European Innovation Council

Report

# Backing visionary entrepreneurs

## Realising the Deep-Tech Entrepreneurial Talent of Europe

Report of the EIC expert group on design of the EIC Marketplace and Tech to Market activities

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# FOREWORD AND ACKNOWLEDGEMENTS

The European Innovation Council (EIC) is Europe's most ambitious Innovation Programme. Its comprehensive policy instruments cover the entire innovation journey from the earliest stages of technological development to market entry and beyond. This said, we argue that EIC can't succeed without including in its mandate the objective of proactively realising the entrepreneurial talent of Europe's brilliant scientists.

In short, the EIC should consider itself an entity that is both fostering technological solutions *and* realising human entrepreneurial talent. We recommend that the EIC should do this through the creation and implementation of two ambitious programmes: Trailblazer and Pioneer.

The report of this expert group is a product of its members who shared their time and expertise. A special thank you goes to Cheryl Martin who was extremely generous with her expertise, time, and energy as subgroup lead.

The expert group is thankful to the EIC staff for their support and input. We would especially like to thank Frédérique Péron-Lührs, Nicolas Sabatier, Romain Bouttier, Jonas Meuleman, Viorel Peca, Veronica Beneitez Pinero, Marco Giorgini, and Simon Hertig.

While this report is the product of the expert group, the responsibility for any omissions or errors is mine.

My sincere gratitude to all who contributed to producing the report

Lars Frolund, Chair of the Expert Group

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# Executive Summary

For the EIC to be successful it needs to take responsibility not only for promoting the development of breakthrough technologies, but also for developing the human talent, the scientific entrepreneurs, that can bring these technologies to the market. To achieve this, our core recommendations comprise: 1) the creation of the EIC Trailblazer Programme *and* the Pioneer Programme to ensure that there is a dense pipeline of entrepreneurial deep tech talent to bring an invention to the market; and 2) implementation of these programmes in a phased manner using pilot projects to allow for experimentation and learning, utilising partners as appropriate for efficiency and to avoid overlap.

# Introduction

For Europe to deliver on its mission-oriented commitments, new technologies, which are or will be developed, need to become products and then be scaled. A significant, early-stage pipeline of high-quality projects, even larger than today, led by entrepreneurial scientists and engineers is necessary to deliver sufficient solutions. Europe has a history of outstanding support for basic science and has developed a significant amount of knowledge, published in scientific journals by faculty and outstanding PhD candidates and postdocs. Often, however, funding and support for early translational endeavors (such as the availability of funding for prototype development and access to advanced experimentation facilities) is sparse and is generally seen as either too applied for research universities or too risky for corporations or private investors[1]. There are also important gaps in engagement between academic scientists and engineers and the broader entrepreneurial ecosystems necessary to bridge new concepts with market needs and drive impact.

We believe EIC should take responsibility not only for financing programmes that identify and support outstanding solutions in its mission areas, but also for creating a new generation of deep-tech entrepreneurs, EIC Innovators, that develop solutions to some of our world's pressing challenges which then will play a key part in further development of Europe's innovation ecosystems. This involves creating the right conditions for these scientific entrepreneurs to not only advance their technologies into higher Technology Readiness Levels (TRLs), but also enable them to begin to understand the fit of their technology into the world for commercialisation and impact.

This increase in the number and expertise of deep-tech entrepreneurs is necessary for the Challenge programmes[2] in the EIC Pathfinder. The instrument relies on the ability to compare possible research avenues and select the most valuable ones to build the appropriate risk-adjusted portfolio and deliver the programme objectives. In this way, an important enabling condition of the Challenge programmes is the existence of a sufficient number of potential EIC Innovators that an EIC PM can leverage to develop solutions to fill the defined challenge space. The initial phase of project selection, for example, already assumes that there are multiple projects to select from. These assumptions are valid for dense, mature innovation ecosystems within a particular field of research or technological development, which have a range of potential EIC Innovators. In contrast, in a nascent innovation ecosystem, the already challenging task of strategic selection becomes an almost impossible one, when there are in fact few potential options, i.e., potential EIC Innovators, to select from. EIC PMs in such nascent innovation ecosystems would be hard-

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[1] Friedemann Polzin, Mark Sanders, How to finance the transition to low-carbon energy in Europe?, Energy Policy, Volume 147, 2020, 111863, ISSN 0301-4215, https://doi.org/10.1016/j.enpol.2020.111863; see also Sarah Brinckmann, Willemijn Kremer, Martin Dewhurst, Jorge Santos da Silva, Alexandra Zemp, https://www.mckinsey.com/industries/life-sciences/our-insights/can-european-biotechs-achieve-greater-scale-in-a-fragmented-landscape?cid=eml-web

[2] https://eic.ec.europa.eu/eic-funding-opportunities/eic-pathfinder_en#ecl-inpage-1166

pressed to identify relevant research projects or possible solution providers, let alone a whole portfolio of them[3].

In this case, an EIC seeking to make high-risk, high-reward investments should *actively seed* the innovation ecosystem with skilled potential solution providers (i.e. our entrepreneurial scientists) to have enough to select from and invest in. This is exactly why the EIC should take the responsibility of not only selecting today's EIC Innovators, but also of seeding and growing Europe's innovation ecosystem with *potential* EIC Innovators who can act as solution providers to the objectives defined in an EIC challenge-driven programme, and more efficiently develop impactful solutions as part of the open bottoms-up solicitations.

Just as technology must be developed over time, so too, the knowledge and skills of a scientist who has some level of interest in entrepreneurship must be developed gradually and continually – blending learning with applied experience. This learning must start early - even when a scientist or engineer has an idea at a very early TRL they need to begin to explore what performance is a 'must have' or a 'nice to have' and what are relevant benchmarks. These early discussions with potential end users or customers require skills not often taught in university or engineering schools and must be learned and then practiced. Design of relevant prototypes of potential products depends on this. In addition, even when a technical founder adds commercial resources to the team they must understand and value the commercial aspects sufficiently to listen to the commercial voice. All of this facilitates the pivots an early-stage company must inevitably make.

In summary, one of the fundamental values of EIC is that it invests in high-risk, high-reward research, which would not otherwise take place, and thus brings about novel, revolutionary solutions. However, this does require that a dense innovation ecosystem of providers of solutions or proto-solutions exist in the first place, with the necessary capabilities in the field, who are willing and able to take that risk. In the case that such a dense innovation ecosystem of potential EIC Innovators does not exist, the EIC should take the responsibility to grow it. The question is then, how?

It is against this background that the EIC Expert Group in this paper seeks to answer the fundamental question: how should the EIC support the creation of scientific entrepreneurs, potential EIC Innovators, within Europe? The answer to this question is closely related to the development of a deep-tech training programme for scientists and engineers, which was recommended in the November 2020 report on "Implementing the Proactive Management of EIC".[4]

In the following we (1) first outline the specific challenges of bringing science-based technologies (aka 'deep tech') to the market and describe at a high level the principles and content of such an entrepreneurial training programme for scientists and engineers. Against this background, we (2) outline different models of how EIC can implement such an entrepreneurial training programme and thus take responsibility for creating a dense innovation ecosystem of potential EIC Innovators. Finally, we (3) give recommendations.

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[3] On this insight see also the working paper "Enabling Mission Impact - Funding Strategies for High-Risk, High-Reward Innovation" by Carolyn Fu, Lars Frolund, and Fiona Murray. Download at: https://innovation.mit.edu/assets/Enabling-Mission-Impact-FINAL.pdf

[4] See: https://ec.europa.eu/info/publications/implementing-pro-active-management-eic-pathfinder-breakthrough-technologies-innovations_en

# 1. The Challenges of Deep Tech and the core content of an Entrepreneurial Training Programme

While there are many courses and programmes focused on commercialising technologies, the majority of these do not focus on the specific needs and the time horizons of a deep tech innovator, i.e., an innovator that is providing technology solutions based on substantial scientific or engineering challenges[5]. Where purely software app-based companies have short development times and rapid market feedback, deep tech is characterised by a much longer time horizon from the earliest stages of technological development from prototyping in a research lab (private or public) to demonstration in a real-life environment and then scaling to impact. This slow de-risking and necessary cost down of the new technology in combination with the uncertainty of market demand and potential regulatory barriers makes it difficult for deep tech entrepreneurs to attract private sector risk funding and partners[6]. Adding to this, applications for much of deep tech are often part of regulated markets (such as energy, aeronautics, or medicine) that can also slow the adoption of a technology. These are all deep tech challenges that an entrepreneurial training programme should 'teach' and, of course, help entrepreneurs to mitigate for their technologies. The figure below illustrates some major differences between deep tech and purely digital, software-based companies.

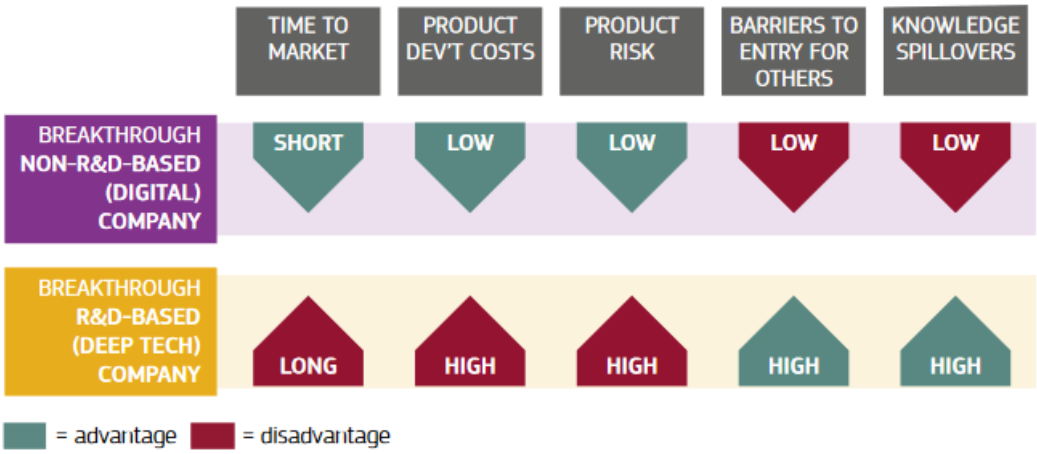


Figure 1: Europe is back – Accelerating Breakthrough Innovation, High-Level Group of Innovators[7]

Recently, we have seen the development of a variety of programmes that provide support for deep tech entrepreneurs, such as the French Deeptech Founders programme via collaboration between Hello Tomorrow and BPI France, the Danish Open Entrepreneurship programme connecting university

[5] It is hard to define deep tech and there are gray areas. Different Funds defines the term in this way in their *Deep Tech Investing Report 2020*: "DeepTech refers to companies and innovators building science-based or R&D-based products. These technologies often have transformational potential [...] DeepTech encompasses innovations in biology, chemistry, physics, engineering, and hardware —frequently powered by advanced computing. Some call this 'Atoms + Bits.' DeepTech companies are increasingly multidisciplinary. Many generate significant data, and layer on some component of artificial intelligence (AI) or machine learning (ML)." See: https://differentfunds.com/deeptech-investing/

[6] Tasto J., "The DeepTech Deal Funnel, Part 2: Venture Capital Gaps", Different Funds, July 2020.

[7] https://ec.europa.eu/info/news/high-level-group-innovators-offer-key-recommendations-european-innovation-council-2018-jan-24_en

researchers with successful entrepreneurs, MIT's Venture Exploration Programme, the entrepreneurial fellowship programme developed by Activate, and Cornell University's programme for post-docs, Runway Startups, to mention just a few. It is important that the EIC brings the different good practices together from such programmes to build a programme of excellence and impact for Europe.

When we consider the specific needs and challenges of deep tech it is clear that an entrepreneurial training programme that is truly unique, additive and discriminating for potential deep-tech innovators should, as a minimum, focus on the following core challenges for deep tech entrepreneurs (see Appendix A for more details):

- Developing the product-market fit specific to deep tech
- Modeling the techno-economics of products at each stage of development
- Defining the internal and external capabilities to move from founder to growth company
- Choosing appropriate business models and options for capital structure
- Planning the business and capital needs to reach defined milestones & value inflection points
- Communicating effectively with non-academic audiences
- Understanding critical legal, IPR and licensing for deep tech

# 2. Models for Implementing the Deep Tech Training Programme

As discussed earlier, the EIC has the responsibility to ensure a pipeline of entrepreneurs to develop and scale critical technologies. However, the EIC should not undertake this mission alone as many proto-entrepreneurs will begin their development journey within EU member states and some expertise has been built, although not uniformly, within cities and sub-regions of the EU. The EIC should understand the maturity and capability of the training ecosystem across the EU, pilot training modules to fill gaps and leverage these with existing programmes across the EU to establish a pipeline of deep-tech entrepreneurs spanning the EU. The EIC has already started pilots for training of EIC innovators via its Innovation Training workshops and EIC Bootcamps[8].

### Model 1: The EIC Trailblazer Programme

A critical element of each EIC funded project within the Pathfinder and Transition instruments will be developing a 'transition plan' with specific milestones (see the 2020 Expert Group report[4]). This said, it is often critical for the commercial success of a project that one or several of the people on the project team take responsibility for the first steps of transitioning the invention to the market. Often this person will be a PhD student or a postdoc with no or little prior experience in bringing a technology to the market. We therefore recommend that the EIC create the EIC Trailblazer Programme for talented PhD candidates and postdocs (potentially also PIs) that are part of projects funded by the EIC Pathfinder and EIC Transition and designate them as EIC Trailblazer Fellows.[9] The programme would naturally include the core elements of a

[8] https://eic.eismea.eu/community/articles/open-call-eic-innovation-bootcamp-20

[9] Our starting point is that the EIC - via the deep tech training - should further develop the pipeline of potential entrepreneurial scientists and engineers. On the other hand, we do acknowledge that other actors in the innovation ecosystem may act as the entrepreneur and take the invention to the market. An example of this is the SATT

deep tech training programme mentioned above. Such a talent programme should work as an *internal accelerator targeting proto-entrepreneurs* and should be regarded as an elite programme that brings together only the most promising talents and "their" breakthrough inventions and gives them the opportunity to pursue commercialisation as an alternative career pathway.[10]

The programme should have in-person modules to facilitate that the EIC Trailblazer Fellows form cohorts and support and learn from each other over time - well beyond the period of the EIC grant. In addition, the EIC should avoid holding the training within EU institutions. Hosting in-person modules within the mature vibrant innovation ecosystems across Europe can facilitate the networking of new entrepreneurs into these networks, break cultural barriers and accelerate their progress. The programme should therefore be able to comprise not only technology agnostic training, but also connect the training to specialised innovation ecosystems across Europe that mirror the potential technological breakthroughs of the EIC beneficiaries from medtech-devices, quantum computing, to ammonia for shipping, to mention just a few.

The EIC should have its own types of grants related to "excellence" in bringing an invention to the market. The EIC should consider creating a special prize and/or grant (e.g., the EUR 50 000 that can be given without a call[11]) for such scientific and entrepreneurial talent as demonstrated by the EIC Trailblazer Fellows. They could use this grant for additional market research beyond the project grant, or for additional training. The EIC might also consider promoting talented researchers with an ERC Proof of Concept grant into the programme.

The EIC PMs and the Technology to Market (T2M) Team should have a role as 'talent scouts' and be given the authority to recommend who should become an EIC Trailblazer Fellow. Further on, EIC PMs and some members of the T2M team could cover a mentorship role for these deep tech entrepreneurs, providing their experience and network, enriching this EU EIC programme with something special. We recommend that the EIC form a partnership - e.g., via a call - with one or several best-in-class deep tech training programmes to develop a bespoke 'powered by' programme for the EIC.

### Model 2: The Pioneer Programme

While the Trailblazer programme would be administered by the EIC with a focus on people who are part of an EIC funded project, the Pioneer programme would function more broadly as deep-tech *add-on modules* to existing programmes in the member states (and potentially in EU associated countries). The programme would have as its objective to ignite the ambition to become a deep tech entrepreneur.[12] The add-on modules of the Pioneer Programme would be sponsored by EIC but the curriculum should be tailored and delivered locally. This programme would not target talented scientists *already* funded by EIC (i.e., EIC beneficiaries), but those that one day will apply for EIC funding. They are pioneers, *proto-EIC Innovators*. The programme should (like the Trailblazer programme) have in-person modules to facilitate that the Pioneers form cohorts across national boundaries and support and learn from each other over time. As an essential first step the EIC should map the current state of deep tech training across the EU as

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Linksium programme (see: https://www.linksium.fr/en) where the Technology Transfer Office (TTO) can act as CEO.

[10] To encourage more researchers to take the daring step of becoming an entrepreneur, it is important that they are given the possibility to come back to academia. Such measures are, for example, included in French PACTE law (see: https://www.gouvernement.fr/en/pacte-the-action-plan-for-business-growth-and-transformation).

[11] https://eic.ec.europa.eu/system/files/2021-03/EIC%20Work%20Programme%202021.pdf (see Annex 6)

[12] For EC countries that currently do not have a deep tech training programme, these modules could be developed into a stand-alone training programme.

well as outstanding programmes globally. Against this background, the EIC can evaluate with the member states the deep tech modules that create additionality as well as the appropriate funding model.

We recognise that the two models are complementary. We therefore recommend that *both* models be implemented for optimal impact: In this way the EIC takes responsibility for developing the early pipeline of proto-EIC Innovators in deep tech in the member states via the Pioneer Programme *and* for ensuring that promising inventions and entrepreneurial talent is nurtured in the EIC Pathfinder and EIC Transition via the EIC Trailblazer Programme. This dual approach should be implemented gradually to allow for experimentation. This is especially important for the Pioneer Programme because of the variation of existing deep tech programmes in the member states and associated countries. It would therefore be beneficial to implement the Pioneer Programme via several pilot programmes and leverage partners where appropriate. The table below illustrates the complementarity of the two programmes.

*Table 1: Summary of high-level attributes across Trailblazer and Pioneer Programmes*

| | Trailblazer | Pioneer |
|---|---|---|
| Target audience | EIC Pathfinder and Transition awardees | Deep tech focused technologists across the EU who are not yet part of an EIC funding programme |
| Outcome | Primary impact on people<br><br>More effective translation of EIC Pathfinder and Transition projects to impact | Primary impact on people *and* regions<br><br>Deepened regional ecosystems producing greater number of entrepreneurs & applicants for EIC programmes who can accelerate their technologies more readily to market |
| Module Design / Content | Developed for EIC in cooperation with expert partners | Leverage Trailblazer modules in partnership with member states to strengthen existing ecosystem in country |
| Delivery | Combination of in person meetings to develop bonds between entrepreneurs and experts (utilising strong ecosystems across EU) and 'on demand' to allow access to info as it is needed by each entrepreneur | Like Trailblazer but more focus in country to allow access to greatest number of people; could also develop sector-focused elements across member states |

The EIC should, additionally, consider creating, sharing, and keeping an updated website depicting in an easy-to-use manner a) what is needed to advance deep tech at various stages of technology development, b) how to access what is available locally, as well as c) how to engage in specially developed EIC programming and network. Ideally this website should contain a 'how to start' segment that would allow researchers to map their potential journey and to self-evaluate whether they would be a good candidate for various programmes. The primary audience for all of this would be PhD candidates and PostDocs who are the EIC Innovators of the future.

# 3. Recommendations

- The EIC should create the EIC Trailblazer programme *and* the Pioneer programme to ensure that there is a dense pipeline of entrepreneurial deep tech talent to bring inventions to the market. The Trailblazer programme should be available for both EIC Pathfinder and EIC Transition.

- The EIC should undertake an inventory of deep-tech programmes throughout the EU (and major ones globally) across specific parameters of methodology (what is taught and how it is taught), scale, metrics, impact etc. This inventory will ensure that the EIC not only understands the current state of the EU innovation ecosystems but also more closely connects with appropriate offerings by partners such as ERC and avoids overlap.

- The EIC should leverage and build upon the learning gained from the pilots of the EIC Innovation Training Workshops and EIC Bootcamps to develop the new programmes.

- The EIC should implement both the Trailblazer and Pioneer programmes gradually to allow for experimentation. This could happen through calls for EU pilot projects uniting relevant and interested players throughout Europe in creating and executing a proposal.

- The EIC should establish metrics (and eventually goals) for measuring the effectiveness of the Trailblazer and Pioneer programmes. These metrics will help guide refinements and adjustments to the programmes as they scale.

- While the EIC should leverage outside expertise via a tender to implement deep-tech training efforts, the EIC should ensure that it has adequate internal resources to drive pilot programmes, assess effectiveness of these and build expertise about best practices which overall results in an optimised training system between EIC and member states.

- The EIC should consider a quality label for the EIC Pioneer Programme that would recognise these highly qualified entrepreneurs and facilitate their access to additional funding/resources at the regional/national level.

- The EIC should create a website that depicts a) what is needed to advance deep-tech at various stages of technology development, b) how to access what is available locally, as well as c) how to engage in specially developed EIC programming and network.

- The EIC should launch a promotional campaign for these entrepreneurial programmes, recruit candidates for the programmes, and secure take up beyond the regions and partners signed up at the start.

- The EIC should begin building up an alumni network from its existing programmes to facilitate alumni to support each other after completion of their EIC programmes and also enrich outreach efforts to potential proto-entrepreneurs across the EU.

Implementation of these recommendations would facilitate the development of a new generation of deep-tech entrepreneurs, EIC Innovators, across Europe who will play critical roles in developing solutions to some of our world's most pressing challenges. In addition, these efforts will enhance and leverage existing European innovation ecosystems and accelerate the development of nascent ones.

# Appendix A: Detailed Concepts For Deep Tech Training Programme

- Introduction: the journey from lab to market for deep tech
  - The specific challenges of transitioning deep tech to impact
  - How to focus on the product-market fit risk specific to deep-tech
  - Defining the Preliminary Transition Plan
  - Listening and communications
    - Explaining your technology (especially to non-technical audiences)
    - Interviewing potential customers, end users and actors within the market
    - Listening to and incorporating feedback
    - Empathic Leadership
  - How inventors move from getting the science right to getting the team right (from equations to missions)

- Developing the product-market fit specific to deep tech
  - Identifying your market(s) and the opportunities within it.
    - Defining the potential market(s) and its ecosystems
    - Characterising the customer, understanding their needs
    - Delineating how you are going to be better than your competitors (Price, Supply Chain, Quality, less "down-time", better upgrade opportunities etc.)
    - Quantifying different market opportunities; Use of tools like 'Market opportunity navigator/Where to Play" (Gruber & Tal) to identify and assess potential applications and opportunities
  - Establishing goals for first prototype and product iteration
    - Utilising design thinking to develop technologies and products that ultimately fit into systems that customers and end users want
  - Accessing manufacturing infrastructure for demo to scale
    - How to find and contract advanced prototyping infrastructure
  - Market-focused testing and validation
  - Identifying and engaging appropriate partners to advance your company through each stage of development

- Modeling the techno-economics of products at each stage of development
  - Modeling of a specific technology component
    - Communicating why X tech is better than Y for customer
    - (Use spreadsheets so the reasoning is understandable by your investors/customer/stakeholders)

- How to integrate a component into a functioning system and model tradeoffs and where further innovation is required
- The importance of industrial design in product development

+ Defining the internal and external capabilities to move from founder to growth company
  - Know thyself first
    + Developing an honest assessment of founder(s) strengths and weaknesses
    + Building an ecosystem around the founder(s). Developing the concept of setting up a "minimum viable ecosystem" for what you are trying to achieve.
    + Bringing onboard advisors (formal and informal); when to establish a formal board of directors
  - Hiring
    + Incentive planning (shares, salary etc.)
    + Adding more functions to team (R&D to engineering, quality control, business development etc.)
  - Building and nurturing culture
    + Defining culture and values
    + Developing empathic leadership.
+ Choosing appropriate business models and options for capital structure
  - Lease vs. own infra-structure assets, license or deliver product
  - Introduction to patient capital/catalytic capital (what is it, what forms might it come in, how to meet them etc.)
  - Introduction to investors' portfolio: venture capitalists, corporate venture capitalists, strategic investors etc.
  - Managing investor expectations -- it's a long time to market, so how to balance enthusiasm and vision with setting interim objectives
  - Planning the business to reach defined milestones / value inflection points with the available capital (this will enable raising of the next financing round)
+ Understanding critical legal, IPR and licensing for deep tech
  - How to evaluate and carry out technology protection
  - Licensing agreements and freedom to operate assessments
  - Options for legal setup of company structure
  - Insurance and liabilities
  - Regulatory or standardisation issues (such as GDPR, AI Act, etc.) that may have an impact on access to market

# Experts' Biography

Paulo Andrez is an international expert in entrepreneurship and innovation, business development, scaling up and risk mitigation. As of 2018, Paulo Andrez is serving as the President and Shareholder of Toys R Us Iberia Holdings, with 60 stores in Portugal and Spain and 1300 employees. He owns a portfolio of 10 investments in startup and scale up companies. As an angel investor, he received the award "Best European Angel Investment" in 2012 as one of his investments reached 25 million euros in revenues within the first year of operations. Paulo is a founder of Entrepreneurship Agency DNA Cascais, which supported more than 400 startups in the last 14 years. Paulo was appointed President Emeritus EBAN, European Business Angel Network, after serving as President until 2014. Since 2012, Paulo has been working with a number of European governments in the field of Early Stage Investment policies and Business Angels Co-Investment Funds design. He chaired the European Commission Expert Group for support of Slovak and Romanian governments in designing and implementing entrepreneurship and innovation policies. He has a background as serial entrepreneur and is frequently invited as speaker worldwide, guest lecturer and expert in innovation, entrepreneurship and early stage investment. Since 2012, Paulo has been holding a series of workshops on the topic of new ventures risk mitigation.

Jes Broeng is serial entrepreneur, professor and director of DTU Entrepreneurship. Born in Copenhagen. He has a Ph.D. from the Technical University of Denmark (DTU) and has spent longer research stays in the UK and US, including invited professor at UC Berkeley (2016-17). For the Danish government, he serves as a member of the Danish Research and Innovation Council (DFiR). In business, he has co-founded six companies and spent a total of 12 years in industry – mainly as technical director at executive level – and now serves on the board of several companies, including a venture capital firm (PreSeed Ventures). Since 2017, he has headed the national initiative "Open Entrepreneurship" in a collaboration between seven Danish universities for improved tech transfer models (funded by the Danish Industry Foundation). The programme has fostered more than 26 university spin-outs and received the first prize in "Promoting the Entrepreneurial Spirit" at the European Enterprise Promotion Awards 2020. Jes has co-authored more than 250 scientific publications, one textbook and holds 22 patents. He is a Fellow of SPIE (the international society for optics and photonics) and a member of the Danish Academy of Technical Sciences. He received the Annual Award of the Danish Optical Society in 1998, the European Optics Prize in 1999 and DTU's Innovation Award in 2016.

Julien Chiaroni has been appointed Director of the great Challenges (Directeur des Grands Défis) in the French Innovation Council. He was previously Director of Strategy and Programmes at List, the Institute for digital and artificial intelligence technologies, with more than 700 researchers located in Paris-Saclay and Grenoble. He implemented the strategy for a wide scope of digital technologies, such as cybersecurity, AI or cyber physical system, for the institute and set partnerships between research and industry; in particular in regards to the thematic of trust in AI and its implementation in embedded systems. Before this, he had operational positions at scientific level as well as management level at Leti, the institute for microelectronics and IT technologies. From 2008 to 2010, he coordinated the nanoscience and nanotechnology programme at the National Research Agency.

Arnaud Cottet handled several positions in Tech Transfer in France and USA. He is the founder of the Tech Transfer consulting company INAUVARES, and he is a Technology Transfer Manager and a key account manager at ONERA, the French Aerospace Lab. He was a Technology Commercialisation Manager at the IDEA Center at Notre Dame and was responsible for the Commercialisation Engine of 100 inventions. He took early-stage technologies of the University of Notre Dame through a process of evaluation and de-risking, transforming them into potentially life-changing and productive applications. Before joining Notre Dame, Arnaud worked as a business developer with a technology transfer acceleration company in France. He was also an international expert on the European project PASRI where he improved the Technology Transfer Process in Tunisia and trained and taught 100 persons. He is a lecturer in Technology Transfer and marketing of Innovation. He is a Certified Intellectual Property Activities Leader from the National Industrial

Property Institute (INPI). He is also a certified Viadesigner Mentor. Arnaud holds a Master of Science Degree in Mechanical Engineering from the "Université de Compiègne," a Master of Science Degree and a Ph.D. Degree in Aerospace from the Georgia Institute of Technology and a University Degree in Digital Transformation from the University of Lyon.

Lars Frølund, Chair of the expert group on design of the EIC Marketplace and Tech to Market activities, is Special Advisor for Innovation at NATO. Formerly he was a Visiting Fellow at the MIT Sloan School of Management and Research Director at MIT Innovation Initiative. He focuses on the success factors for university-industry partnerships, fostering innovation ecosystems, and mission-driven research and innovation. He is the co-editor of the book "Success Factors for University Partnerships" and "Developing Successful Strategic Partnerships with Universities" published by Sloan Management Review. He is on the board of the Danish Innovation Fund, was the Chair of the international Expert Group on Strengthening the Management of the Enhanced European Innovation Council Pilot, and a Fulbright Scholar at MIT in 2016-17.

Angelos Keromytis is the John H. Weitnauer Technology Transition Endowed Chair Professor and Georgia Research Alliance Eminent Scholar with the School of Electrical and Computer Engineering at Georgia Institute of Technology. He is a Fellow of both the IEEE and the ACM. From July 2013 to July 2014, he was on leave with the National Science Foundation (NSF), where he served as Programme Director for the Secure and Trustworthy Cyberspace Programme (SaTC). From July 2014 to December 2018, he was on leave with the Defence Advanced Research Projects Agency (DARPA), where he served as Programme Manager with the Information Innovation Office (I2O). Prior to Georgia Tech, he was an Associate Professor with Tenure with the Department of Computer Science at Columbia University and Director of the Network Security Laboratory, where he conducted research in computer and network security since 2001 (when he received his Ph.D. from the University of Pennsylvania). He has over 250 peer-reviewed publications in technical conferences and journals, and has co-authored two books; he is the named co-inventor in 58 issued US patents; he has served as a member in over 100 programme committees and has chaired several conferences in the field; he has co-founded 4 security startups, and has served in a number of advisory workshops for the Department of Defence, the National Science Foundation, and various US agencies. You can find his CV at https://angelosk.github.io/cv.html

Michela Magas is an innovation catalyst who bridges the worlds of science and art, design and technology, and academic research and industry, with a track record of over 25 years of innovation. She is innovation advisor to the European Commission and the G7 leaders, Member of President von der Leyen's High Level Round Table for the New European Bauhaus, and the creator of the Industry Commons. She is Chair of the Industry Commons Foundation with a Steering Board of thought leaders in Open Innovation, which is tasked with development and sustainability of the Industry Commons tools, methodology and ecosystem.
In 2017 she was awarded European Woman Innovator of the Year and in 2016 she was presented with an Innovation Luminary Award for Creative Innovation. She is the founder and CEO of MTF Labs, a global community platform of around 8000 creative innovators and scientific researchers. The platform provides a test case for innovation in areas as diverse as neuroscience, forestry and microcomputing.
She has served on the CAF Advisory Forum of the European Commission's Horizon 2020 programme 2013-2018, both at meta level regarding future directions for the programme, and more specifically as coordinator of the recommendations by the Innovation Working Group. Over 20 years she ran Stromatolite Design Lab in London with global clients such as Apple, Nike and Nokia.

Cheryl Martin, Tech to Market subgroup lead, founded her consulting firm, Harwich Partners, to engage public and private sector entities in designing and implementing solutions for complex problems, especially those related to energy, sustainability, urban development, and technology adoption. Previously she was a member of the Managing Board at the World Economic Forum where she was responsible for a range of business and innovation initiatives. Before this, Cheryl had served as the Acting Director of the US

Department of Energy (DOE) Advanced Research Projects Agency–Energy (ARPA-E). She was also the Deputy Director for Commercialisation at the agency where she developed the Technology-to-Market programme, which helps breakthrough energy technologies succeed in the marketplace. Prior to joining ARPA-E, Cheryl was an Executive in Residence with Kleiner Perkins after a career with Rohm and Haas Company in roles ranging from technology development to finance and business management. Cheryl serves as the chair of the Board for Sound Agriculture, an early-stage sustainable agriculture technology company, as well as on the Boards for the Clean Energy Trust (Chicago) and Elemental Excelerator (HI and CA). Cheryl was on the Board of Queens Gambit Growth Corporation (GMBT), an ESG-focused SPAC, which recently merged with SWVL, a global provider of transformative tech-enabled mass transit solutions.

Florian Muellershausen is a Managing Director at the Novartis Venture Fund in Basel, Switzerland. Prior to joining Novartis Venture Fund, he worked as a Scientific Manager for the R&D Committee of the Novartis Board of Directors and, before that held various scientific and drug discovery roles at the Novartis Institute of Biomedical Research (NIBR) including as Laboratory Head in target discovery and in early clinical research as Translational Medicine Expert, Autoimmunity. Florian received his MSc degree in Biochemistry from Free University Berlin and his PhD degree with great distinction in Biochemistry from Ruhr University Bochum and completed his post-doctoral training at NIBR in Switzerland. He currently serves on the board of directors of Anaveon (CH), FoRx Therapeutics (CH), Amphista Therapeutics (UK), Granite Bio (CH), LoQus23 (UK) and is a board observer on Splice Bio (ESP).

Fiona Murray is the Associate Dean of Innovation and Inclusion at the MIT School of Management and William Porter (1967) Professor of Entrepreneurship. She is the co-director of MIT's Innovation Initiative and Faculty Director of the MIT Legatum Center for Entrepreneurship and Development. Fiona is an associate of the National Bureau of Economic Research. She received her BA '89 and MA '90 from the University of Oxford in Chemistry. She subsequently moved to the United States and earned an AM '92 and PhD '96 from Harvard University in applied sciences. Fiona serves on the British Prime Minister's Council on Science and Technology and was awarded a CBE (Commander of the British Empire) for her services to innovation and entrepreneurship in the United Kingdom. She is also a Member of the Ministry of Defence Innovation Advisory Panel and the European Innovation Council Joint Expert Group.
Murray is an international policy expert on the transformation of investments in science and technology into deep-tech start-up ventures that solve significant global challenges and create national advantage – from defence and security to health, food and water security. Her work includes understanding new funding approaches for innovations that arise from scientific research, and educating the next generation of technical leaders to build effective ventures. She is particularly focused on how regions can build more inclusive innovation ecosystems that allow for diverse innovators to focus on their most significant challenges and to build on their most substantial advantages. Fiona brings her deep appreciation of science and technology to an understanding of the global innovation economy and to the ways in which the next generation of global innovators and the policymakers who support them can be effectively educated.

Špela Stres, Design of the EIC Marketplace subgroup lead, is the Head of the Innovation and Technology Transfer Center for the Jožef Stefan Institute and an invited lecturer at the University of Ljubljana and the Jožef Stefan International Postgraduate School. She used to work as an elementary particle physicist, collaborating internationally with DESY Hamburg and CERN Geneve. Currently, she holds the rank of Research Councilor.
She is active in the field of business development and designing the financial support environment for innovation. She was instrumental in setting up 11 spin-out companies in the past ten years. At the United Nations New York, she is a Member of the 10-MG Group for Sustainable Development. She served as a member of the Expert Group on strengthening the management of the enhanced European Innovation Council pilot for the DG Research and Innovation, European Commission. She is a Delegate to the CERN KT Forum and the KT Forum on Medical Applications. Formerly, she served as Vice President and Board Member of the European Association of Science and Technology Professionals. She served as a Member of the Future Emerging Technologies Advisory Group and a Member of the SWAFS Advisory Group for the European Commission (DG Connect and DG R&I). She served as a Board Member of the CERN Technology

Transfer Network.
She holds a PhD in Physics from the University of Ljubljana, a Master's degree of law in intellectual property from the University of Turin, an executive MBA from Cotrugli Business School, and has passed the patent attorney exam. She is a Registered Certified Licensing Professional – CLP and a Registered Technology Transfer Professional - RTTP.

Mirjam Storim is Head of Innovation Strategy and Strategic Value Creation at BMW Group. She has covered several roles in the past within the BMW Group: Head of Make-or-Buy and Production Partner Management, Manager Corporate Strategy, Trade Policy and Economics, Manager Human Resources Strategy, University Cooperation, Leadership Development. Before her time at the BMW Group BMW, she served as a consultant at Oliver Wyman and as Deputy Managing Director of the Eberhard von Kuenheim Foundation of BMW AG. Besides that, she is member of the curatorship of the Fraunhofer Institute of Systems and Innovation Research (ISI).

Jérome Van Biervliet has 20 years of cross-disciplinary experience in the medical, business and biotech environments. Prior to his position as Managing Director in the general management of VIB, he trained as a veterinary internal medicine specialist at Cornell University. He then was accredited by the American College of Veterinary Internal medicine and continued with a PhD at VIB finishing with a land-mark paper in Science. After his clinical and research training, Dr. Van Biervliet started as a consultant at Bain & Company, advising especially in private equity transactions. Over the last 10 years, he has been in various roles in the VIB Innovation and Business office of VIB. As the Head of Business Development, Dr. Van Biervliet is responsible for the BD team driving all industry collaborations, licensing of VIB assets and strategic collaborations. He was the founder and Head of VIB Discovery Sciences, an internal drug discovery unit at VIB with a team of industry-trained scientists creating a portfolio of innovative projects. Dr. Van Biervliet is currently Managing Director for VIB as an institute in a tandem with his colleague Jo Bury and holds end-responsibility for all Innovation & Business activities.

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The EU Open Data Portal (http://data.europa.eu/euodp/en) provides access to datasets from the EU. Data can be downloaded and reused for free, for both commercial and non-commercial purposes.

The group recommends that the EIC creates two ambitious deep-tech training programmes: the Trailblazer and the Pioneer. The "raison d'être" of the EIC is to realise and accelerate breakthrough innovation for rapid market growth as well as to promote the Union's strategic autonomy. The European innovation ecosystem being fragmented, providers of solutions or proto-solutions are sparse and unwilling/ unable to take the necessary risk. The group recommends that the EIC takes the responsibility to grow this innovation ecosystem of solution providers and presents how this could be done.

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