

WHITE PAPER
WHAT WORKS?
**Commercialisation
and Technology
Transfer**

Roundtable and workshops
proceedings



Co-funded by the
European Union

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The context for the roundtable topic

The European Institute of Innovation and Technology (EIT) is an independent European Union (EU) body created in 2008 to strengthen the continent's ability to innovate. The EIT is an inherent part of Horizon Europe, the EU's Framework Programme (FP) for Research and Innovation.

The Institute's three main missions include:

- A) Making Europe's growth sustainable and job market competitive;
- B) Tackling global challenges such as the United Nations (UN) Sustainable Development Goals (SDGs);
- C) Creating an environment conducive to creativity and the conditions for world-class innovation and entrepreneurship to flourish in Europe¹.

The Institute supports dynamic pan-European partnerships – especially via its eight EIT's Knowledge and Innovation Communities (KICs)², which consist of leading companies, research laboratories, and universities. Together with its 2000 partners, the EIT Community offers a wide range of innovation and entrepreneurship activities across Europe: entrepreneurship and education courses, business creation and acceleration services, as well as innovation-driven research projects, among others. Eventually, such a setup brings new ideas and solutions to the market, helps students become entrepreneurs, and, most importantly, leads to innovation.

The EIT Community from Central, Eastern and Southern Europe cooperates extensively to develop joint programmes under the umbrella of the EIT Cross-KIC Regional Innovation Scheme (RIS) introduced in 2017. Its aim is to share good practices and experiences emerging from EIT Community activities and widen participation in Europe's countries with moderate or modest innovation scores as defined by the European Innovation Scoreboard (EIS). Since the EIT RIS launch, collaboration has been a good engine for sharing knowledge, experiences, and results of common activities. Joint projects in the area of commercialisation and technology transfer include the EIT Jumpstarter programme, which helps researchers build a validated business model and start their venture. Another example is the Joint Innovation Incubator³, which supports university-based incubators in finding their value-proposition and developing their programme portfolio.

Yet, despite numerous signs of progress, especially regarding collaboration, as the last Research and Innovation analysis in the European Semester 2020 Country Reports suggest, technology transfer and commercialisation of research results remain at a low level in many European countries⁴. Driven from EIT Communities' experiences in early-stage venture creation and support, on 15 September 2021, EIT Communities gathered in Budapest to discuss how to support countries in which the pace of innovation is still moderate in becoming more advanced in the field of commercialisation and technology transfer. Aiming for a cross-disciplinary discussion, the meeting participants focused on the nexus between the two. The invited experts and practitioners (see the full list in Appendix 1) represented a wide range of "commercialisation hotspots", including Incubators, Centres for Entrepreneurship and Innovation, Technology Transfer Offices (TTOs), Innovation and Business Managers' offices. Given their vast hands-on experience, the participants were asked to present pragmatic insights and tools – exchanging dos and don'ts, real experiences, lessons learnt and creating recommendations for technology transfer actors across the EIT regions. The key objectives of the roundtable and the workshops were:

- **To reveal and validate the relevant enablers and barriers** for successful commercialisation and transfer of ideas in innovation ecosystems, whilst also identifying similarities and differences between regions & commercialisation perspectives;

- **To identify how to improve the impact** of commercialisation by specifying obstacles to overcome and opportunities to maximise the innovation capacity in Europe (EIT RIS), such as policy interventions, financial support instruments or the need of entrepreneurship training;
- **To analyse the role of the EU** in encouraging greater adoption of innovation activities of commercialising ideas and IP into start-ups.

Hence, the roundtable and workshops on different commercialisation strategies and practices allowed it to identify specific local needs, opportunities, barriers, and successful solutions and examples of best practices that could be replicated at the European level.

Objectives and structure

This white paper presents the main takeaways and recommendations discussed during the roundtable mentioned above and three tailor-made workshops that followed. Effectively, this publication should be seen as a practical manual for policymakers and other key opinion leaders at the regional, national, and pan-European level.

The report explores how the EIT Communities can support commercialisation, technology transfer and intellectual property (IP) management better, which are the main barriers to overcome and how to foster collaborations in the field between the different stakeholders.

During the roundtable and workshops the following questions were asked:

- **Which enablers and barriers** do practitioners face in various contexts (EIT RIS) of commercialisation and technology transfer?;
- **To successfully enable commercialisation** and technology transfer, what is needed to create a better understanding of the “commercialisation environment/ecosystem”, its stakeholders, institutions, frameworks, and processes?;
- **How to build a sustainable strategy** for defining medium- and longer-term vision and goals, resources and performance indicators for successful commercialisation and technology transfer?;
- **How do we need to design** entrepreneurship knowledge training to attract, motivate and educate new talents to enhance the innovation capacity in EIT RIS regions?;

1. EIT. (2020). *Making Innovation Happen*. Retrieved from https://eit.europa.eu/sites/default/files/eit_leaflet_2020.pdf.
2. EIT. *Knowledge and Innovation Communities*. Retrieved from <https://eit.europa.eu/our-communities/eit-innovation-communities>.
3. EIT. *Call for applications to EIT RIS Joint Innovation Incubator Programme*. Retrieved from <https://eit.europa.eu/our-activities/opportunities/call-applications-eit-ris-joint-innovation-incubator-programme>.
4. EC. (2020). *Research and Innovation analysis in the European Semester 2020 Country Reports*. Retrieved from https://ec.europa.eu/info/sites/default/files/research_and_innovation_strategy_on_research_and_innovation/documents/2020_compilation_research_and_innovation_sections_in_country_reports.pdf.

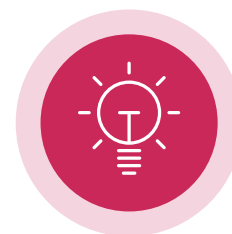
- **What roles does a scientific team** need to get on board to successfully commercialise their ideas and IP?;
- **What is the role of intergovernmental cooperation** and public-private partnerships (PPPs) in enabling innovation?;
- **Which (further) policy interventions** could foster innovation?;
- **How to invest upfront** in the infrastructure of commercialisation and technology transfer?;
- **What funding and reimbursement mechanism** should exist to achieve the best commercialisation and technology transfer results?;
- **Which incentives and guidance** could be provided to enhance collaboration within technology transfer and commercialisation stakeholders?;

Yet, the list of specific questions to be discussed was long, and the identified objectives of the roundtable and the workshops were broad, covering multiple aspects of commercialisation, tech-transfer, and IP management activities. Therefore, to ensure effective and timely discussion, as well as enhance practical insight generation from the participants, the objectives and specific questions were shuffled and eventually merged into five streams:

1. **Best practices** regarding commercialisation and technology transfer – identifying relevant enablers and barriers.
2. **Creating a sustainable strategy** for defining medium- and long-term goals for successful commercialisation and tech transfer.
3. **Entrepreneurship training** and education needs to close the skills gap of entrepreneurship.
4. **Further policy interventions** fostering innovation.
5. **The role of intergovernmental cooperation** and PPPs in enabling innovation.

This white paper's structure is divided into five separate sections that follow the agenda of the roundtable and three consecutive workshops organised to discuss in more detail issues strongly linked to streams: 3, 4, and 5. Apart from Stream 1, which predominantly focuses on best practices, all other streams follow the same logic of providing challenges identified by the roundtable participants, recommendations they gave, and additional best practices worth mentioning. Unless mentioned explicitly by addition of complementary sources, all challenges and recommendations correspond to inputs from the roundtable and workshops. Best practices have been added in the process of drafting of this paper, to back the ideas gathered.

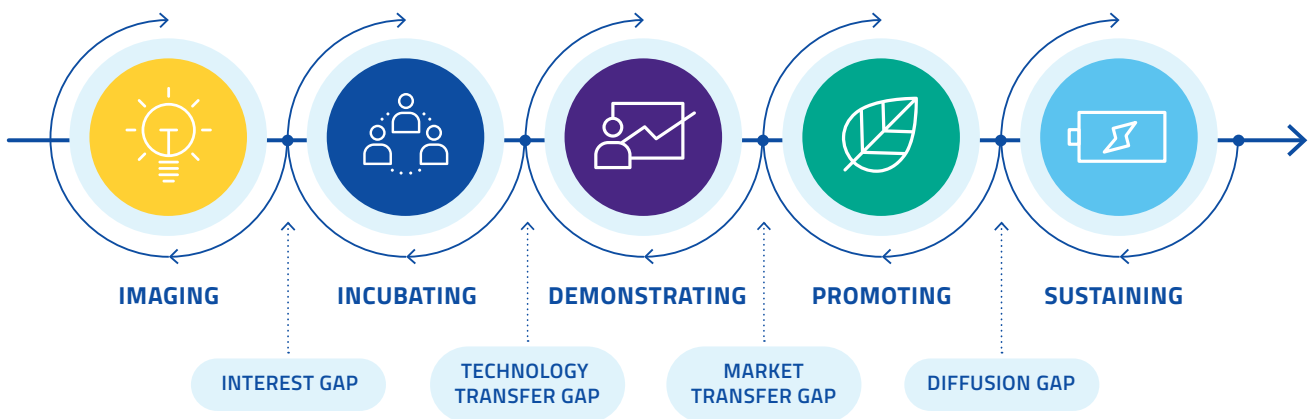
Stream 1: Best practices regarding commercialisation and technology transfer – identifying relevant enablers and barriers



A modern and competitive economy requires innovations reaching the market and consumers in the form of new products and services. The ability to transform knowledge into new products, services, technologies, techniques, and organisational solutions determines the market success of people, enterprises, and entire economies. The intensification of technology transfer and knowledge commercialisation mechanisms and the abolition of prejudices against innovation, entrepreneurship and commercial activities in the scientific community are becoming a challenge today from the micro-, meso- and macroeconomic perspectives. It is necessary to equip research centres with organisational and legal instruments to allow for efficient and safe transfer. Activities in the area require new organisational models, tools, and specialised support institutions. Technology transfer and commercialisation are of strategic importance for the European economy. Yet, we often hear about the “European paradox” → a situation in which the results of research, publications and patents of European scientists translate to a small extent into market applications in new products, technologies, and services. European countries face the necessity to revise and restructure the socio-economic model, including redefining the role of the university or the laboratory.

That is because the European economy is based on old paradigms that lack the market orientation of research and development. Building a modern knowledge economy requires long-term investments in key technologies combined with a proactive, intelligent approach to the assumed goals. At the same time, building innovative capabilities turns out to be extremely difficult in practice. As shown in the figure below, there are five activities making technology commercialisation successful: imaging a problem and a solution to it; incubating the technology to define the solution's commercial potential and attractiveness; demonstrating it contextually in products and/or processes; promoting the latter's adoption; and sustaining commercialisation. As important as these activities are the four bridges between them. The progress from one subprocess to the next without delay is critical in technology commercialisation. The four threatening obstacles to the four bridges are the interest gap; technology transfer gap market transfer gap; and diffusion gap.

Technology commercialisation process model*:



At the same time, the impact of innovation, transfer and commercialisation of knowledge and links between science and business on the development of enterprises, regions and economies is becoming the central area of economic and social policy as well as research considerations and concepts as agreed during the roundtable. Despite numerous

obstacles mentioned above, there are some success stories worth sharing. In this context, the roundtable participants were asked to think of the biggest challenges and relevant recommendations that can be applicable not only at the EU, but also Member State (MS) level when it comes to commercialisation and technology transfer.



CHALLENGE AHEAD (1):

As this stream specifically mentions “best practices” in the title (as opposed to other streams which correspond to narrow issues such as funding or education), in this single

case, the roundtable participants identified a broader list of challenges and barriers without focusing on two-three key challenges:

- 1. Need for a better connectivity of the different stakeholders** of the innovation-supporting landscape (academia, business, start-ups, public;
- 2. Most research tends to stay in the laboratory in the European market.** This also happens when too early staged projects are presented to business partners;
- 3. Entrepreneurs oftentimes look for isolated solutions** instead of finding and analysing the problem worth solving;
- 4. Lack of awareness and/or lack of access to available tools** and sources of information for the scientists and innovators (open innovation platforms).

* Source: https://www.researchgate.net/publication/229130988_Technology_transfer_in_the_IT_industry_A_Korean_perspective/figures?lo=1



RECOMMENDATIONS:

As mentioned above – this stream includes “best practices” in its title (as opposed to other streams which correspond to narrow issues such as funding or education),

hence in this case, the roundtable participants came up with a longer list of recommendations worth implementing without focusing on one single specialisation:

- 1. Fostering technology extension services;** stimulating demand for innovation;
- 2. Developing strategic partnerships** for applications-oriented research – especially between the business community and universities (i.e. leading economic clusters, leadership by the productive sector, the critical mass to achieve impact);
- 3. Nurturing universities “third mission”** of contributing to economic development;
- 4. IP management:** improving institutions, regulations, practices (this includes the development of a strong network of Technology Transfer Offices (TTOs) at universities or stimulating the demand and raising awareness, among others);
- 5. Instead of pushing the technology,** the encouragement of the start-ups is sought to analyse and validate the market needs, and learn from monitoring and evaluation;
- 6. Adapting programmes** over time.



BEST PRACTICE:

The EIT Community has been created specifically to address most of the barriers mentioned by the roundtable participants at the pan-European level. In its numerous initiatives, the Institute tries to fill in the gaps identified in the above-mentioned standardised technology commercialisation process model. It does so by the provision of more holistic programmes, such as EIT Jumpstarter⁵ – the award-winning pre-accelerator programme for innovators working on different ideas spanning from healthcare, agri-food, raw materials, energy, urban mobility or manufacturing sectors. Furthermore, multisectoral programmes and projects across the EU MS also tend to promote innovative endeavours which

try to address the gaps identified in the standardised model. Yet, it is at workshops – and in current pandemic reality – webinars, where the larger population can benefit from the knowledge that is not always easily accessible. A recent webinar organised by the EIT on 12 October 2021 regarding empowering and protecting creativity through IP⁶ serves as a good example of an initiative that can boost commercialisation. The webinar addressed the theoretical issues of the IP transfer and allowed participants to familiarise with concrete examples on how to protect brands and designs from competitors – issues of the utmost importance for the European creative industry.



5. EIT. *Why EIT Jumpstarter?* Retrieved from <https://eitjumpstarter.eu/why-eit-jumpstarter/>.
6. EIT. *Webinar: Empowering & protecting creativity through intellectual property.* Retrieved from <https://eit.europa.eu/news-events/events/webinar-empowering-protecting-creativity-through-intellectual-property>.

Stream 2:

Creating a sustainable strategy for defining medium- and long-term goals for successful commercialisation and tech transfer



Creating a medium- and long-term strategy is profitable in an economic sense in all entrepreneurial activities. Good planning of tasks means fewer misunderstandings, fewer discussions, and unexpected findings afterwards, and typically fewer mistakes. Planning also saves time. In addition, this type of strategy is based on valuable modus operandi that can be used and ameliorated repeatedly while saving resources needed to create new schemes – long-term planning simply translates into much better results. It is no different

in the case of commercialisation and technology transfer. Yet, it seems that across the EU, especially in RIS countries, the planning related to IP and technology transfer is short-sighted. Two main challenges were mentioned and discussed during the roundtable meeting. Each of them is presented below, together with recommendations and inspiring best practices that could change the unperfect status quo related to short-sighted planning trends.



CHALLENGE AHEAD (1):

Revenue-driven thinking. Entrepreneurs willing to commercialise their products, services or processes tend to focus too much on the revenues while forgetting that other spillover effects of “good innovations” might be equally important, i.e., new forms of cooperation. Apart from a focus on revenue, there are four other aspects of “washing out” the social sense of innovation, noticeable in economic activity and public discourse:

This thinking needs to be complemented by the **social dimension of innovation**.

1. **Focusing on technological innovations;**
2. **Paying attention to the transfer of codified knowledge;**
3. **Emphasising the role of the supply side of innovation;**
4. **Lack of sufficient recognition of the innovative potential social sciences.**



RECOMMENDATIONS:

Before coming up with medium and long-term strategies, one should decide who will do what and when? Once this is clarified, the strategies should emphasise:

1. Study examples of social innovation and its translation to technological innovations. Measure the innovations’ social impact;
2. The importance of informal and culturally conditioned knowledge and innovation mechanisms involved;

3. The role of the demand side in innovation (and involvement of the perspective customers, users, beneficiaries and patients in the process. Validate!);

Recognising the importance of social innovation, including all its dimensions as shown by the figure below, is a condition for the effectiveness of policies to support the overall entrepreneurship ecosystem.

The key dimensions of social innovation*



BEST PRACTICE:

The increasing interest in social innovation in the MS and EU is reflected in the rising number of past and current research activities and projects conducted in this field. On a pan-European level, the topic is horizontally present across many funding programmes, predominantly Horizon2020 (H2020 from the recent Research and Innovation FP). For example, **the Entrepreneurial skills for young social innovators in an open digital world (DOIT)**⁷ project's objective is to create and scale a new scheme for early-stage entrepreneurship education in the EU "and nurture the seeds of active social

innovation in young pupils, namely an entrepreneurial mindset, know-how and skills" which would indeed highlight the importance of social innovation⁸. The project targets children aged between 6 and 16 years, as well as their teachers willing to apply innovative tools and methods that could tackle societal problems, i.e. those spanning from the SDGs. All outputs created within the DOIT, are designed "to provide the experience of being a social innovator in mobile and fixed child-friendly spaces"⁹.



7. DOIT. *DOIT – A European Initiative*. Retrieved from <https://www.doit-europe.net>.
8. Ibidem.
9. Ibidem.

* **Source:** based on SOCIAL INNOVATION: TOWARDS A NEW INNOVATION PARADIGM, https://www.researchgate.net/publication/312545796_SOCIAL_INNOVATION_TOWARDS_A_NEW_INNOVATION_PARADIGM



CHALLENGE AHEAD (1):

The end consumers are not always involved in the process/product development from the very beginning. At the same time, the dynamic environment in which enterprises operate, increasing competition and convergence of industries, systematic and dynamic development of technology (communication and digitisation) make it possible to build

more and more interactive relations between market participants, which makes it necessary to involve an increasing number of potential end users in the process of creating innovation. Thus, the effects of the traditional approach cease to meet the needs and expectations of recipients while ineffectively involving more and more funds.



RECOMMENDATIONS:

The consumer engagement process is complex; the involvement of end users in the innovation cycle is even more complicated as it usually requires a multi-stage and multi-faceted communication strategy. Yet, it is a core element of a successful market research. An essential assumption for conducting such communication could be to use the Internet and mobile technology achievements. The very activity needs to be close to the values of the innovators, as modern consumer involvement and engagement

should be based on the quality of the products and services provided, as well as the authenticity and transparency of the organisation at stake. What influences the involvement (or its lack) of demanding prosumers includes communicating the needs and providing feedback. Modern customer communication platforms enable the direct measurement of consumer engagement; hence the involvement of the end users should always be considered in short-, medium- and long-term strategies.



BEST PRACTICE:

The EU MS and EU bodies provide multiple open-access databases that can be crucial in discovering potential market and end consumers behaviours and preferences. These official data and statistics (then gathered in various sections of the Eurostat¹⁰) give credibility to different projects. Moreover, to understand sectoral trends and consumer protection issues across the EU, one can visit the European

Consumer Organisation (BEUC) website¹¹, where publications and articles on consumer issues of importance to Europeans are available. Last but not least, a number of sector data statistics, i.e. on health, energy, or the food industry, is also available on respective Directorates-General (DGs) websites.

10. Eurostat. *Your key to European statistics*.

Retrieved from <https://ec.europa.eu/eurostat>.

11. BEUC. Landing page. Retrieved from <https://www.beuc.eu>.



Stream 3:

Entrepreneurship training to close the skills gap for the successful commercialization



Entrepreneurial competencies are not only key in business, but also contributes to personal development and better understanding of the socio-economic environment we live in. This is of particular importance for the EIT RIS countries, where the strategic goal of the socio-economic policy is to dynamize innovative development processes to raise the level and quality of

life to the standards of the most developed countries, with higher scores in the EIS. Therefore, while the roundtable participants highlighted several enablers and barriers relevant to successful entrepreneurial education, a follow-up workshop was also organised where concrete recommendations were presented.



CHALLENGE AHEAD (1):

Lack of entrepreneurial education from an early stage across the EU. In many EU MS, entrepreneurial courses commence in high school, if not later.

Entrepreneurial education should be introduced in the curriculum from the early years, adjusted to the changing needs and competences of kids and adolescents.



RECOMMENDATIONS:

Entrepreneurial education should be added to the curriculum from a very early age – preferably primary education as it is a process of constant experimenting that should be developed throughout all education stages. Indeed, the literature underlines the impact that entrepreneurial classes can generate on students, especially later in life in terms of seizing opportunities for greater financial independence, dignity, and self-respect¹², but also benefits the MS and EU overall through economic growth and lower youth employment. Similarly, numerous experimental endeavours prove that the programmes tailored for preschool-aged children increase their overall entrepreneurial spirit. For example, in 2015 Axelsson, Hägglund, and Sandberg¹³ conducted a study in five Swedish preschools, which proved that activities initiated primarily through the children's own will and inte-

rest have a positive effect on entrepreneurial activities and skills learning. Similarly, in 2014 Huber et al.¹⁴ focused on the usefulness of an entrepreneurship course taught at the final grade of the Dutch primary school. The main finding was that the course positively impacted numerous non-cognitive entrepreneurial skills, including risk-taking propensity, creativity, need for achievement, self-efficacy, pro-activity, persistence, and analysing.

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12. Wilson, F., Marlino, D. and Kickul, J. (2004) *Our entrepreneurial future: Examining the diverse attitudes and motivations of teens across gender and ethnic identity*. Journal of Developmental Entrepreneurship 9(3): 177–197.
 13. Axelsson, K., Hägglund, S. and Sandberg, A. (2015). *Entrepreneurial Learning in Education: Preschool as a Take-Off for the Entrepreneurial Self*. Journal of Education and Training 2(2): 40-58.
 14. Huber, R., Sloof, L. and van Praag, C. M. (2014). *The effect of early entrepreneurship education: Evidence from a field experiment*. The European Economic Review 72(11): 76–97.



BEST PRACTICE:

In the Netherlands, under the wider BizWorld¹⁵ programme umbrella, the Jong Ondernemen – Learning by Doing programme¹⁶ operates to teach children the fundamentals of entrepreneurship. It aims at promoting teamwork and leadership in the primary schools through experiential learning approaches and could easily be scaled to other EU MS.



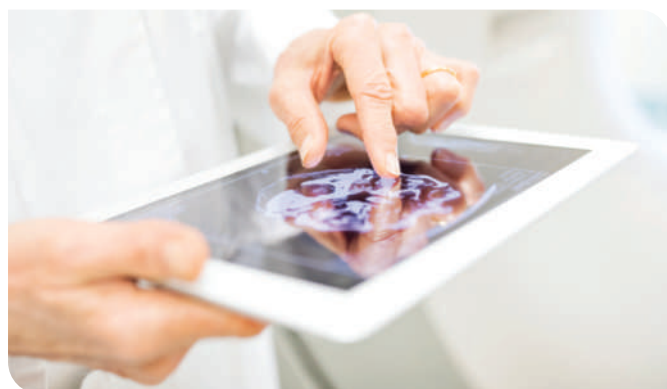
CHALLENGE AHEAD (2):

Entrepreneurial education among many EU MS is designed in siloes. It is either too narrow or too broad. It does not fit into today's realities.



RECOMMENDATIONS:

Entrepreneurship training should focus on practical cases: understanding and decomposing the technology (into core elements that allow capitalising and possible market applications) and identifying customers and industry partners. At the same time, creativity and entrepreneurship training should not be focused only on leadership but also on developing some narrow and specific skills (what would be of the utmost importance for future co-founders, for example). It should ensure a capability to cooperate and work with people from other fields (open mindedness not only of businesspeople but also representatives of academia or public authorities, where being entrepreneurial is also, if not equally, important). In 2017 Davidsen and Sørensen¹⁷ came up with tailored recommendations on how to use such a design-driven approach to entrepreneurial education



(including design thinking) in public schools that would solve the issue of entrepreneurship education being designed in silos and focused on one area only. Their methodology, or perhaps rather design perspective, adds a new creative approach that includes working with imagination; it adds new methods and combines thinking and doing. In that sense, it provides a paradigm shift, changing the traditional didactic assumptions of entrepreneurship education. The table below illustrates some unique features of such holistic entrepreneurial education, such as emphasis on not only problems but also on opportunities¹⁸, iterative experimentation in collaboration with external stakeholders, and focus on (or even requirement of) newness or innovativeness of created value¹⁹.

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15. Bizworld. Landing page. Retrieved from <https://bizworld.org>.
 16. Jong Ondernemen. Landing page. Retrieved from <https://www.jongondernemen.nl>.
 17. Davidsen, H. M. and Sørensen, K. B. (2017). *A Holistic Design Perspective on Entrepreneurship Education*. *Universal Journal of Educational Research*, 5(10): 1818-1826. <https://doi.org/10.13189/ujer.2017.051020>.
 18. Rae, D. (2007). *Entrepreneurship: from opportunity to action*. New York, NY. Palgrave Macmillan.
 19. Shapero, A. and Sokol, L. (1982). *The social dimensions of entrepreneurship*. *Encyclopedia of entrepreneurship*, 72-90.

Comparison of pedagogical approaches.
Similarities and differences between entrepreneurial education
and some pedagogical approaches are often stated to be similar*

Major focus on...	Entrepreneurial education	Problem-based learning	Project-based learning	Service-learning
...problems	X	X	X	X
...opportunities	X			
...authenticity	X	X	X	X
...artifact creation	X		X	
...interactive experimentation	X			
...real world (inter-)action	X			X
...value creation to external stakeholders	X			X
...team-work	X	X	X	
...work across extended periods of time	X		X	X
...newness / innovativeness	X			
...risk of failure	X			

 **BEST PRACTICE:**

A good example in this line of reasoning is the work of Blank²⁰, Reis²¹ and Osterwalder²², who created a philosophy and a set of tools for management and entrepreneurial education, the so-called Lean Start-up²³, based on deep practice and observation, but methodically verified²⁴.

The Lean Start-up methodology focuses on short feedback loops of building a solution, measuring the effectiveness and learning from the feedbacks. This is the core of EIT Jumpstarter, adjusted to the needs of deeptech projects in the Emerging European environment. In EIT Jumpstarter we educate researchers, PHD students and business idea holders how to build a scaleable business model around the project and validate it. Validation is key in the early stages to check the need for the solution. Even if the team finds out that there is no market for their innovation, during the program they gained knowledge and network. Since 2017, we educated more than 500 deeptech teams, and supported the creation of 45 start-ups during the program.

After several years of its implementation at the best American universities (mainly in technical faculties), the American National Science Foundation and the National Institutes of Health are currently financing a wide-ranging program of educating specialists and scientists in life sciences towards

entrepreneurship (Lean LaunchPad for Life. Science & Healthcare²⁵). This programme implements and disseminates education in the spirit of lean and is an experiment that gives hope for a new "opening" to innovation (and at the same time savings) in the healthcare system and institutions. We will probably have to wait at least a few years for the data to verify the effectiveness of this venture, but already at this stage, the project well illustrates the importance that can be attached to a wide, yet precise entrepreneurial education as a key element of the triad: education-entrepreneurship-economy.

20. Blank, S. (2013). *Why the lean start-up changes everything*. Harvard Business Review, 91(5): 63–72.
 21. Reis, E. (2011). *The Lean Startup*. New York: Crown Business.
 22. Osterwalder, A. and Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers*. John Wiley & Sons.
 23. The Lean Startup. Landing page. Retrieved from <http://theleanstartup.com/principles>.
 24. Blank, S. and Dorf, B. (2012). *The startup owner's manual*. K&S, Ranch.
 25. Science News: <http://news.sciencemag.org/biology/2014/04/nih-looking-kick-start-biotech-startups> and Huffington Post: http://www.huffingtonpost.com/steve-blank/lean-launchpad-for-life-s_b_4212335.html

* Source: Lackéus, M. (2015). *Entrepreneurship in education - what, why, when, how*. Background paper, OECD Publishing, Paris, p. 16.

Workshop 3:

Recommendations and actions to design entrepreneurship knowledge training on commercialisation and technology transfer



During the workshop, participants presented their ideas that could improve the overall quality of entrepreneurship training programmes across the EU, hence the skill set of citizens enrolled. While presenting concrete recommendations, workshop participants simultaneously listed key stakeholders who could be responsible for implementing

the actions at stake. These recommendations were intended as general guidelines for the EU, without taking into account the specificity of individual MS. The selected recommendations relate to local, regional, and national authorities work and pan-European initiatives that support innovation, such as the ones provided by the EIT.



RECOMMENDATIONS:

- **Coachability of teams is an important aspect** – one can only support those who are in need and those who are open for advice.
- **One needs to keep in mind that not everyone has to be an entrepreneur**, but we all need basic entrepreneurial knowledge to speak the same language, so entrepreneurial education should not only be focused on gaining leadership skills.
- **Examining regional differences is important** – some nations are more eager of risk-taking.
- **According to MIT research, successful entrepreneurs are very diverse people²⁶**; hence we cannot categorise and/or find them based on one-two characteristics; there is no such thing as an ideal entrepreneurial personality.
- **Implementation of entrepreneurship training needs to take place at an early stage.** From early years children need to know that “failure is OK” and failing is just part of the journey. The ability to redesign/restart is as important as achieving success; a risk-taking attitude pays off sooner or later.



Design entrepreneurship training

Action	Target stakeholder(s)
Changing the mindset about entrepreneurship – the celebration of success stories, training activities or camps, among others	Stakeholders from the entrepreneurial ecosystem; schools and universities; entrepreneurship programme providers such as the EIT Jumpstarter) business – chambers, Small and Medium-Sized Enterprises (SMEs); civil society, including communities and Non-governmental Organisations (NGOs); interest groups (such as intermediary organisations, or trade unions)
Design entrepreneurship training for (high) school pupils	Educational institutions such as schools, training centres, universities, Higher Education Institutions (HEIs)
Providing entrepreneurship education and skill training – from basics knowledge to soft skills	Entrepreneurship stakeholders, such as entrepreneurship programs, investors, companies, educational institutions including TTOs, or chambers
Pitch training (tips and tools that help one communicate the product or process value in any length of pitch)	Entrepreneurship stakeholders, such as entrepreneurship programs, investors, companies, educational institutions including TTOs, or chambers
Examining regional factors	Stakeholders from academia; local and regional policymakers; regional entrepreneurship initiatives such as incubators



OTHER BEST PRACTICES:

- **Commercialisation Reactor²⁷ masterclasses** are worth mentioning as they focus precisely on the practical side of entrepreneurship training by showcasing real start-up cases that participants can replicate in their businesses.
- **GE Healthcare has a subprogramme** under HealthVentureLab (HVLAB)²⁸ targeting high school pupils where they must create an imaginary product and pitch at the end of the programme.

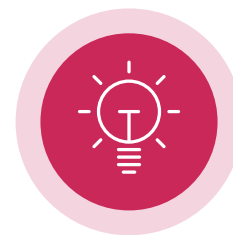
26. MIT. *How to elevate an inclusive community of entrepreneurs*. Retrieved from <https://mitsloan.mit.edu/ideas-made-to-matter/how-to-elevate-inclusive-community-entrepreneurs>.

27. Commercialisation Reactor. Landing page. Retrieved from <https://www.commercializationreactor.com>. 28. HVLAB. Landing page. Retrieved from <https://hvlab.eu>.

28. HVLAB. Landing page. Retrieved from <https://hvlab.eu>.

Stream 4:

Further policy interventions fostering innovation



The roundtable highlighted the key factors and barriers to fostering innovation and challenges facing Europe in the context of the development of innovation policies.

At the same time, it has been agreed that innovation is a broad concept and should be interpreted from the perspective of various stakeholders – depending on who is working on innovations, who implements them and who uses them.



CHALLENGE AHEAD (1):

Fragmentation of Europe. The European Union policies are strongly focused on research and innovation. Horizon Europe, the funding programme for 2021–2027 with a budget of EUR 95.5 billion, introduced new instruments which will further facilitate the implementation and development of research and innovation in knowledge-based areas within the EU. These instruments include new objective-driven partnerships with industry to realise Horizon Europe goals, open science approach, and market-creating innovative solutions supported by the EIT, the European Innovation Council (EIC), and European Innovation Ecosystems programmes with a total budget of more than EUR 13.6 billion²⁹.

However, what remains a challenge is the EU fragmentation on different levels: regulations, Research and Development (R&D) spending, Venture Capital (VC) investments.

The analysis of R&D spending globally and in various EU MS shows the disparities in absolute expenditure and the percentage of GDP. Among ten leading countries by gross R&D expenditure in 2021, which account for around 80% of global spending, two are EU MS: Germany (EUR 112.5 billion) and France (EUR 59.3 billion). China, the leading country, spent around EUR 549.3 billion, followed by the USA – EUR 529.2 billion³⁰. When analysing the percentage of GDP spent on innovation in EU MS, one can observe disparities as well. Austria, Finland, and Sweden spend 3.1% of their GDP on R&D, Denmark and Germany – 2.9%, Slovenia – 2.4%, whereas Estonia – 1.4%, Portugal – 1.3%, Spain – 1.2%, Poland – 0.9% according to the UNESCO Institute for Statistics (UIS)³¹. Pan-European initiatives have a role to play in ensuring equal opportunities. One of the EIT RIS missions is to bridge the gap between regions that are innovation leaders and those that are still developing.



29. EC. (2021). *Horizon Europe, pillar III - Innovative Europe. Supporting and connecting innovators across Europe*. Retrieved from <https://op.europa.eu/en/publication-detail/-/publication/377dbf20-b91d-11eb-8aca-01aa75ed71a1/language-en/format-PDF/source-search>.
30. Survey done in 2020 – the data presented is the forecast for 2021. <https://www.statista.com/statistics/732247/worldwide-research-and-development-gross-expenditure-top-countries/>.
31. UIS. R&D spending. Retrieved from <http://uis.unesco.org/apps/visualisations/research-and-development-spending/>.



CASE STUDY

Dealing with EU fragmentation was highlighted during the roundtable as one of the priorities. Some regulations do not allow looking from a broader, pan-European perspective in the innovation area. Hence, a single market needs to be put first (as opposed to 27 different ones). The fragmentation of Europe can lead to difficulties with adequate funding, attracting investments, proper scale of innovative solutions' implementation, as well as developing innovations beyond Europe.

One of the examples within the innovation area where EU fragmentation is noticeable is connected automated driving. Regulatory fragmentation may be one of the obstacles to wider technology imple-

mentation/usage. Research and testing should be validated EU-wide, the traffic rules and traffic sign infrastructure should be unified among EU countries³². Some EU MS already implement laws enabling autonomous driving, while others are cautious about introducing new regulations. In 2017, the German Parliament introduced the German Road Traffic Act ("Straßenverkehrsgesetz"). The act allows vehicles with automated systems, enabling drivers to distract from driving. According to the law, although the steering system is automated, the driver is required to stay focused and return to driving if necessary. In 2021, Germany implemented the new "Straßenverkehrsgesetz" as the first country, allowing fully automated driving on public roads without driver's interventions³³.



BEST PRACTICE:

In 2017, the European Commission Vice-President, Maroš Šefčovič, launched the European Battery Alliance. The Alliance's main goals include clean and sustainable energy transition and increase of European competitiveness in the mobility sector through the development of

battery technology. The Alliance is supported by the European Investment Bank and the EIT InnoEnergy and brings together EU states and more than 700 industrial and academic partners³⁴. Thanks to the Alliance cooperation, it is expected that by 2025 around 4 million jobs will be created³⁵.



CHALLENGE AHEAD (2):

Cultural transition. Creating policy frameworks and introducing regulations is a necessary element of the effective implementation of innovation, but without the right mindset, innovation will not be created, and success will be short-term and limited. According to the roundtable participants, policy should focus on enabling cultural transition.

32. ERTRAC. (2019). *Connected Automated Driving Roadmap*. Retrieved from <https://www.ertrac.org/uploads/documentsearch/id57/ERTRAC-CAD-Roadmap-2019.pdf>.
33. Global Compliance News. *Germany: German Government introduces bill for "Level-4" highly automated driving*. Retrieved from <https://www.globalcompliancenes.com/2021/03/30/germany-german-government-introduces-bill-for-level-4-highly-automated-driving-23032021/>.
34. EC. *European Battery Alliance*. Retrieved from https://ec.europa.eu/growth/industry/strategy/industrial-alliances/european-battery-alliance_pl.
35. EC. *Speech by Vice-President Šefčovič at the press conference following the 5th high-level meeting of the European Battery Alliance*. Retrieved from https://ec.europa.eu/commission/presscorner/detail/en/speech_21_1142.



RECOMMENDATIONS:

Entrepreneurs and business creators are essential for EU economic growth. As was highlighted in previous chapter, the roundtable participants discussed the importance of early entrepreneurial education. Cultural transition requires education. The framework for supporting early

entrepreneurial training and curriculum should be created at the EU level and implemented nationally.

Pan-European organisations, such as EIT, might be the driver to push forward this idea to make such education official and obligatory.



BEST PRACTICE:

As was analysed in the previous chapters, some EU MS have already implemented entrepreneurial values and culture into the schools. Denmark is another example, being a pioneer in creating the strategy for early entrepreneurial education, starting from the primary school. In 2009, the EU established the strategic framework for cooperation in education and training with objectives to be pursued until

2020³⁶, including enhancing entrepreneurship in all education stages. Denmark started inter-ministerial cooperation following this framework and established the Danish Foundation for Entrepreneurship. Effectively, entrepreneurial education was introduced. In 2018, the first generation who learned entrepreneurial skills throughout the primary education period graduated from elementary schools³⁷.



CHALLENGE AHEAD (3):

Insufficient proof-of-concept (PoC) funding.



RECOMMENDATIONS:

The PoC funding is needed. Roundtable participants suggested that one of the key elements of successful commercialisation is access to PoC funding at universities. It was highlighted that in Central, Eastern and Southern Europe, it is one of the barriers when it comes to business creation. It is worth noting that funding is just an instrument.

It is essential to support the commercialisation process comprehensively. What was also highlighted is the importance of proper evaluation of the commercialisation process (knowledge generation) as such evaluations may contribute to institutional learning and performance improvement.



36. EC. *European policy cooperation (ET 2020 framework)*. Retrieved from https://ec.europa.eu/education/policies/european-policy-cooperation/et2020-framework_en.

37. ELM Magazine. *First generation of Danish "entrepreneurial natives" emerging*. Retrieved from <https://elmmagazine.eu/news/first-generation-of-danish-entrepreneurial-natives-emerging/>.



BEST PRACTICE:

One of the EIT programmes – the EIT Health RIS Innovation Call – supports the development of innovative healthcare projects from progressing European regions.

The programme is dedicated to partnerships developing projects in the PoC phase. The partnerships receive funding, mentoring, training, matchmaking with the EIT Health partners, and networking. Apart from the funding guaranteed by the programme, in 2019 and 2020, projects supported by the EIT Health RIS Innovation Call attracted an additional EUR 2.6 million³⁸.

Another example of existing PoC funding programmes for researchers is the ERC PoC grant. It aims to facilitate the further innovation development process and explore the commercial potential of ERC-granted research projects. The PoC grant is the next step in the innovation journey: from basic research to commercialisation. The PoC grant allows validating the idea, funding the additional research, providing IPR and knowledge transfer strategy, helping with the market due diligence, and providing the researchers with potential partners from industry, academia, and policymakers³⁹.

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38. EIT Health. (2021). *Bridging European gaps: thriving healthcare innovation in emerging regions*. Retrieved from https://eithealth.eu/wp-content/uploads/2021/08/EIT-Health-RIS-Innovation-Call-2021_.pdf.
39. ERC. *PoC*. Retrieved from <https://erc.europa.eu/funding/proof-concept>.



Workshop 4:

Policy and funding frameworks



At the workshop, participants recommended actions in the policy and funding domain that would help foster innovation in the EU. They also listed key stakeholders who might be responsible for implementing those actions. Participants identified a range of issues that need to be address-

sed at an EU level. These recommendations were intended as general guidelines for the EU without taking into account the specificity of individual MS. The selected recommendations relate to the work of pan-European initiatives that support innovation, such as EIT and EIC.



RECOMMENDATIONS:

- 1. Unlock further funding possibilities for commercialisation and entrepreneurship.** Successful partnerships within the pan-European initiatives should transfer the knowledge and best practices related to funding opportunities.
- 2. Promote funding for commercialisation and entrepreneurship.** Using communication tools to promote success stories and best practices related to funding opportunities and the outcomes from the programmes, education initiatives, start-ups investments.
- 3. Alignment of funding instruments.** Supporting instruments such as public funding and EIT activities should complement, not compete.
- 4. Create joint programmes.** The joint programmes aim to combine existing pan-European initiatives and national efforts to tackle common European challenges more effectively. An example of such a joint initiative is the EIT and EIC cooperation, which pursue Horizon Europe third pillar's objectives. The activities of both institutions are complementary, and the areas of activity include: identifying start-ups/SMEs, supporting them in the innovation journey, implementing the FastTrack process along with the co-investment, and providing advisory and networking opportunities⁴⁰.
- 5. Create contact points for the EIT community about synergies of funding opportunities.** Horizon Europe 2021-2027 gave new instruments to create partnerships. Contact points are another opportunity to provide beneficiaries with comprehensive knowledge about joint programmes.



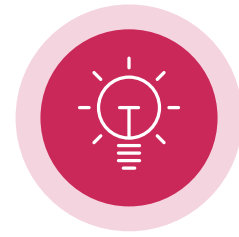
40. EIT. *EIC – EIT: Working closer together for Europe's innovators*. Retrieved from <https://eit.europa.eu/news-events/news/eic-eit-working-closer-together-for-europes-innovators>.

Policy and funding frameworks

Action	Target stakeholder(s)
<p>Unlock further funding possibilities for commercialisation and entrepreneurship</p>	<p>EIT partners of the knowledge triangle; Cross-KIC working groups related to policymaking and finance; universities; research institutions; R&D units of companies, funding agencies; investors; business ventures; hubs (university-based) incubators and accelerators</p>
<p>Promote funding for commercialisation and entrepreneurship</p>	<p>Commercialisation stakeholders, such as EIT partners of the knowledge triangle; Cross-KIC working groups related to policymaking and finance; universities, research institutions, R&D units of companies; innovators: patents, spin-offs, start-ups, projects; hubs; incubators; accelerations; investors, business ventures; other stakeholders involved in supported projects</p>
<p>Alignment of funding instruments</p>	<p>EIT; Cross-KIC working groups related to policymaking and finance; funding authorities such as European Commission; national and regional funding authorities; Joint Research Centre; innovation policymakers, decision-makers</p>
<p>Create joint programmes</p>	<p>EIT; Cross-KIC working groups related to policymaking and finance; funding authorities such as European Commission; national and regional funding authorities; EIC; Joint Research Centre</p>
<p>Create contact points for the EIT community about synergies of funding opportunities</p>	<p>EIT; Cross-KIC working groups related to policymaking and finance; EIT partners of the knowledge triangle; universities, research institutions, companies, and other stakeholders involved in successfully funded projects; EIT RIS Hubs; NCPs; EEN and further funding information providers; funding representatives, such as ambassadors; associations; chambers and networks working in the funding ecosystem</p>

Stream 5:

The role of intergovernmental cooperation and PPPs in enabling innovation



The roundtable clearly highlighted the role of PPPs and outlined the directions of short-term and long-term government interventions in the area of research and innovation.



CHALLENGE AHEAD (1):

Partnership synergy. One of the key parts of a successful commercialisation process is a partnership. The roundtable participants identified some key advantages of partnerships in the research and innovation area. Cooperation allows all parties to take care of the fields they are most experienced and specialised in, while learning new skills from the parties taking care of other matters. Furthermore, cooperation is typically reflected in increased commitments to R&D funding.

Cooperation with industry and VCs should be secured from the fledgling stage of the commercialisation process. Yet, it can still be a challenge, especially in Central, Eastern,

and Southern Europe. When analysing the VC global investments, Europe is making progress – over the last decade it grew six times to more than EUR 21 billion in 2020.

However, Europe is still lagging behind the US. In Central, Eastern, and Southern Europe, the VC funding shortfall is even more evident. According to the recent data from Dealroom, there are 643 VC companies in France, in Germany – 796, whereas in Italy – 247, Poland – 116, and Hungary – 40⁴¹, suggesting the significant impact of partnerships and support of pan-European institutions in creating an innovation ecosystem.



CASE STUDY

In 2021 EIT Health, together with the Polish Medical Research Agency and industrial partners (AstraZeneca, Roche, Microsoft, and Polpharma), launched the Warsaw Health Innovation Hub (WHIH). The initiative

is an example of a PPP, aiming at supporting and creating innovative solutions, targeting gaps in the Polish healthcare sector in various areas, including medical technology, biotechnology, health IT, legal solutions⁴².



41. Sifted. (2021). *The data: European vs US VCs*. Retrieved from <https://sifted.eu/articles/europe-us-vc>.

42. WHIH. *About WHIH*. Retrieved from <https://whih.abm.gov.pl/whe/about-us/about-whih/70,about-WHIH.html>.



BEST PRACTICE:

Israel is considered one of the global leaders of innovation, leading in global innovation rankings. According to data from 2019, Israel is the top innovation country, measured by the venture capital raised per capita⁴³. This country has a unique entrepreneurial culture and mindset, which cannot be easily applicable in other countries – although Europe can learn and implement (and already does so) some of the elements of the Israeli innovation strategy. An example of an intervention by the Israeli government that strengthened

Israel's further domination in the global innovation area was the strategy towards supporting private investments. The Israeli government's initial focus was the VC funds, which received massive government support, and therefore the risk of investment was very low from the VC perspective. With this strategy, Israel attracted investors and once the VC ecosystem flourished in Israel, shifted its focus to early-stage start-ups, incubators, tech transfer, attracting foreign industry expertise to the local ecosystems.

43. Cardumen Capital. (2020). *Israel Funding Ecosystem*. Retrieved from <https://cardumencapital.medium.com/israel-funding-ecosystem-44878280bf00>.

Workshop 5: Recommendations and actions to enhance collaboration between commercialisation and technology transfer stakeholders



The workshop's topic aimed at providing recommendations and defining stakeholders, who might be key drivers of those actions, to enhance collaboration between commercialisation and technology transfer experts. The discussion concerned a slightly wider topic – development/implementen-

tation of innovative solutions and enhancing collaboration on a regional level, based on a case study from the Baranya region in Hungary.

The discussions in this Workshop were based on the case study "The Silver Economy in Baranya".

Observation:

The Baranya region presents many advantages in Hungary, such as an advanced healthcare system (more than the national average), low prices of a property, focus on the environmental, health and creative industries, and significant contribution of the multi-ethnic population (the Baranya region is inhabited by the greatest number of minorities in Hungary – including more than 1/3 of Germans and 1/3 of Southern Slav minorities⁴⁴).

Ideas on how to enhance collaboration in the region:

Support regional development, make the Baranya region a "Florida" state with a strong focus on health and well-being that will attract seniors and retirees (the „silver generation“).

44. Pecs economy. *Baranya County*. Retrieved from <https://pecseconomy.eu/baranya-county/>.



RECOMMENDATIONS:

1. **Stakeholder mapping.** Key stakeholders identified are the university, local government, international organisations, and authorities. All these stakeholders should pursue common goals: those affected by a common problem are more likely to join forces and work together to solve it.
2. **Lobbying.** Involvement of local representatives of public administration and lobbying outside the Baranya region (at the national and EU level).
3. **Building an official exchange platform.** An example of such a platform is the “advisory group”. Giving a stake to stakeholders helps raise their level of involvement and brings them around a table to foster external/public involvement (for instance, regional government/funding).
4. **Creating and promoting a story.** The vision presented should:
 - a) involve as many people as possible: the multiple layers of entrepreneurship and innovation must be considered. The idea is to show that the project opens up entrepreneurial opportunities in any direction;
 - b) be used as a tool to engage local players. Including them as an integral part of the story from the very beginning will encourage them to be more involved;
 - c) include the ambassadors that will help spread the story among the stakeholders. Existing networks should be included in the process (the example of such a network is EIT Health and its cooperation with the University of Pecs).
5. **Identifying a promoter.** Usually, the promoter is a politician or a famous name from the business sector, who will launch the project, and later will be the front person.
6. **Expanding outreach and communication.** Create buzz around the idea. This can be done by organising a conference to select ideas and attract additional stakeholders (NGOs, external actors, politicians). Connecting people during the event will also contribute to building a network which in turn will bring new opportunities and knowledge.

Enhance collaboration Case study: Silver economy in Baranya

Action	Target stakeholder(s)
Stakeholder mapping	University; local government; international organisations
Lobbying	Political stakeholders: decision-makers; policymakers and public officials
Building an advisory group of key stakeholders who support external/public engagement	Regional decision-makers; funding agencies; university representatives
Creating and promoting a „story” to open entrepreneurial opportunities	Ambassadors; local stakeholders, PR agencies; media
Identifying and accepting a promotor	Ambassadors and influencers
Identifying and accepting a promotor	Additional stakeholders: ex-situ actors; politicians; NGOs; World Health Organisation (WHO); pan-European organisations (including EIT)

List of abbreviations

BEUC	European Consumer Organisation
DG	Directorates-General
EC	European Commission
EIC	European Innovation Council
EIS	European Innovation Scoreboard
EIT	European Institute of Innovation and Technology
EU	European Union
FP	Framework Programme
HEIs	Higher Education Institutions
IP	Intellectual Property
KICs	Knowledge and Innovation Communities
MS	Member States
NGO	Non-governmental Organisation
PoC	Proof of Concept
R&D	Research and Development
RIS	Regional Innovation Scheme
SDGs	Sustainable Development Goals
SME	Small and Medium-Sized Enterprises
TTOs	Technology Transfer Offices
UIS	UNESCO Institute for Statistics
UN	United Nations
VC	Venture Capital
WHO	World Health Organisation



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Appendix 1: Roundtable meeting participants

Last name	First name	Company
Amador	Miguel	EIT Health InnoStars
Barel	Adi	EIT Hub Israel
Bodnar	Yulia	EIT Food CLC North-East
Bognar	David	EIT Health InnoStars
Brzeziński	Michał	EIT Health InnoStars
Esmail Zaei	Mansour	University of Warsaw
Felici	Faustine	EIT Health InnoStars
Goraczek	Małgorzata	EIT Health InnoStars
Górzyński	Michał	EIT
Gulchak	Ilona	Commercialization Reactor
Hajdu	Peter	Moderation
Incorvaja	Luke	EIT
Judit	Jobbágy	EIT Health InnoStars
Kaczmarek	Marta	EIT Health InnoStars
Kele	Balázs	EIT Health InnoStars
Klein	Markus	EIT Raw Materials
Kozma	Andrea	CEU InnovationsLab
Krauzlis	Milda	EIT Food CLC North-East
Levenfeld	Yoni	EIT Hub Israel
Marosvolgyi	Dora	EIT Health InnoStars
Matias	Inês	EIT Health InnoStars
Meissner	Zofia	EIT Health InnoStars
Mogyorósi	Péter	Laser Consult Kft
Nagy	Peter	EIT Health InnoStars
Nawrocki	Piotr	University of Warsaw
Peli	Anna	EIT Health InnoStars
Prorok	Magdalena	Cracow University of Economics
Sebestyen	Adam	EIT Manufacturing
Sharon	Maayan	EIT Hub Israel
Sik	Attila	University of Pecs
Szobol	Szilard	EIT Health InnoStars

www.eithealth.eu

AUTHOR: KAROLINA ZUBEL

CONTRIBUTORS: FAUSTINE FELICI,
MALGORZATA GORACZEK

REVIEWED BY: DORA MAROSVÖLGYI



Co-funded by the
European Union