

WP7 Report

ET-PP Annual Meeting Barcelona, 12 June 2023

M. Morandin (INFN-PD) - WP7 co-coordinator
on behalf of the WP7 group

12 June 2023

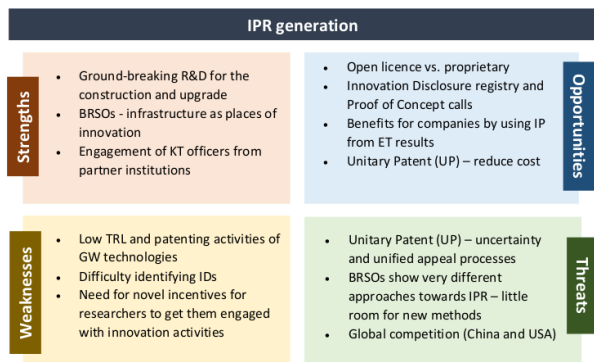
Summary

- Status of the activities
 - 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:
 - **CDTI, IFAE, INFN, NIKHEF, UW**
- Periodic meetings
 - WP7 monthly meetings: <https://indico.cern.ch/category/16367/>
 - WP7.1 be-weekly meetings: <https://indico.cern.ch/category/16368/>

WP7.1 Status

- **first document** reporting the **SWOT analysis of the innovation promotion strategies** delivered (Milestone n. 9)
- the SWOT analysis has been performed with reference to 4 different perspectives
 - **collaborative research, IPR generation, procurement, Entrepreneurship**

and was based mainly on existing experience in other Scientific Organization



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

- next important step is the delivery of a document containing the **Innovation Plan** that consists on a **prioritized set of actions** to be implemented by the ETO
- a first prototype of such document, dealing with a specific aspect (IPR generation) has already been circulated internally a few weeks ago
- this first exercise has shown that, in order to develop the proposal we need to clarify some basic assumptions that define the reference context in which the actions described in the plan should to be carried out
 - what is the sharing of the R&D, and procurement activities between the ET collaboration (Univ. , Research Institutions, Funding Agencies) and the future ETO organization ?
 - how will this sharing develop with time ?
 - etc.
- to clarify this points we have asked the help of a **panel comprising representatives from the other WPs (Liaison Group, L.G.)**
 - so far it includes: F. Ferroni, R. Saban, H. Lück, N Arnaud, A. Freise. M. Martinez
 - first kick-off meeting held on Apr. 21
 - second meeting on May 26th at 11:30 CEST: **very useful feedback**
 - third meeting will take place tomorrow (June 13) during lunch
 - many thanks to Mario for organizing it!

Innovation ambiguity (I)

- Innovation and therefore "Innovation plan" have slightly different meanings for us in WP7, and for the L.G.
 - we are using the term innovation in a more restricted sense, i.e.: **product, process or service innovation in industry**
 - let's call it: *industrial innovation*
 - we are working therefore with the objective of eventually producing a plan aimed mainly at exploiting **the ET potential to generate industrial innovation**
 - since this was scheduled to happen early in the ET-PP timeline, it was also foreseen to take a **technology independent approach**
 - however, since the goal is to draw a plan that can have a reasonable chance to be implemented:
 - we have to scale the actions (and therefore the resource required), w.r.t. the foreseen volume of R&D activities and procurement
 - we have to make some assumptions about who is going to implement the plan and who will make available the resources

Example of actions in the Inn. Plan

Actions	Estimated Cost	
	Manpower	Resources
Innovation culture dissemination and training sessions for ET researchers, postdocs and PhD students on IP topics for their research to have an impact on society and the environment – raising awareness and instructing them in the paths for IDs creation, evaluation, protection, valorisation and exploitation (work carried out by the KT office and/or KTT providers).	0.05 FTE of KTT personnel per workshop. Dissemination of available innovation coaching activities of the EC (IP results booster, entrepreneurship seminars, etc.) through research groups	30,000€ (yearly) business school + internal organization (estimated 20-30 participants)
Creation of a specific competitive fund managed by the ET-KT Office directed at increasing the TRL of those IDs more marketable -awarded on the basis of the disruptive and market potential of the invention.	0.5 FTE dedication to innovation/market potential analyses of ID identified and protection strategy definition	$2 \text{ PoP} * (25\text{k€}) + 2 \text{ PoC} * (50\text{k€}) = 150,000\text{€ (yearly)}$ The levels of funding and number of projects can be modulated, depending on final TRL expected and minimum innovation level set to apply to the call for projects (innovative idea, invention disclosure ongoing, protected asset, etc.)

Innovation ambiguity (II)

- for the L.G., and probably for the ET community in general, it seems that Innovation is mainly associated with the development of the **technologies needed to achieve the desired detector characteristics and the ET science goals**
 - of course, **industrial involvement** is also seen as a **key element in this context**, but the main driver is the technology developments in the ET R&D activities and **industrial innovation** can be seen their by-product
 - in this approach, an "Innovation Plan" has to be **tightly linked to the R&D plan** and it will have to deal with specific aspects of the relevant technologies to be developed
- we also learned that one or more of the documents to be submitted by the ETO to the ministries will have to be **dedicated to innovation**
 - the content of these documents has still to be defined, but it will probably adopt an approach an approach similar to the one just described
 - but it will also contain the analysis of the final industrial impact
- so we now need to harmonize the views, taking also into account the ETO priorities, and decide how to proceed with the necessary adjustments
 - these two days in Barcelona represent a great opportunity to make progress

Further feedback from the L.G.1 (I)

- when we developed the WP7 proposals I think we had in mind a centralized approach for the innovation plan, as well as for the TT organizational model to be defined in the third task WP7.3
- but this approach is probably not the best suited for ET
- ET entities that might have an impact in defining and implementing innovation plan are:
 - now:
 - the ET collaboration
 - the ETO, now operational, but in the process of defining its internal organization, etc.
 - in the future:
 - ETO will evolve into an ETO++, the final future ET legal entity that will have the responsibility of building and running the infrastructure and related services
 - a possible intermediate quasi legal entity, ETO+ ?
- what seems rather clear is that in the foreseeable future, most ET R&D activities, and perhaps also significant part of the procurement, will be managed by the Research Institutions, under the coordination of the ET collaboration and to an extent not defined yet by the ETO
 - currently by far most resources are now available at regional level (EMR, ETIC)
- ETO will be engaged with developments related to the infrastructure but it could also play a role to ensure that some general transversal objectives like pursuing industrial innovation and sustainability are taken into proper consideration
- so in the innovation plan we will have to take into consideration that most actions will have to assume a collaborative model rather than a centralized one

"KTT and IL" session later today

contributions should help addressing some of the topics previously described

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

WP7.2 Industry engagement

7.1.0	Task coordination [Nikhef]	On going
7.2.1	Industrial participation: risks and mitigations	Started: survey of first technical sector finished; new approach adopted: include the questions in the ET R&D survey
7.2.2	Mapping of the national initiatives	Finished: ILO's extended survey carried out
7.2.3	Definition of the engagement plan [Milestone at M10]	Started: Do a first exercise exploiting information collected on the Vacuum sector
7.2.4	Engagement plan execution	
7.2.5	Report on engagement activities [Deliverable at M42]	
7.2.6	Analysis of approaches for achieving an optimal industrial return [Milestone at M15]	Started in advance w.r.t schedule: interaction with WP2-3 on-going
7.2.7	Develop the ET balanced return strategy and implementation model [Deliverable at M33]	

WP7.2.1

- 7.2.1 **Where in ET do we need to strengthen the involvement of industry**, now in the R.D. phase and, in perspective, in the Construction/Production phases ?
 - technology sectors identified
 - started to collect feedback from the ET experts through a detailed questionnaire
 - Vacuum was the first sector examined
 - main R&D challenges identified and was used to structure the questionnaire
 - feedback was received, many thanks to Paolo Chiggiato et al. for participating in the survey and the follow up discussions
 - a document summarizing the outcome was prepared in the form of an excel table
 - we run however into a difficulty, i.e., in some sectors **there isn't at the moment in ET an R&D coordination structure in place**, that defines whom to ask to for getting an overall picture of what is going on
 - we then realized that the ET collaboration had decided to perform a survey of the R&D activities
 - so we agreed with Harald and Michele that it could make sense to piggyback on this effort, including our questions in their questionnaire
 - the questionnaire is now ready to go

Industry engagement questions

- questions, related to the various R&D activities:
 - what companies are already collaborating ?
 - what known companies would you like to engage ?
 - how important is it to engage new additional companies ?
 - what expertise or service should they provide ?
 - are the technical requirements mature to start looking for new industrial partners ?
 - what is the TRL right now ?
 - what is it expected to be in 2027 ?
 - what is the final TRL to be achieved and when ?

Which companies are already engaged in the related R&D activities? *

Please report the code of the R&D activity and possible specific associated technologies.

[e.g.: 10-3 - **Company1(UHV), Company2(Getter)**]

La tua risposta

Are there other known possible partners that you would like to engage in these R&D activities? *

Please report the code of the R&D activity and possible specific associated technologies.

[e.g.: 10-3 - **Company3(UHV), Company4(Getter)**]

La tua risposta

In addition, on a scale from 1 to 5, how important is to find other new industrial partners? *

Levels: 1-Negligibly, 2-Minimally, 3-Fairly, 4-Very, 5-Extremely

Please report the code of the R&D activity and possible specific associated technologies.

[e.g.: 10-3 - **5 (Getter), 4 (UHV)**]

La tua risposta

What expertise or services should new industrial partners provide for the R&D activities? *

Please report the code of the R&D activity and possible specific associated technologies.

[e.g.: 10-3 - **Getter pumps manufacturing design and capabilities, (Getter)**]

La tua risposta

Industry engagement questions

- the R&D questionnaire defined a two level hierarchical list of R&D sectors

• e.g.:

- 10-1 Vacuum: Pipes
- 10-2 Vacuum: Towers
- 10-3 Vacuum: Pumps
- 10-4 Vacuum: Control system

- In the industry-related questions, we encourage respondents to be more specific and to define the technology domain in more detail

• e.g.:

Which companies are already engaged in the related R&D activities?
Please report the code of the R&D activity and possible specific associated technologies.
[e.g.: 10-3 - Company1(UHV), Company2(Getter)]

La tua risposta

Important remark

- after the interaction with the L.G., it seems that the **outcome of the R&D survey**, complemented by the industrial and TRL related questions, is going to be **very important**, not only for the Collaboration, but also for WP7 and for the ETO
 - especially in view of possible contributions to the documents to be submitted to the ministry

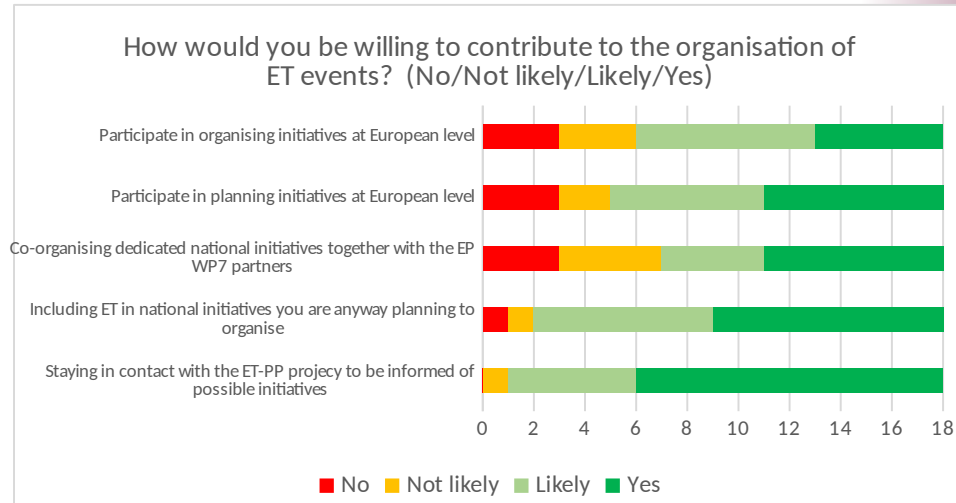
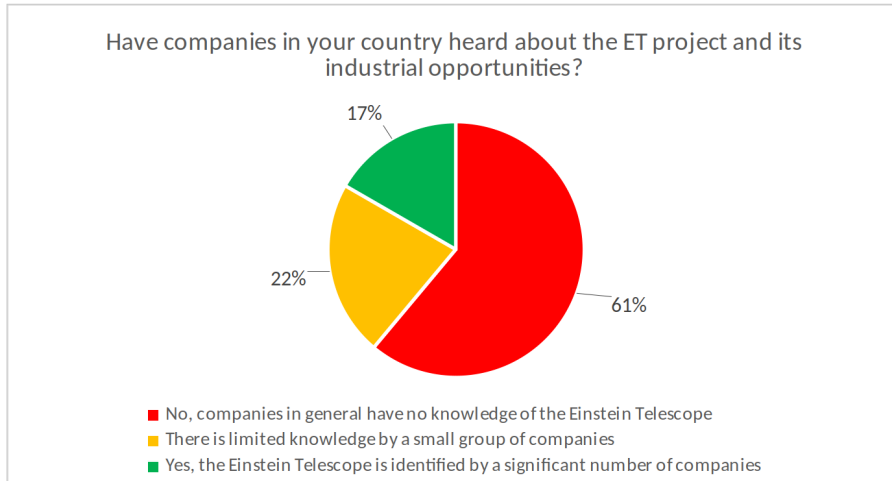
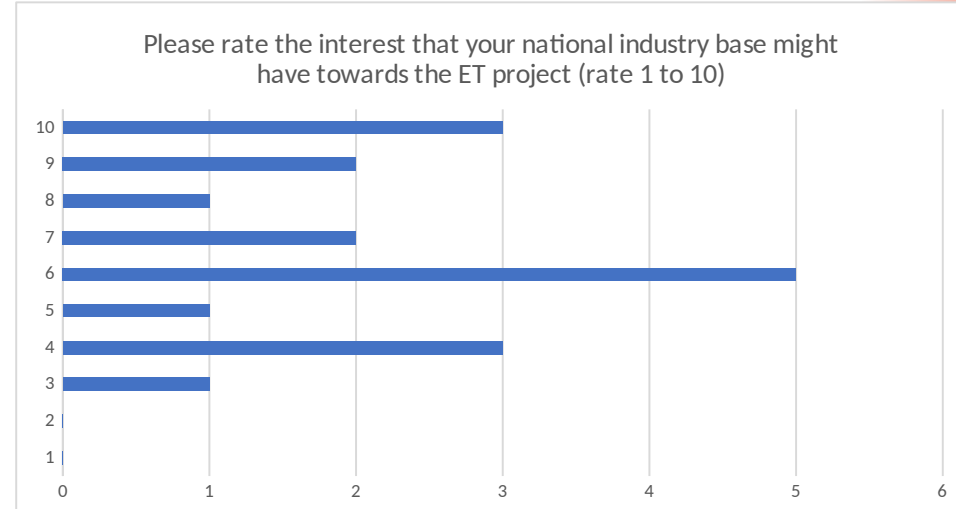
WP7.2.2

- 7.2.2 What can we learn from the experience of the international ILO community to strengthen the involvement of industry ?
 - we decided to exploit the international network of ILOs and ask them several questions:
 - 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 understand the tools that they make use of and which ones work best
 - to learn about the degree of knowledge their industries have about the Einstein Telescope
 - to collect their views about the different initiatives which could be included in the ET-PP engagement plan
 - survey was carried out and 18 ILOs provided their feedback from 16 countries



ILO survey outcome

- results of the survey will be presented in the WP7 satellite meeting tomorrow
- here are some highlights
- key side effect: successful ILOs engagement



WP7.2.6-7

- in Barcelona last year we proposed that WP2-3 would take the lead and we would adapt to their schedule
- we participated in a few with WP2-3 to address the procurement-related issues that can have an impact on how to shape the final ETO
- work is in progress
- next meeting will take place tomorrow at the WP2/WP3 session
 - WP7 home work:
 - define what are the key aspects of an ideal procurement model

WP7.3

- Activities started also in this task

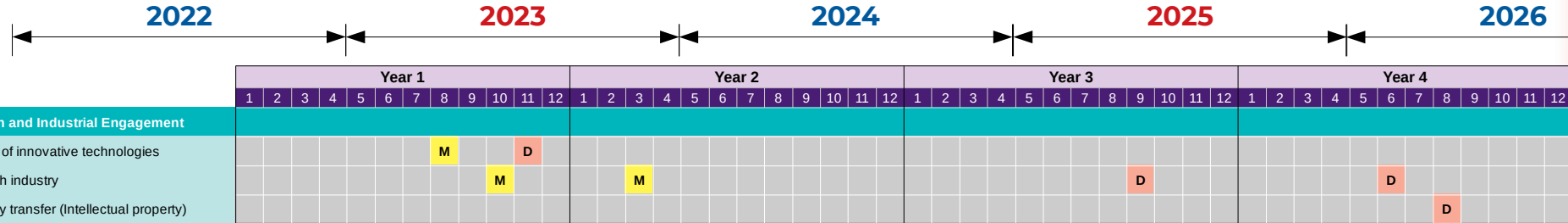
WP 7.3.0	Task coordination [INFN]	Ongoing Task schedule revisited: WP7.3.2 timeline shortened
WP 7.3.1	Definition of TT management principles and goals	Started: Interaction with other TT/KT offices started
WP 7.3.2	Development of the TT management model	
WP7.3.3	TT support for specific ET technologies	

WP7.3.2

- Work timeline compressed to fit in the first two years of the project
 - this also due to possible exploitation of the results obtained in 7.1 and 7.2
- In the way the last two years can be dedicated to provide TT support services to ET R&D activities
 - in line with the possible additional funding requests submitted
 - some initial exercise of patent analysis already performed at IFAE

		Start Month n.	
		Current	New proposal
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	17	15
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	23	19
7.3.2.3. What organization is needed ?	Define the TT services to be provided and the organization to be setup	26	21
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	29	23
7.3.2.5. Final Report	Assemble the final report	32	26

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

OK

will be delayed (several months), structure of the document will be discussed this week

M11 as presented at KOM we will try deliver the plan before the summer break

Deliverables

D7.1	Innovation plan	WP7	IFAE	R	PU	M12
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