</b>
6	Low level of industrial capabilities identified in certain areas of the project	Implement measures in industry engagement plan to involve industry in R&D projects with key institutes	<b>Gap analysis started and first results have triggered a series of webinar for industry to address the lack of industrial suppliers identified</b>



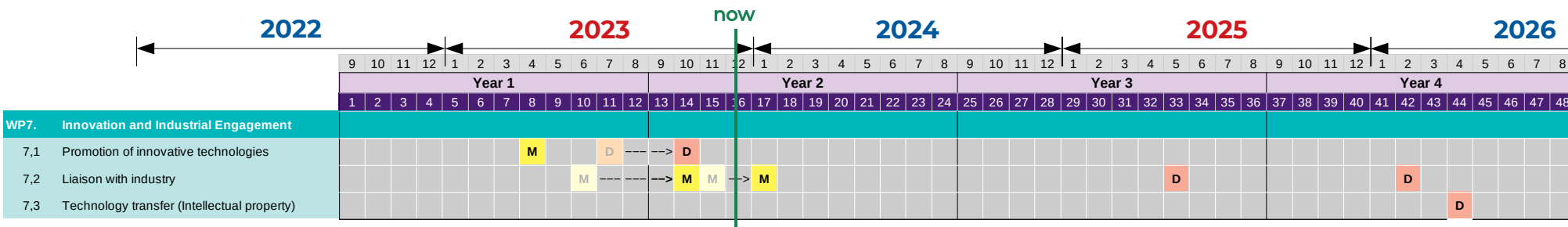
# WP7: Critical risks, deviations from Annex I, contingency plans

Risk		Mitigation	Status 11/23
N.	Description		
7	Difficulties to find full time personnel adequately in time, with the skills needed for the project	Dedicate part of the time of more than one person of the Collaboration to cover the needs, and complement with personnel in-kind contribution.	<b>No problem for WP7, main contributions are provided by staff personnel</b>
9	The pandemic delays the organization and limit the participation to workshops planned to receive input and feedback from the stakeholders	Online planned workshops and webinars, adjust timing, offline surveys...	<b>Non issue. Risk retired</b>

## WP7: deviations from Annex I

- No significant deviations from the original plan so far.

# Deadlines WP7



## Milestones

M7.1	Analysis of promotion strategies accomplished	WP7	M8	Report	✓
M7.2	Engagement plan produced	WP7	M10	Report	✓
M7.3	Analysis of balanced industrial return strategies accomplished		M15	Report	

Delay introduced to profit from the participation in a survey across all ET Research Unit carried out by the ET collaboration

Interaction with WP2-3-4-5-6 was required (liaison group), delaying the task completion

## Deliverables

D7.1	Innovation plan	WP7	IFAE	R	PU	M11 ✓
D7.2	Report on industry engagement plan execution	WP7	NIKHEF	R	PU	M42
D7.3	Model for pursuing in ET a balanced industrial return	WP7	INFN	R	PU	M33
D7.4	Report on TT and Intellectual property management in ET	WP7	INFN	R	PU	M44

We aim at producing this report earlier than anticipated

# WP7: Contributions of each partner

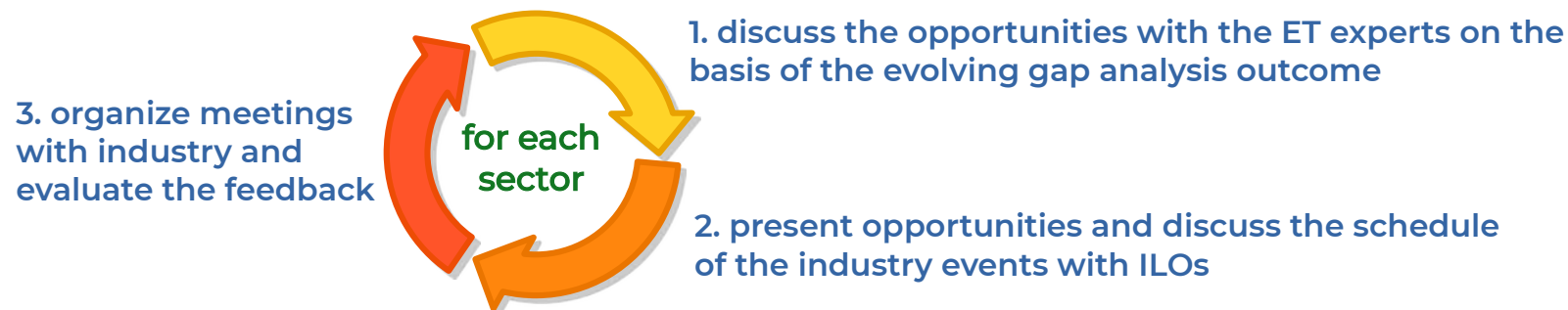
- IFAE's main contribution was in Task 7.1, which is now completed
- NIKHEF did not participate in Task 7.1, so *Contributives* are expected to build up in the last three years
- CDTI also made an important contribution to Task 7.1 which is included in the IFAE *Contributives*

INSTITUTION		PM	
		PM in the period per Annex I	PM in the period in the period
1 IFAE	CONTRIBUTIVES	12	3
	REQUESTED EC	14	10
2 INFN	CONTRIBUTIVES	12	3,7
	REQUESTED EC	12	2,0
3 UW	CONTRIBUTIVES	19	1,11
	REQUESTED EC		
5 NIKHEF	CONTRIBUTIVES	12	1.11
	REQUESTED EC	2	1,16
5 UAntwerpen	CONTRIBUTIVES	5	1
	REQUESTED EC		
Total Person Months	CONTRIBUTIVES	60	8,81
Total Person Months	REQUESTED EC	21	13,16
		<b>81</b>	<b>21,97</b>

## WP7: Outlook and perspectives

In the next reporting period, the main activities will be:

- to implement the Industry Engagement Plan



- to finalize the analysis of the balanced industrial return strategies and define the proposed approach with possible options for ET
- define the organization of the TT effort to be implemented by the ETO



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Grant agreement: N° 101079696



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

WP7 Rob van der Meer  
10/12/2023  
Grant agreement: N° 101079696

# WP7: objectives for year 2-3-4

Initial Milestones mostly completed. Remaining Deliverables planned for y3 and y4



## WP7: Task 7.3 Technology Transfer and IP

- Deliverable D7.4 : "Report on Technology Transfer (TT) and Intellectual property (IP) management" [M44]
  - Clear plan to complete the work and report before the Deliverable deadline.
- Current activities:
  - Introduction about general goals of TT:
  - *What will be the extent of requests for TT services that will originate from ET in the various phases of this scientific endeavor ?*
  - *What type of TT transfer should be considered, promoted and supported in ET ?*

# WP7: Task 7.2 Industry Engagement (1)

- Webinar to involve ILO's in Europe
  - 30 November 2023: Recording and presentations available on Indico.
- Webinars on technologies:
  - Vacuum (120 km Pipeline) 19 December 2023: invitation on Indico.
  - Preparing for 2024 with ISB division leaders:
  - *Cryogenics, Active Noise mitigation, Suspension, Optics, Photonics, Electronics & Control, Infrastructures*
- Big Science Business Forum [BSBF 2024]
  - October 1-4 2024 Trieste, Italy.
  - We will have an ET stand and plan to contribute to sessions.
- D7.2: Report on industry engagement plan execution
  - Collection of activities and plan changes or elaborations.

## WP7: Task 7.2 Industry Engagement (2)

- Tenders and fair return of investment
  - Information gathering from other RIs: CERN, ESS, SKAO, CTAO, ...
  - Milestone M7.3: “Analysis of balanced industrial return strategies” [M15] late.
  - Information exchange with WP2, WP3
  - Deliverable D7.3: “Model for pursuing in ET a balanced industrial return” [M33]

# WP7: General (progress) planning

- Monthly meeting for whole WP
  - Agenda and presentations on Indico
- Specific task meetings
  - Agenda and documents on Indico
- Exchange of documents
  - Gdrive: actively used.
  
- Webinars – technology challenges
  - Agenda and documents on Indico
  - Invitations via ILOs and international network contacts.  
Feel free to add (un)solicited contacts.

# WP 7: Outlook and perspectives

On track.

Input from other WPs very welcome.



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