

Innovation Plan – How to converge

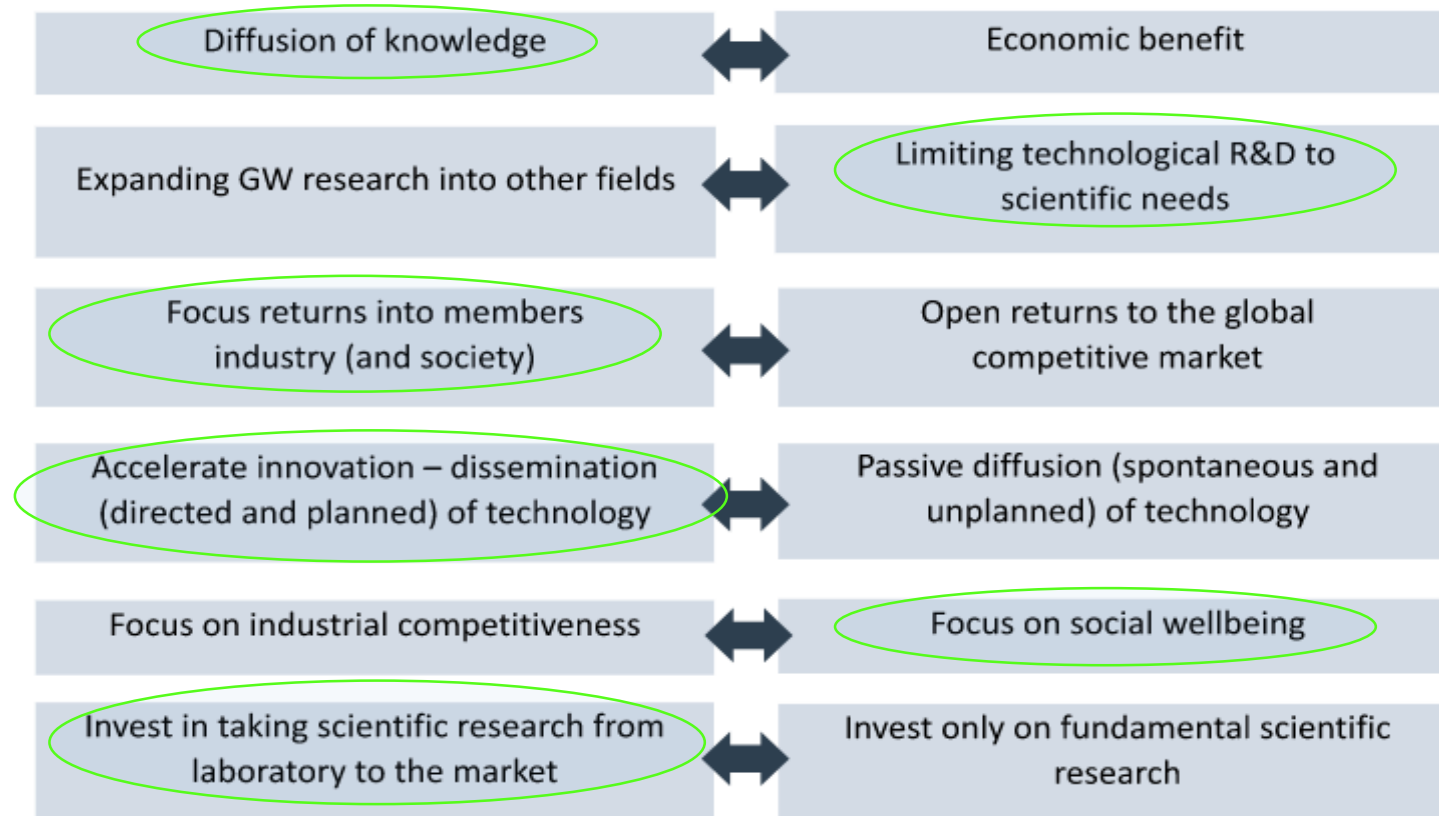


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Innovation Priorities

The ET-PP WP7.1 team developed a quantitative method to prioritize ET Innovation Actions based on specific Innovation priorities (see below), the SWOT map produced in Milestone 9 ($W>T>S=O$) and a cost/benefit criteria.



Problem: Some Innovation Goals require previous governance and funding strategic decisions from ETO.

Innovation Goals & Benefits pursued

Actions to convert SWOT analysis in benefits for ET for each innovation goal defined

Table 1a Weaknesses to Strengthens flowchart necessary actions and associated benefits linked to ET to innovation goals.

Weaknesses	W>S Action	Strengthens	S>I Action	Benefit	ET top-level goal
Low TRL and patenting activities of GW technologies	Creation of a specific competitive valorisation fund managed by the ET-KT Office directed at increasing the TRL of IDs	Ground-breaking R&D, novel, matured and high value technologies	Acquire a software license to get access to relevant open innovation platform/s	Find licensee companies to transfer ET technologies	Dissemination of new ET technologies
			Host companies on-site by offering them technical workshop spaces in a collaborative research environment	Promotion informal links and build trust for further commercial relations via R&D facilities access and technical services agreements	Promotion of employment and high qualified jobs in the R&D&I fields
Difficulty identifying IDs within ET collaboration	Creating the role of KT Coordinator in each Research Group / Technical Department	Close collaboration between researchers and KT staff	Create an internal ID registry for those ET protected inventions	Facilitate the management of IDs	Dissemination of new ET technologies
	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.	Increase awareness of the socio-economy implications of fundamental research	Funding for the pursuance of follow-up research beyond GW applications	Generate research results applications to expand GW impact beyond science industry (e.g. medical applications, sustainability, digital transformation, etc.)	Promotion of employment and high qualified jobs within the R&D&I fields
Need for novel incentives for researchers to get them engaged	Develop an IP policy regulating intangible assets ownership, protection and exploitation, as well as incentives	Clear guidelines for the exploitation of new technologies and know-how.	Program of incentives beyond assigning part of the revenues obtained from patent/know-how to inventors	Increase the innovative technologies portfolio by an incentive policy to address market issues	Impacting economy with novel technologies applied to solve market challenges

Baseline Action

Baseline Goals

Optional Goals

Problem: ETO and ET Collaboration may require different Innovation Goals.

Innovation actions relative impact

Expected impact of the innovation actions for ETO & ET Collaboration:

Impact Code	Impact for ET (I)	Impact Factor
A	Find licensee companies to transfer ET technologies	7
B	Promotion informal links and build trust for further commercial relations via R&D facilities access and technical services agreements	8
C	Generate opportunities for creating new start-ups, and find potential collaborators, licensees and researchers	10
D	ET as a keystone actor in the innovation ecosystem, reference hub for industry and academia	4
E	Facilitate the identification and management of IDs	6
F	Generate research results applications to expand GW impact beyond science industry (e.g. medical applications, sustainability, digital transformation, etc.)	9
G	Increase the innovative technologies portfolio by an incentive policy to address market issues	3

Expected impacts of Baseline Actions

Expected impacts of Optional Actions

Problem: ETO and ET Collaboration may require different Innovation Actions based on differentiated Innovation Goals.

Innovation actions costs

Expected costs of the innovation actions proposed for ET:

Table 3 Detailed action table, group around IPR strategic goals and with estimated cost, implementation phase, technical proposal and further references for each of the proposed actions.

Actions	Estimated Cost		Implementation phase ¹	Technical proposal ²	References
	Manpower	Resources			
Encourage/promote researchers' involvement in the technology transfer process by creating the role of KT Coordinator in each Research Group / Technical Department in charge of identifying technologies which might be transferred, identifying research staff with certain competencies which can work with KT in handling external technical requests for support and help tracking contacts with industry which involve Knowledge Transfer.	0.1 FTE of research department representatives involved in KT (1-2 general meetings annually. Periodic ad hoc meetings KT Coordinator-KT Office)	Creation of a Knowledge Transfer Internal Network (KT-INET) (one-off) 1,000€	O	B	INET CERN model however other structures can be considered to best fit ET structure
Organise showcase events hosted by ET partners with local third-party entities to disseminate ET technologies and show prototypes to maximise the transfer opportunities.	0.1 FTE of KTT personnel	500€ per event (estimated 6 events per year – 3,000€)	C&O	C	CERN model adapted to project partner structure, each partner institution can hold one event every two years
Create an advisory board composed of public research entities and private companies (3:2), the latter as co-innovation partners and to explore new alternative experimental concepts and advanced prototyping of key technologies.	0.1FTE - Coordination of quarterly meetings with CEOs and R&D Directors of relevant industries to exchange industry/science challenges and promoting the collaborative R&D and licensing of the portfolio of technologies	-	C&O	C	Inspired by the Innovation Fostering in Accelerator Science and Technology (I.FAST) at CERN
Acquire a software license to get access to relevant open innovation platform/s to identify industrial challenges matching ET technologies.	0.4 FTE - Industry – academia interaction management by KTT personnel	Licence (one-off) 1,500€	C&O	AC	Based on ESA's innovation model (Phase 1)
Creation of an open innovation platform to show ET-technologies to potential licensee companies, based on the demand and success of the general open innovation platforms used.	0.2 FTE - editing of the patented technologies (and know how available for licensing) repository	Creation of the platform (one-off) 5,000€ + maintenance and update (yearly) 1,000€	O	AC	Based on CERN's innovation model (Phase 2)
Host companies on-site by offering them technical workshop spaces to promote informal links and build trust for further commercial relations via tech licensing or services agreements.	0.2FTE - Technical services promotion	Legal support for the service agreement and public rates templates (yearly) 2,000€	O	AC	Common in BSROs with their spin-offs
Benefits/returns	<ul style="list-style-type: none"> Prospect of 3 annual licence agreements → 15k€/year (avg. value) per licence (+ down payment) This type of actions have shown in other BSROs to multiply the investment in R&D by 1.55 (van Barneveld et al., 2018) 				

Problem: ETO and ET Collaboration innovation needs must be identified to scale allocation of innovation resources.
 Solution: To define 2 Innovation Plans; 1 for ETO and 1 for ET Collaboration concerning R&D + Procurement management

Innovation actions prioritization

Cost/Benefit Ratio for the ET Innovation Actions

Table 2 IPR actions, associated cost divided in one-off, yearly and FTE personnel requirements, cost indicator, benefit/impact indicator and CBA classification of complementary actions. Accompanied by the Impact code key.

SWOT Input	Innovation Action	Action Output	Impact Code	Estimated Costs			Cost Indicator	Impact Indicator	Cost Benefit Ratio
				FTE	one-off	yearly			
S	Acquire and manage a software license	I	A	0,3	1500	0	3,50	3,5	1,00
S	Creation of an open innovation platform	I	A	0,2	5000	1000	4,67	3,5	1,33
T	Showcase events	O	C	0,1	0	3000	4,00	10	0,40
S	Host companies on-site	I	B	0,2	0	2000	4,00	4	1,00
O	Advisory board	I	D	0,1	0	0	1,00	2	0,50
S	ID registry	I	E	0,1	2500	0	1,83	3	0,61
W	KTT workshops	S	F	0,05	0	30000	30,50	B	
T	KT officers in GW research conferences	O	D	0,1	0	2500	3,50	7	0,50
W	Competitive valorisation fund	S	A+B	0,5	0	150000	155,00	B	
O	Open access repository of business cases	I	C	0,1	0	10000	11,00	5	2,20

Additional Complen. Actions

Complen. Actions

Baseline Actions

TOTAL costs	2.05 FTE (staff required) + 15k€ (one-off) + 198.5k€ (yearly)
Baseline Actions	0.85 FTE (staff required) + 6k€ (one-off) + 180k€ (yearly)
Complementary Actions	0.40 FTE (staff required) + 2.5k€ (one-off) + 5.5k€ (yearly)
Additional Complementary Actions	0.90 FTE (staff required) + 6,5k€ (one-off) + 13k€ (yearly)