

# WP 7.1 Promotion of Innovative Technologies

25/11/2022  
Meeting

Speaker:  
I. Esparbé (IFAE)



ET-PP

Preparatory Phase for the Einstein Telescope  
Gravitational Wave Observatory

WP 7: Innovation and Industrial engagement

## 7.1.0. Task coordination [IFAE]

### WP 7.1 Team

Institution	Institutional Role	Name	Email	Personal Role
INFN	WP 7.1 member	Mauro Morandin	mauro.morandin@pd.infn.it	WP 7.1 Participant / WP7.1 contact person at INFN
		Michel Onori	michel.onori@pd.infn.it	WP 7.1 Participant
		Ilaria Giammarioli	ilaria.giammarioli@Inf.infn.it	WP 7.1 Participant
		Pier Paolo Deminicis	pier.paolo.deminicis@Inf.infn.it	WP 7.1 Participant
NIKHEF	WP 7.1 member	Rob Van der Meer	r.van.der.meer@nikhef.nl	WP 7.1 Participant / WP7.1 contact person at NIKHEF
UW	WP 7.1 member	Kazimierz Anhalt	kanhalt@uott.uw.edu.pl	WP 7.1 Participant / WP7.1 contact person at UW
		Dorota Rosinska	drosinska@astrouw.edu.pl	WP 7.1 Participant
		Robert Dwilinski	rdwilinski@uott.uw.edu.pl	WP 7.1 Participant
IFAE	WP 7.1 Leader	Isaac Esparbé	iesparbe@ifae.es	WP 7.1 Participant / WP7.1 contact person at IFAE
		Rodrigo Ortega	rortega@ifae.es	WP 7.1 Participant




### WP 7.1 Meetings

Bi-weekly. Proposal of Friday at 11h except some days in December and April, on Wednesday at 11h for festivity matters, not overlapping with WP7 general meetings.














Proposed dates: 25/11, 7/12, 21/12, 13/1, 27/1, 10/2, 24/2, 10/3, 24/3, 5/4, 21/4, 5/5, 19/5, 2/6, 16/6, 30/6, 14/7, 28/7.


# 7.1.0. Task coordination [IFAE]

## WP 7.1 Reference Documentation


Shared with me > WP7 > Reference documentation fro...   

**Reference documentation from other BSO**




Name	Owner	Last modifi...	↓	File size
 Other references	me	9:33 AM	—	
 Procurement	me	9:22 AM	—	
 IP Protection	me	9:22 AM	—	
 Entrepreneurship	me	9:22 AM	—	
 Collaborative R&D	me	9:21 AM	—	
 SKA.IP_.Policy.013WM.pdf 	me	Nov 16, 2022		830 KB
 Gravitational waves discovery, intellectual property and te... 	Mauro M.	Oct 21, 2022		841 KB
 Case Study of the CERN's Knowledge Transfer and Innovat... 	Mauro M.	Oct 21, 2022		786 KB
 Managing innovation ecosystems around Big Science Org... 	Mauro M.	Oct 21, 2022		424 KB

 Reference documentation from other BSO ×

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**Who has access**

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I
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Owned by Mauro M.. Shared with Isaac, Javier Echavarri, Monreal Lucas, Rob van der Meer, and 1 other.

# 7.1.0. Task coordination [IFAE]

## WP 7.1 Report Templates



### H2020 Programme

Periodic Report Template  
(RIA, IA, CSA, SME instrument, MSCA, Lump Sum Pilot)

Periodic Technical Report (parts A and B)  
Periodic Financial Report

Version 3.0  
27 November 2019

Disclaimer: This template is provided to applicants for Horizon 2020 funding. It serves only as an example. The actual web forms and templates are provided in the Funding & Tenders Portal Grant Management System (and may contain certain differences). The reports must be prepared and submitted online via the Portal.



### 2. Deliverables

Del. no.	Deliverable name	WP no.	Lead beneficiary	Type	Dissemin. level	Delivery date from Annex 1	Actual delivery date	If deliverable not submitted on time: Forecast delivery date if appropriate	Status	Comments
[insert deliverable number]	[insert deliverable name]	[insert WP number]	[insert beneficiary short name]	[R] [DEM] [DEC] [OTHER]	[PU] [CO] [CI]	[insert month number]	[insert dd/mm/yyyy]	[insert dd/mm/yyyy]	[Not submitted] [Request for revision] [Not assessed yet] [Not valid] [Accepted]	[insert comments]

(\*) Data in coloured fields will be prefilled by the IT tool.

### 3. Milestones

Milest. no.	Milestone title	Related WP(s) no.	Lead beneficiary	Delivery date from Annex 1	Means of verification	Achieved	If not achieved Forecast achievement date	Comments
[insert MS number]	[insert milestone name]	[insert WP number]	[insert beneficiary short name]	[insert dd/mm/yyyy]	[insert means of verification as in Annex 1]	[YES] [NO]	[insert dd/mm/yyyy]	[insert comment if needed]

### PERIODIC REPORT

Grant Agreement number:	[insert Grant Agreement number]
Project Acronym:	[insert acronym]
Project title:	[insert project title]
Start date of the project:	[insert dd/mm/yyyy]
Duration of the project:	[insert duration in months]
[Option for MSCA] Supervisor name:	[insert name] /
[Option for MSCA] Researcher name:	[insert name] /
Period covered by the report:	from [insert dd/mm/yyyy] to [insert dd/mm/yyyy]
Periodic report:	[1 <sup>a</sup> ] [2 <sup>a</sup> ] [3 <sup>a</sup> ] [4 <sup>a</sup> ]
Date of submission of the periodic report:	[insert dd/mm/yyyy]
Version:	[insert number]
Project website <sup>2</sup> address:	[insert website address]
The report is elaborated on the basis of the:	- Original Grant agreement - Amended Grant Agreement through amendment n° [insert number]

(\*)Table is completed automatically

HISTORY OF CHANGES		
VERSION	PUBLICATION DATE	CHANGE
1.0	15.07.2015	Initial version
1.1	14.09.2015	Table on section 12 on Research infrastructures has been corrected.
1.2	08.08.2016	Simplification of the question on energy. Question on gender: distinction between researchers and other work force. Corrections for MSCA.
1.3	27.03.2017	Modification of Part B for Research Infrastructures (RI) actions to include a table with the resources used to provide access to RI.
2.0	19.09.2017	Revision to include the new cost category in MGA v4.0 (other direct costs declared as units costs for internally invoiced goods and services)
2.1	19.12.2017	Update of part B of the template to include explanations on adjustments to financial statements declared on previous periods.
3.0	27.11.2019	Update of Part B to include specificities of lump sum pilot

# 7.1.0. Task coordination [IFAE]

## WP 7.1 Schedule Update & Next Steps

7.1	Promotion of innovative technologies	PMs	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
7.1.0	Task coordination [IFAE]													
7.1.0.1	Task coordination [IFAE]	+0.25	1	1	1									
7.1.1	Fundamentals of the ET Innovation Strategy [IFAE] - Internal milestone month 4 (IM4)													
7.1.1.1	Organizational aspects driving the development and the implementation of a strategy of technology innovation promotion [IFAE] - (IM3)	+1.0	1	1	1									
7.1.1.2	Processes and mechanisms for identifying results with innovation potentia [IFAE] - (IM3)	+0.75	1	1	1									
7.1.1.3	Key elements to construct an Innovation Strategy for ET [IFAE] - (IM4)	+0.75			0.5	0								
7.1.2	SWOT Analysis of promotion strategies on experiences and best practices in similar Big Science projects [IFAE / INFN / NIKHEF] - Internal milestone month 5 (IM5)													
7.1.2.1	Innovation promotion by collaborative research between academia and industry [IFAE] - (IM4)	0.75 +0.25			1	0								
7.1.2.2	Innovation promotion by proprietary/open-source licensing of ET research groups foreground [IFAE] - (IM4)	0.75 +0.25			0.5	0								
7.1.2.3	Innovation promotion by innovative public procurement [INFN / NIKHEF] - (IM4)	0.75			0	0								
7.1.2.4	Innovation promotion by tech based venture building (spin-offs and start-ups) [IFAE] - (IM4)	+0.75			0	0								
7.1.2.5	Conclusions extracted from the 4 previous SWOT analyses on innovation promotion strategies [IFAE / INFN / NIKHEF] - (IM5)	0.75				0.5	0							

# 7.1.0. Task coordination [IFAE]

## WP 7.1 Schedule Update & Next Steps

7.1	Promotion of innovative technologies	PMs	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
7.1.3	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 [IFAE / UW] - Official milestone month 6 (OM6)													
7.1.3.1	Goals & KPIs for pushing entrepreneurship culture [IFAE / UW] - (IM5)	0.75				0	0							
7.1.3.2	Goals & KPIs for promoting new technologies disclosure and exploitation [IFAE/UW] - (IM5)	0.75				0.5	0							
7.1.3.3	<b>Milestone 7.1.</b> Analysis of Promotion Strategies Accomplished. Conclusions on the Goals, KPIs and Actions for promoting innovative technologies during the ET project [IFAE/INFN/NIKHEF] - (OM6)	0.75					0	0						
7.1.4	Plan of action to be executed in C&O phase of ET [IFAE / INFN / NIKHEF] - Deliverable month 9 (D9)													
7.1.4.1	Innovation by procurement [INFN, NIKHEF] - (IM8)	0.75				0	0	0	0	0				
7.1.4.2	Innovation by funded collaborative research [IFAE] - (IM8)	0.75				0.5	0	0	0	0				
7.1.4.3	<b>Deliverable 7.1.</b> Assemble the Innovation Plan (final report) [IFAE/INFN / NIKHEF] - (D9)	2					0	0	0	0	0			
7.1.5	Coordination with WP10 in Communication Activities [UW]													
7.1.5.1	Coordination with WP10 in Communication Activities [UW]	0.25					0	0	0	0	0			
<b>TOTAL (%EXECUTED)</b>		<b>9+4</b>	<b>100%</b>	<b>100%</b>	<b>57%</b>	<b>15%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>			

4 PMs IFAE planned contribution in WP 7.1 → 8 PMs IFAE contribution in WP 7.1 (4 PMs + 4 EC funded PMs)

## 7.1.1.1 Organizational aspects driving the development and the implementation of a strategy of technology innovation promotion (M3)

### ESA TTP model benchmarking

The **technology transfer programme (TTP)** of ESA has published the successful transfer of over 200 space technologies to non-space sectors for applications as diverse as cooling suits for a Formula 1 racing team, ground penetrating radar to detect cracks in mine tunnels and several health-care innovations (2001-2009).

**Space** can be considered as attractive *lead market* with the **potential to trigger innovation** in the downstream market (e.g. satellite communications user equipment and services) by providing new opportunities for services and **creating entire new markets** (e.g. global navigation satellite systems). These generally represent fruitful grounds for the **emergence of innovative start-up companies** as early entrants to exploring these new markets.

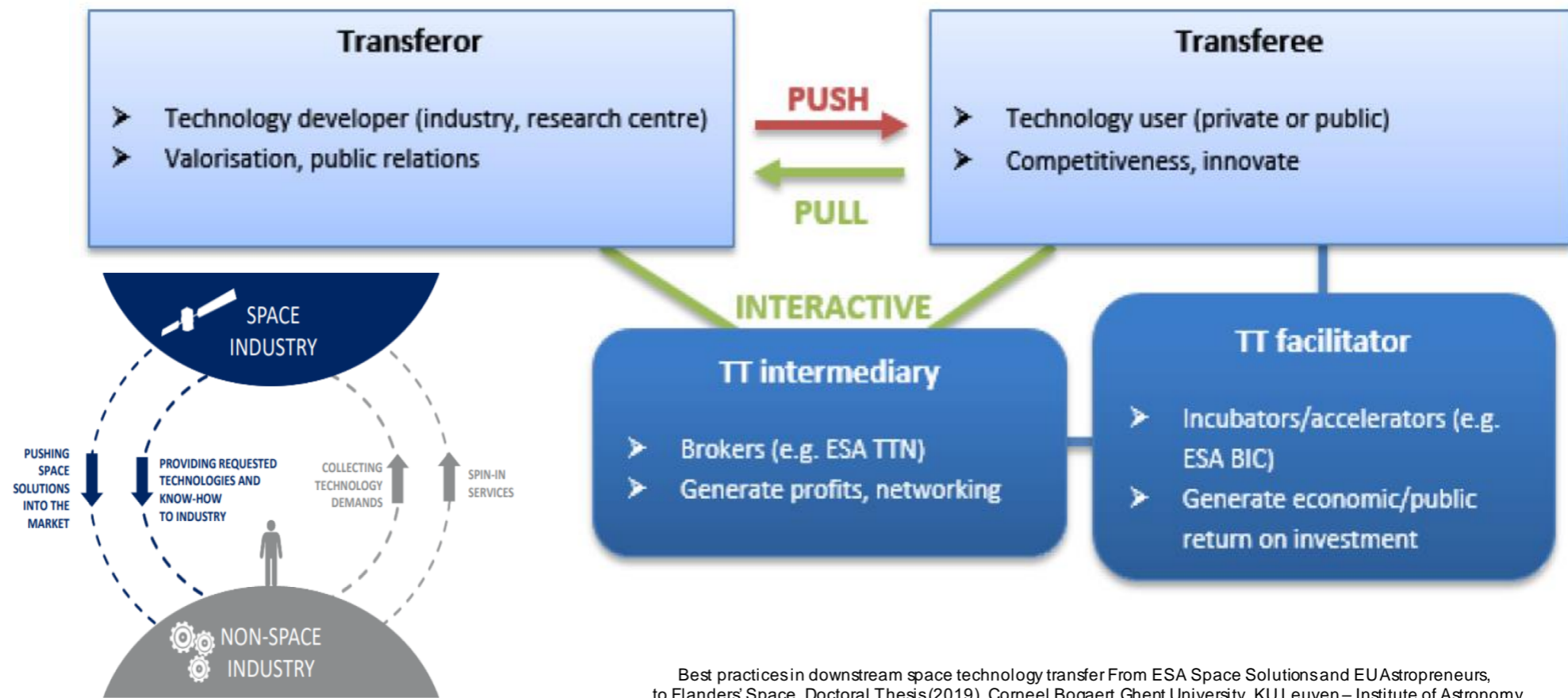
**Table 1** Innovation conditions within the European space sector and dedicated European programmes compensating innovation hindering situations.

Conditions for ...	Condition descriptions	Conditions in space	Dedicated ESA programmes
	• Attractive stimuli, difficulties, challenges	• Challenging objectives (+) • Difficult environments (+)	n/a
	• Culture of openness, high rate of information exchange	• Relatively closed sector (-)	• Innovation Triangle Initiative [20] • Networking Partnering Initiative • Ariadna [21]
... invention	• Readiness for error, encouragement of risk taking	• Risk adversity (-) • Errors / failures not an option (-)	• Basic and Specific Technology Research Programme • Innovation Triangle Initiative [20]
... implementation	• Diversity of skilled workforce able and free to recognize and seize opportunities	• Highly skilled & culturally diverse, integrated mobile workforce (+)	n/a
	• Opportunities and open competitive markets	• High entrance barriers to space market (-) • Governmental distortions of free market forces (-) • Monopsony structures (-)	• In-orbit Demonstration Programme • Small satellite opportunities

International Journal of Innovation Science. Signs of Potentially Disruptive Innovation in the Space Sector. Leopold Summerer (2011)

## 7.1.1.1 Organizational aspects driving the development and the implementation of a strategy of technology innovation promotion (M3)

ESA TT actors:



© ESA Space Solutions

Best practices in downstream space technology transfer From ESA Space Solutions and EUAstropreneurs, to Flanders' Space, Doctoral Thesis (2019). Comeel Bogaert. Ghent University. KU Leuven – Institute of Astronomy



ESA  
TTP  
Pillars

## ESA Technology Transfer Programme Office (TTP-O)

ESA intellectual property right protection, networking, business incubation and entrepreneurship since 1990.

## ESA Technology Transfer Network (ESA TTN)

**15 brokers** identify local opportunities and assist local industries and start-ups to apply ESA technology. Opportunity creation (scouting, **workshops and events**), feasibility research (consultancy), and ESA funding for demonstrators to develop prototypes (**open calls**). Yet Managed by a Belgium private company since 2016.

## ESA Tech Forum / ESA Open Innovation Space Platform / Enterprise Europe Network (EEN)

These networks can lead to **funding sources** and networking opportunities through events and online platforms. It can be also a certification system for **incubators and accelerators**.

## Astropreneurs Accelerator / ESA Business Incubation Centers (BICS) / SpaceUp programme

Start-up incubators, accelerators and scale-up programmes

## ESA Valorization Tools:

### 1. ESA Space Solutions = ESA TTN + ESA National Technology Transfer Initiative (NTTI)

**Feasibility studies** (x10 each year):

ESA co-funds PoCs. max. 50% of company's cost. Max eligible cost 500k€ (**250k€ ESA max contribution**).

**TTP Open call for Demonstrators** (x2 each year):

Private company contracted by the TTPO select projects to be funded with a maximum amount of **€38 000** each to **build a demonstrator** in 6 months.

### 2. ESA Business Applications

Directed at a specific problem or opportunity. Accepted projects are funded by ESA **75% of min. €60000/company (total activity budget up to 2M€)**. The remaining budget may come from different sources (own funding, profits, investors, bank loan, etc.).

## ESA Entrepreneurship Tools:

### 1. Astropreneurs Accelerator

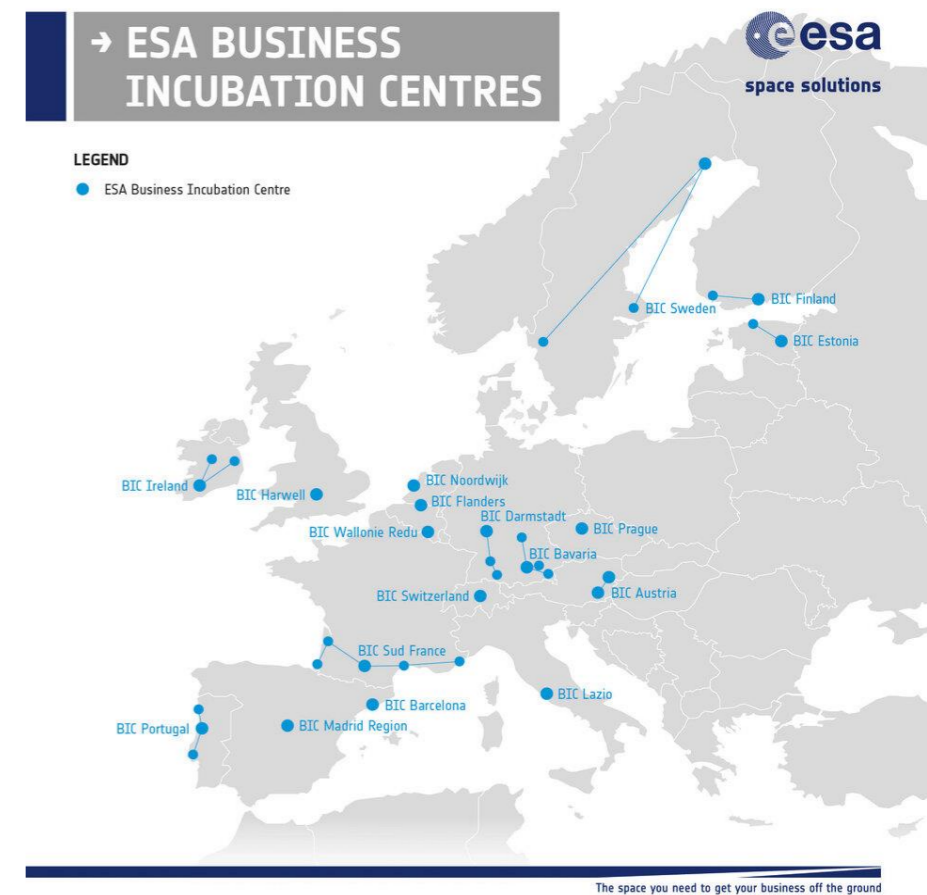
8 partner organisations, most of which are also part of the ESA brokers network. The contributions of the partners **amount up to nearly €2 million**. Currently, the Astropreneurs Accelerator includes 80 mentors (limited to 100).

### 2. ESA BIC

**25K€ from ESA** to be spent on **technical development or on intellectual property protection** related costs. 25k€ coming from the national government has to be spent on rent and on marketing, consulting, intellectual properties and external services. Today, there are ESA BICs in Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, the Netherlands and UK (+Poland?).

### 3. Space Up

Consortium of 9 partner organisations with 2 coming from Belgium (European Business Angel Network and SME4Space VZW). The contributions of the partners amount **up to nearly €2M**.

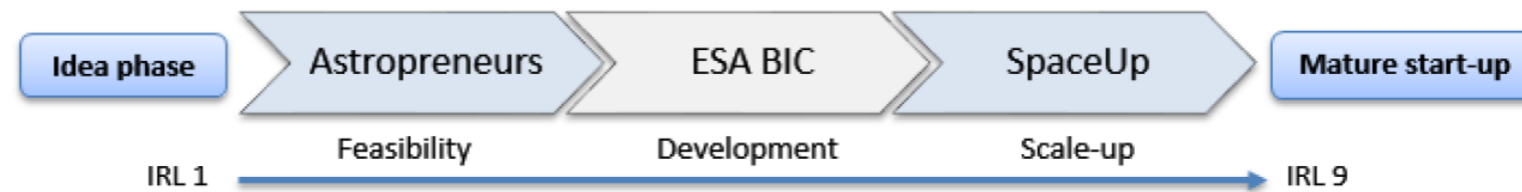
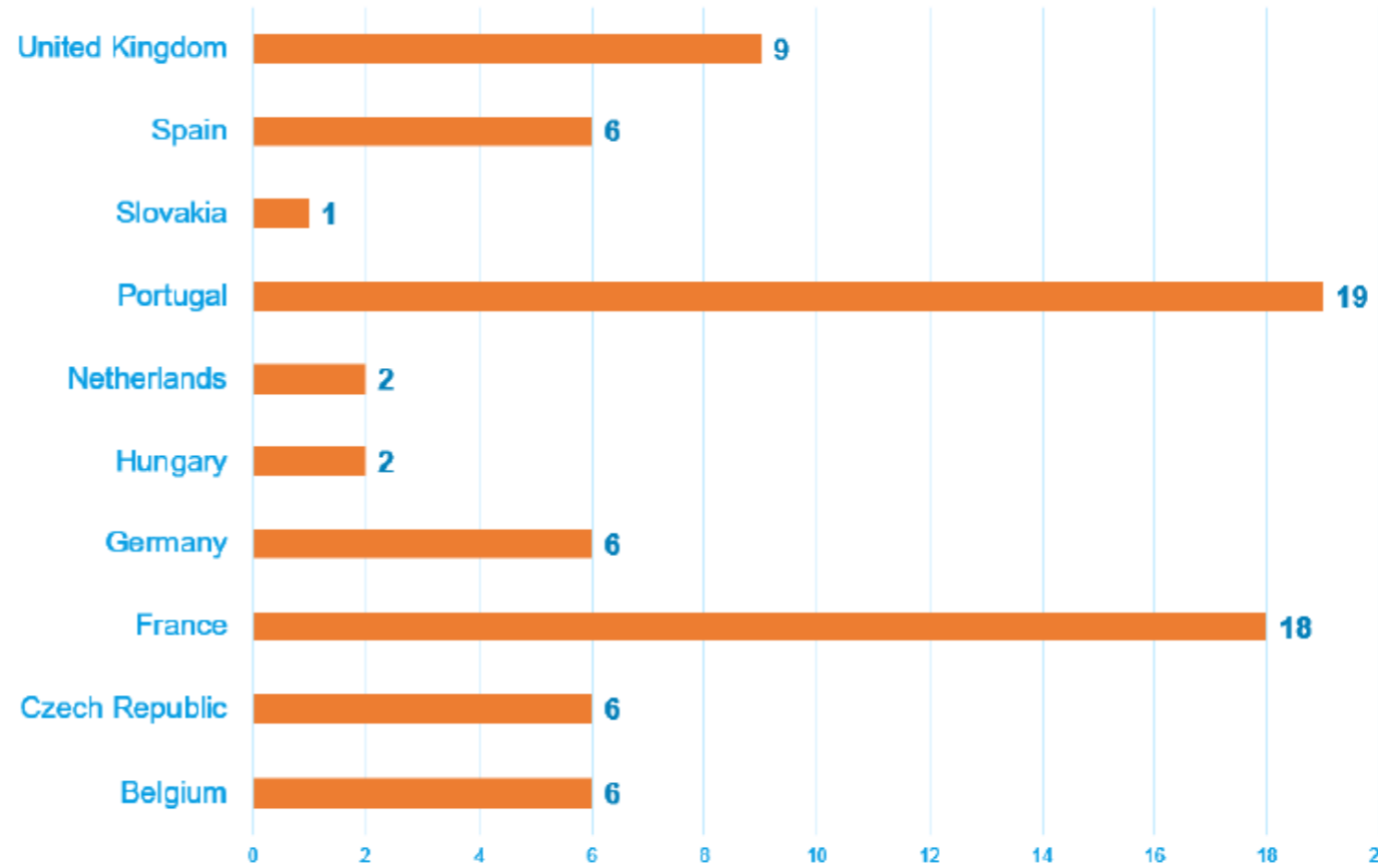




## STARTUPS: 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> cut-offs



**75**  
Startups selected



## 7.1.1.2. Processes & mechanisms for identifying results with innovation potential (M3)

### CERN TT Process:

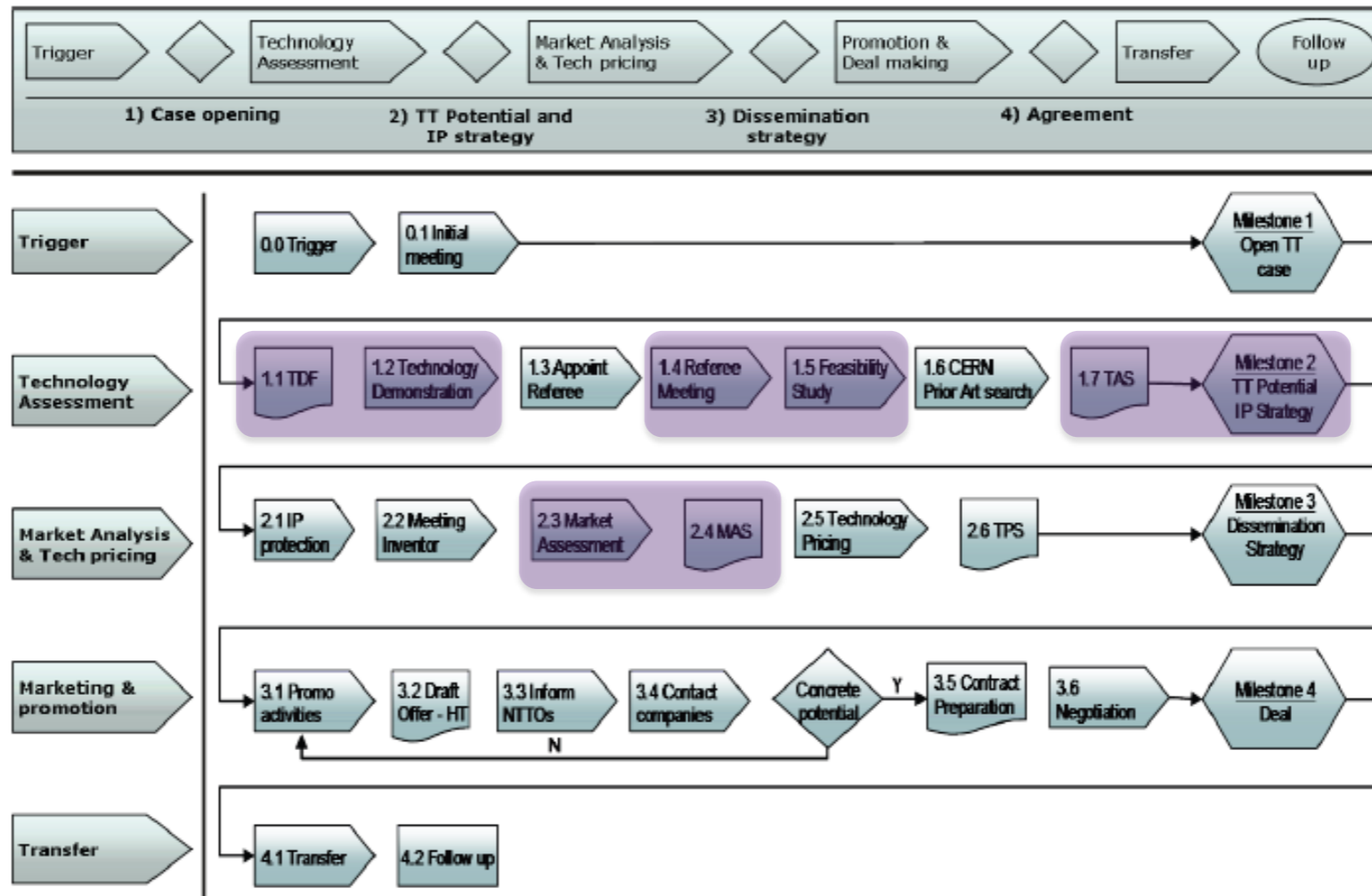


Figure B.1: CERN's Goal Directed Technology Transfer Process

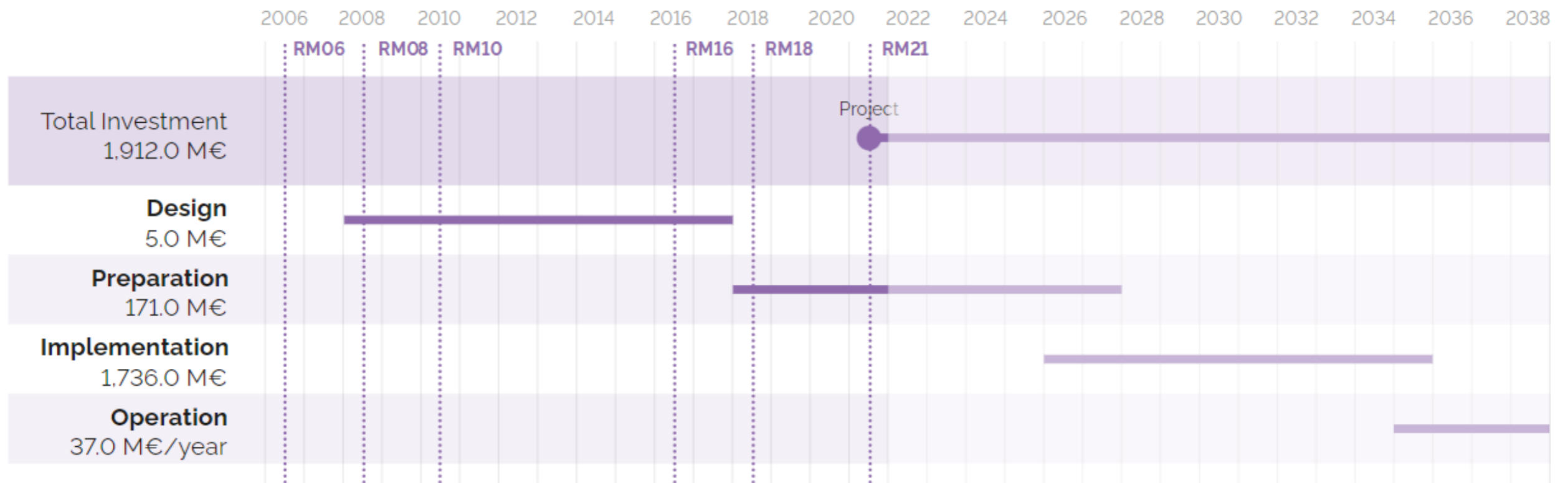
Guidelines for the execution of the Tech Assessment & Market Analysis in WP 7.3

Vidar Eide; Andrzej Golebiowski. Pricing of Licenses on CERN Technology. November 2006. Norwegian University of Science and Technology Faculty for Social Sciences and Technology Management Department of Industrial Economics and Technology Management

15 PMs IFAE planned contribution in WP 7.3 (8 PMs+7 PMs EC funded) → 16 PMs IFAE contribution in WP 7.3 (8 PMs + 8 EC funded PMs)

## 7.1.1.3. Key elements to construct an Innovation Strategy for ET (M4)

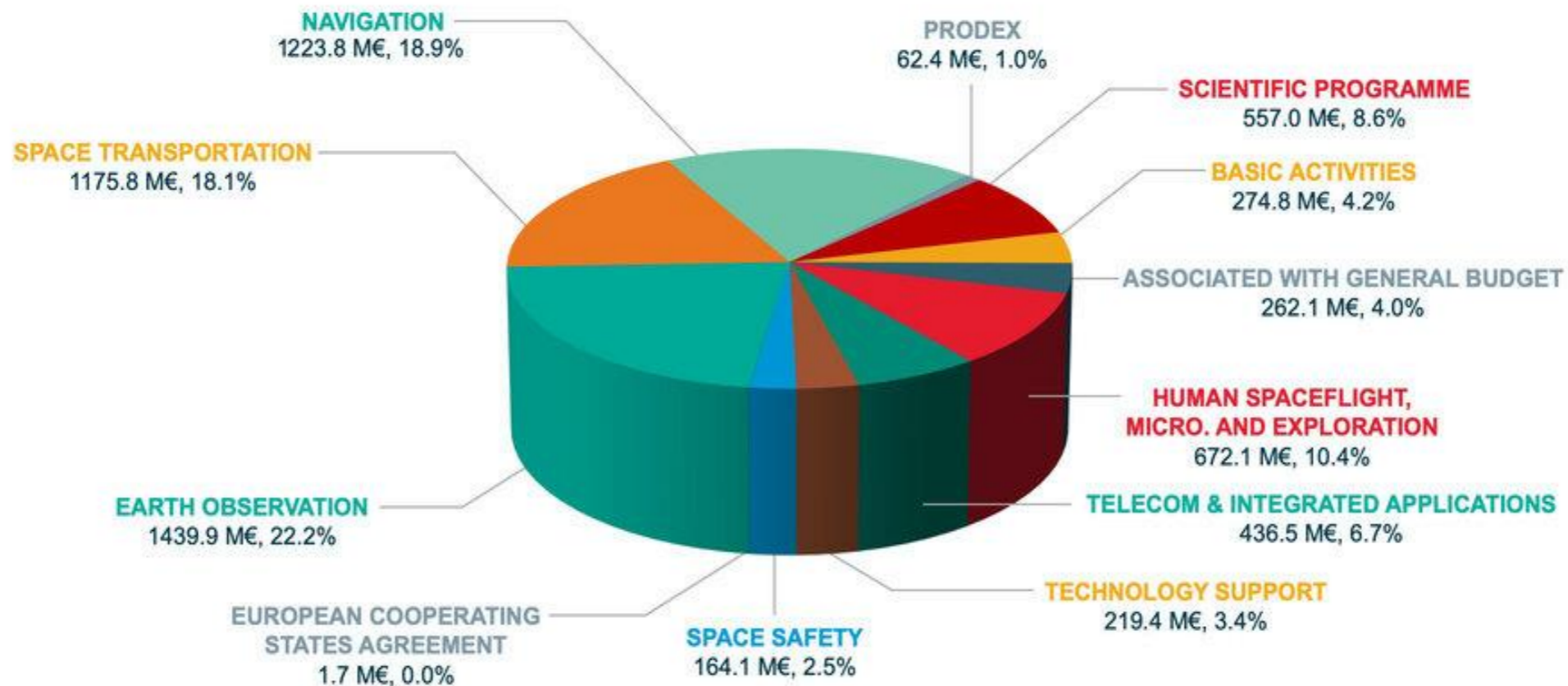
### TIMELINE & ESTIMATED COSTS



ESFRI, the European Strategy Forum on Research Infrastructures (<https://roadmap2021.esfri.eu/projects-and-landmarks/view-the-table>)

## 7.1.1.3. Key elements to construct an Innovation Strategy for ET (M4)

### ESA BUDGET BY DOMAIN FOR 2021: 6.49 B€\*



\*includes activities implemented for other institutional partners

## 7.1.1.3. Key elements to construct an Innovation Strategy for ET (M4)

	ESA	% on Total count (or Output / Funding)	LIGO	% on Total count (or Output / Funding)	ET (ESA model)	% on Total count (or Output / Funding)	ET (LIGO model)	% on Total count (or Output / Funding)
TTO staff	13		0.03		3		0.03	
Annual BSRO budget (M€)	6490							
Averaged annual funding x Big Science Research Line (M€)	1623		57		71		71	
Licensing programme (ESA since 1990)	21		35		27		27	
Valorisation programme period (ESA since 2016)	6		35		27		27	
Entrepreneurship programme period (since 2003)	19		35		27		27	
TTPO (ESA since 1990)	32		35		27		27	
TT Programme total budget (M€)	7.038	0.43%	0.191		0.453	0.64%		
TT initiatives excluding protection and TT staff (M€)	5.048	0.31%	0.178	0.31%	0.220	0.31%	0.220	0.31%
TTO staff averaged budget (M€)	0.780	0.05%	0.002	0.00%	0.180	0.25%	0.002	0.00%
Tech Protection budget (M€)	1.210	0.07%	0.011	0.02%	0.053	0.07%	0.053	0.07%
Annual ESA valorisation&licensing initiatives budget (M€)	4.326	0.27%			0.189	0.27%		
Annual external valorisation budget (M€)	3.250	0.20%	0.114	0.20%	0.142	0.20%	0.142	0.20%
TTO staff averaged budget dedicated to valorisation&licensing (M€)	0.520	0.03%	0.001	0.00%	0.120	0.17%	0.001	0.00%
Annual ESA entrepreneurship budget (M€)	0.722	0.04%	0.000	0.00%	0.032	0.04%		0.00%
Annual External entrepreneurship funding (M€)	3.778	0.23%	0.133	0.23%	0.165	0.23%	0.165	0.23%
TTO staff averaged budget dedicated to entrepreneurship (M€)	0.260	0.02%	0.001	0.00%	0.060	0.08%	0.001	0.00%
Annual ESA Valorisation output (out-licensing agreements)	9.524	1.023	0.286	2.251	0.461	1.023	0.322	2.251
Annual ESA Protection output (patent app)	15.000	1.612	0.143	1.126	0.726	1.612	0.161	1.126
Annual ESA Entrepreneurship averaged output (spin-offs count)	21.053	3.526	0.029	0.197	0.904	3.526	0.584	0.197
Total ESA Valorisation output (out-licensing agreements)	200		10		12		9	
Total ESA Protection output (patent count)	530		5		20		4	
Total ESA Entrepreneurship output (spin-offs count)	400		1		24		16	