BEST PRACTICES FOR DEVELOPING ESTONIA'S DEEP TECH ECOSYSTEM: DENMARK, THE NETHERLANDS, AND THE UNITED KINGDOM

WHITE PAPER

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Startup Incubator by Tehnopol EstBAN TAL TECH STARTUP ESTONIA EAS Enterprise Estonia KREDEX

EXECUTIVE SUMMARY

In the first half of 2023, the participants of the Estonian deep tech ecosystem had a unique opportunity to learn from the best practices of three leading deep tech ecosystems: the Cambridge region (the UK), the Eindhoven region (the Netherlands), and the ecosystem surrounding the Technical University of Denmark.

Despite the differences between the ecosystems, it is possible to draw conclusions about which approaches would help more research teams spin out of the Estonian universities and deep tech startups to be more competitive in the international markets.

All three ecosystems are united by a strong and consistent focus on the commercialization of research achievements. This allows the research teams to have a clear business development roadmap and an understanding of what are the university's possible development grants and conditions for transferring intellectual property rights. Estonian universities are taking steps towards increased transparency of technology and knowledge transfer and clear business development roadmaps but can learn from the lessons of our selected ecosystems.

TOP 10 recommendations from Copenhagen, Cambridge, and Eindhoven regions to develop Estonia's deep tech ecosystem:

1. **Clear roadmap** to ensure the commercialization of science in all Estonian universities, together with university grants, and conditions for transferring IP to a private company, outlining the conditions for equity taken by the university or licensing fees and the expected time frame of the process. The Netherlands has also followed this path.
2. Consistent **public funding** for research teams for the proof-of-concept and transition from science to business phase.
3. **Investor involvement in the early phase** of the company – initially as mentors, later already as a real investor. If possible, the involvement of international investors to open doors to new markets.
4. A clear **decision by the research team** members, whether to continue as a researcher at the university with a full-time position and have a small (single digit) share in the company or to head fully into entrepreneurship, developing all the necessary skills to become an entrepreneur.

5. The **capitalization table of university spin-offs** must be kept as simple and clean as possible. For universities this means that taking equity in spin-offs must come with clear internal procedures and the speed of decision-making like other investors. A good example of moving in this direction is the creation of UniTartu Ventures by the University of Tartu.
6. A **platform for researchers and entrepreneurs to connect** and find co-founders, mentors, and other help. In Denmark, an online platform was created for matchmaking between spin-offs and potential new team members. An additional step would be the creation of Entrepreneur in Residence programs in all universities and Venture Studio-type programs in science parks.
7. **Demand from the government** for universities to commercialize science and an understanding that the whole ecosystem, including the public sector, is responsible for contributing to the growth of new science-based companies.
8. A clear **division of roles** between ecosystem members, especially the universities and science parks. The division of roles must be complemented by close collaboration and the **early involvement of investors**.
9. Clear roadmap for those entrepreneurs who want to become a **university spin-in company** from outside the university. An analogy here is the Cambridge spin-in model.
10. Encouraging and facilitating the **creation of student teams**. Based on Eindhoven's example, providing strong support for early-stage volunteer-based teams of students (such as student formula teams and the student satellite team) working on innovation projects over the space of several years leads to increased publicity for universities, a noticeable increase in startups and spin-offs created, as well as increased employability of graduates who have gained significant practical knowledge.

The necessary momentum for Estonia's deep tech ecosystem to take the crucial next steps has been created. Lessons from this project serve as a lighthouse to make some vital improvements in the next few years. The conclusions of this program match and complement the deep tech Action Plan put together by Startup Estonia in the spring of 2023.

1. INTRODUCTION

1.1 BACKGROUND

In Estonian universities, world-class cutting-edge research is conducted, but much of this research does not reach end-users through entrepreneurship today. A good scientist does not automatically equal a good entrepreneur. Therefore, it is of critical importance to enhance the business competence and collaborative capabilities of Estonian knowledge-intensive development teams and improve business skills.

As the commercialization of science is a complex and multi-faceted issue involving various stakeholders, it cannot be solved by any single stakeholder. To enhance collaboration across the deep tech ecosystem and to enhance Estonia's efforts to reach the 500 deep tech startups by 2030, the goal set by Startup Estonia, efforts must be made to align objectives across stakeholders and create day-to-day interactions.

Today, there is readiness across the board to contribute to the further development of research-based teams. However, what is mainly lacking is practical experience in supporting deep tech teams and agreement on the precise next steps. Additionally, there is a lack of a shared understanding and a "good practice" on the use of intellectual property and the involvement of investments across the Estonian deep tech ecosystem.

For this reason, the project "Deeptech Sandbox" was initiated by Tehnopol Startup Incubator, Estonian Business Angels Network (EstBAN) and Tallinn University of Technology (TalTech), powered by Startup Estonia. The project consisted of a series of events focused on creating a strong deep technology support system. The events took place on 21-22 February 2023 at Tehnopol, on 29-30 March 2023 at Tehnopol and on 15-16 May 2023 at TalTech.

The main aim included contributing to the development of the deep technology ecosystem in Estonia, bringing experts from centers of excellence to Estonia for knowledge sharing, as well as bringing key stakeholders from Estonia together into one room. The result each time was a synergy, leading to joint solutions and the identification of activities that might best support the Estonian ecosystem.

The final step in the "Deeptech Sandbox" project was to compile this White Paper based on the presentations of international best practices and the input gathered from the participants' discussions from the group work sessions held during the events. The White Paper provides input to Startup Estonia for deciding how best to support the development of the Estonian deep technology ecosystem.

The project was co-funded by the European Regional Development Fund.

1.2 METHODOLOGY

The "Deeptech Sandbox" project identified three strong deep tech ecosystems to base the knowledge sharing activities on. The ecosystems were centered around the following universities:

1) **Technical University of Denmark (Denmark)**
2) **University of Cambridge (UK)**
3) **Eindhoven University of Technology (the Netherlands)**

These locations were selected because of their outstanding deep tech ecosystems. Based on the Research.com, a leading academic research portal, the Technical University of Denmark (DTU) was ranked third (2023) among the best 'Engineering and Technology' universities in the world, just after Massachusetts Institute of Technology (MIT) and Stanford University. Cambridge is one of the leading deep-tech startup ecosystems in the UK – with the highest rate of patent applications per capita in the UK. Eindhoven University of Technology belongs to the top 200 universities in the world and is in the top 10 of technical universities in Europe.

To participate in the knowledge sharing, key Estonian stakeholder groups were invited. Participants were mainly from the following groups:

1) **universities and their technology transfer units,**
2) **support organizations (science parks, investment funds, accelerators),**
3) **investors,**
4) **deep-tech start-ups/spin-offs,**
5) **public sector representatives.**

At each of the three events, there were several presentations made to cover the key perspectives for deep tech support: universities, support organizations, investors, recipients of the support (i.e., startups and spin-offs). The representatives of the universities and support organizations shared their operating models and best practices for technology and knowledge transfer, as well as additional programmes and activities that they consider relevant for other ecosystems. Spin-off companies, emerged from universities, shared their journey and challenges, both in building the business and raising funds. Investors shared their perspective on investing in deep technology teams – the main factors to consider and how to distribute ownership so that deep technology companies are attractive to venture capital and angel investors.

In addition, the Estonian ecosystem was presented from the university, startup support and investor community perspectives. Also, there were several fire-side chats to provoke further discussions and clarify outstanding issues. At each event, group discussions among Estonian stakeholders took place to prioritize the main necessary changes to increase the number and quality of deep technology startups in Estonia. The results of the discussions are covered in chapter 3 and the specific answers are given in Annexes 1-6.

2. CASE STUDIES AND BEST PRACTICES

2.1 ECOSYSTEM AROUND THE TECHNICAL UNIVERSITY OF DENMARK

Technical University of Denmark (DTU) is a public university located in Copenhagen and organized into 27 departments, by which its top three research fields are biology, physics, and computer science. In 2023 DTU ranks third among the best 'Engineering and Technology' universities in the world, just after Massachusetts Institute of Technology (MIT) and Stanford University.

DTU is divided into several faculties, each dedicated to specific fields of study and research. The faculties are responsible for delivering education, conducting research, and fostering innovation within their respective domains. Each faculty is further divided into departments that focus on specialized areas within the faculty's domain. Departments are responsible for research activities, academic programs, and the development of knowledge within their specific fields.

DTU houses numerous research centers, which are specialized units focused on specific research areas. These research centers serve as hubs for cutting-edge research and often collaborate with industries and governmental organizations to address real-world challenges. DTU exemplifies Denmark's usage of the Triple Helix Model of innovation, as the university has strong collaborative ties with both the government and private companies.

1. Academia

The university is dedicated to cutting-edge research and education, generating new knowledge, and fostering a culture of innovation among its students and researchers. DTU's research centers and laboratories work on diverse scientific and technological fields (incl engineering, natural sciences, sustainable energy, biotechnology, and more), addressing real-world challenges and pushing the boundaries of knowledge.

2. Industry

DTU maintains strong ties with industries, startups, and businesses. The university actively collaborates with industrial partners, engaging in joint research projects, technology transfer, and knowledge exchange. This interaction ensures that DTU's research findings are relevant and applicable to industrial needs, fostering technology commercialization and the development of innovative products and services.

3. Government

The model encourages DTU to collaborate closely with government bodies and agencies. DTU engages with policymakers to provide expert advice, offer research-based solutions to societal challenges, and contribute to policy formulation in areas such as sustainable development, energy, environment, and technology regulation. This collaboration facilitates the alignment of research efforts with national priorities and supports evidence-based decision-making.

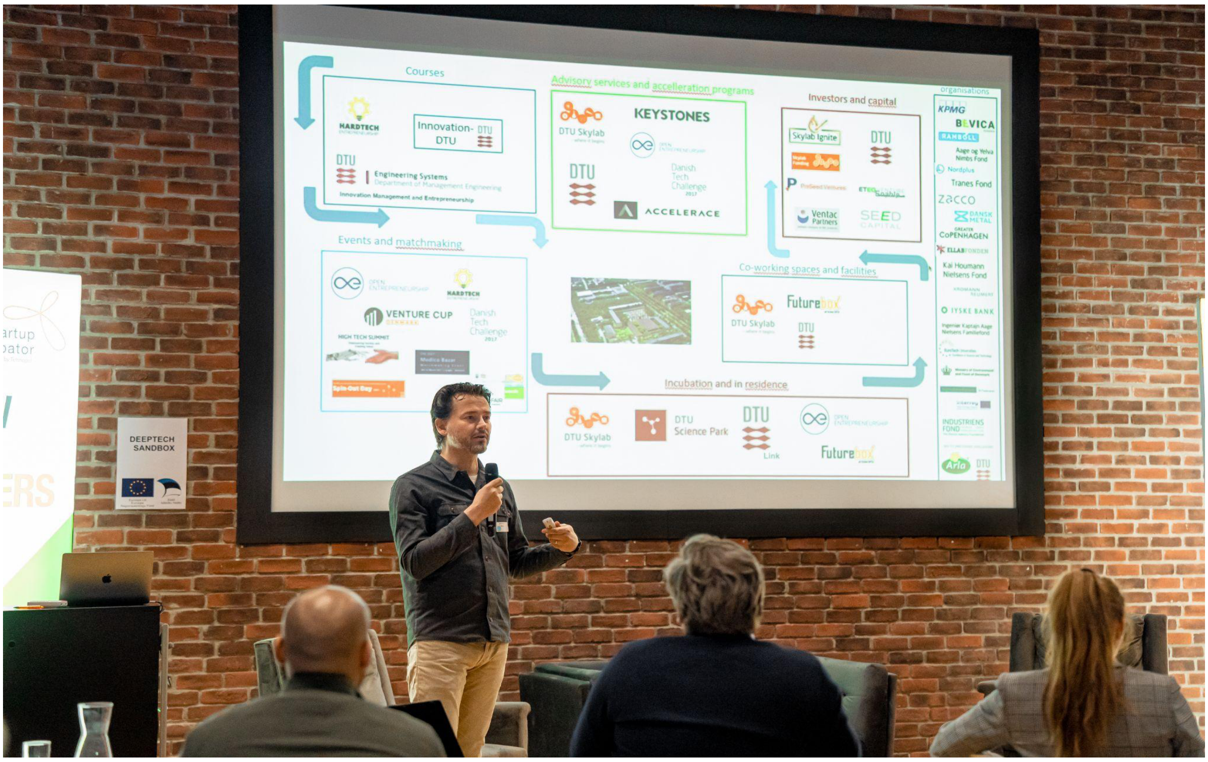

Photo 1. Jens Friholm giving an overview about the ecosystem at DTU.

DTU actively promotes the Triple Helix approach through various initiatives and programs:

1. DTU Skylab and DTU Entrepreneurship

DTU Skylab serves as a collaborative space that encourages interdisciplinary interaction between students, researchers, and industry partners. It fosters an entrepreneurial culture and supports startup ventures through prototyping facilities, mentorship, and industry connections. DTU Entrepreneurship complements this effort by offering tailored support and guidance to student-led startups, further nurturing the entrepreneurial ecosystem.

2. Research Collaborations and Centers

DTU's research centers are at the forefront of collaborative projects with industries and governmental bodies. These partnerships lead to joint research efforts, co-funding of projects, and the co-creation of innovations that address pressing societal challenges.

3. Innovation Hubs and Incubation Programs

DTU Science Park, a part of DTU's ecosystem, provides tailored incubation programs for technology-based startups, offering support and mentoring to young entrepreneurs. This initiative helps startups bridge the gap between research and commercialization, fostering technology transfer and economic growth.

Figure 1 gives an overview about the different stages about how the pre-startup journey from research to spin out look like.

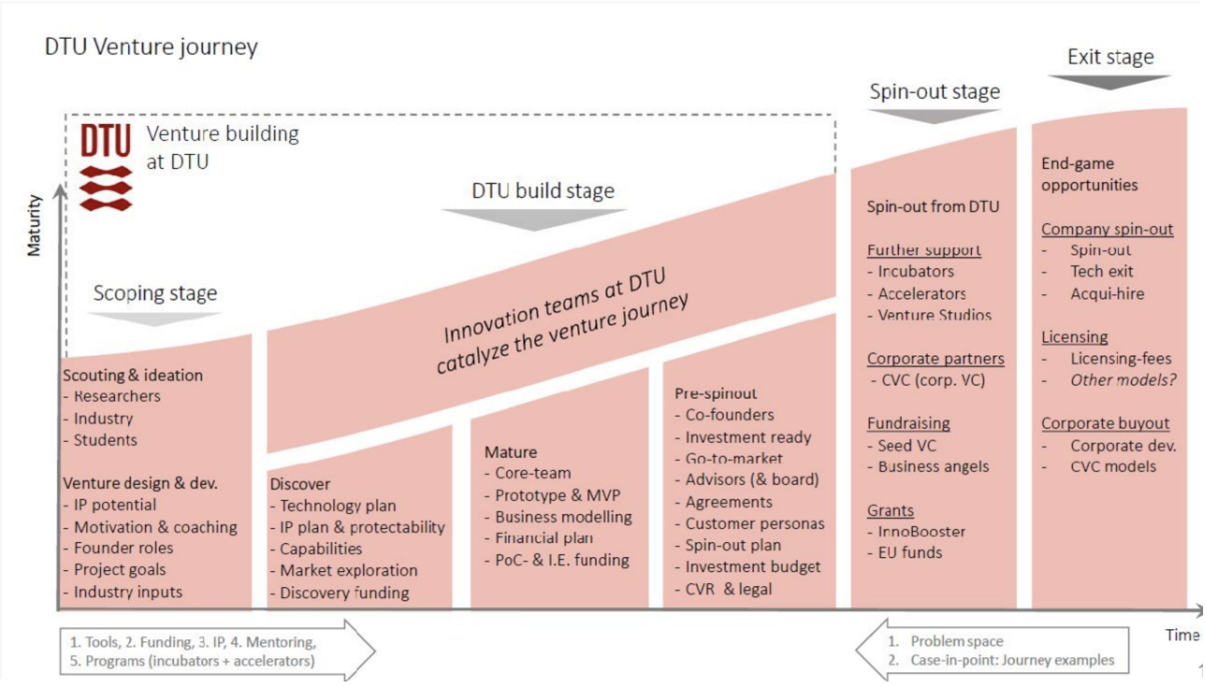

Figure 1. Pre-startup journey from research to spin out (based on the presentation of Jens Friholm from DTU).

At the spin out stage the grant money plays a pivotal role in bridging the funding gap for deep tech companies, enabling them to progress from research and development to commercialization while reducing financial risks. Primary grant programmes are listed on figure 2.

	Discovery Grant	PoC Fund	InnoExplorer
Max. grant	150.000 DKK	500.000 DKK	1.500.000 DKK incl. OH
Expected projects	approx. 40	approx. 20	10 (2020, DTU result)
IP content	80%	95%	N.A.
Appl. rounds	Weekly	3 times/yr	4 times/yr
Annual budget	5,2 mDKK	6,0 mDKK	14.4 mDKK (2020 result)
	• Entry point for employees in a commercialisation path • Feeds projects into the DTU eco-system • Fast uptake since start 2018	• Maturing for start-up or licensing or further funding in InnoExplorer • More mature projects than Discovery	• New national programme to support research-driven university start-ups • Owned by Innovation Fund Denmark

Figure 2. Primary grant programmes in Denmark (based on the presentation of Jens Friholm from DTU).

Some key lessons that the Technical University of Denmark emphasizes for other ecosystems to consider implementing, are the following:

- To facilitate the successful spin-off of researchers' innovations, effective management support is essential. This support includes a proactive leadership presence within the institution, emphasizing the importance of enabling spin-offs as a strategic priority. Furthermore, fostering a deep understanding of the process is crucial, ensuring that accomplished scientists are empowered to transition their expertise into viable companies. In essence, a combination of visionary leadership and a strong commitment to nurturing entrepreneurial scientists is key to promoting successful spin-offs from the university.
- DTU's approach has relied on licensing, which investors have appreciated because the university remains uninvolved in equity. We offer a buyout option for investors, allowing them to purchase patents if they invest a sufficient amount. This negotiation point gives the university leverage, and in our case, we use net discounted value with a pricing cap when considering patent buyouts. The university aims for the startup to succeed, attract investors, and scale without constraints while ensuring that the company also contributes back to the university. Striking the right balance is essential.
- The central challenge revolves around assembling a team with the expertise to build and operate a successful startup. Matching co-founders with teams is a very important element. For this purpose, DTU is using a platform to matchmake potential people. For example, through

this app 20 individuals sought co-founders in the last year, a quarter of them successfully formed partnerships.

Some key lessons from the spin off company's point of view are the following:

- Protecting intellectual property (IP) is closely intertwined with business development. Customer-centric, value-driven approach is integral to successful IP protection and business growth in the deep tech sector. Budgeting should be aligned with key stakeholders, including investors and the founding team, to ensure effective IP protection.
- Between Technology Readiness Levels (TRL) 5-6, prioritizing customer engagement and seeking investor funding becomes paramount. At this stage, channeling efforts in these directions is crucial, with reliance on grants for earlier phases of development.
- Given the limited number of deep tech investors, it's advisable to bridge expertise from established corporations with capital from investors. This collaboration allows investors to trust in the technology's potential, especially when it may not be immediately relatable to traditional software-as-a-service (SaaS) investors. Seeking international expertise can be a valuable strategy.

Some key lessons from the investor's perspective are the following:

- Universities aim to secure equity in startups for IP protection and incentives, but alternative arrangements like exit bonuses or royalties can achieve these goals without equity involvement. When licensing IP, clear pricing for buyouts or sales is vital to meet the demands of venture capitalists. In deep-tech startups, IP ownership is crucial, and founders must proactively file patents.
- Professors, not the university, should hold stakes in startups, and researcher-founders should prioritize active roles to receive primary equity. Equity exceeding 5% for inactive researchers raises concerns without compelling reasons.
- Passive co-founders, especially researchers aspiring to be entrepreneurs, should leave the university to focus on their company. Collaboration is possible, but a successful company requires full commitment, with the main equity going to exit-founders.
- Matching potential co-founders is vital, but it typically occurs informally, driven by the co-founders' need and initiative. A goal-oriented approach is crucial for successful co-founder connections.

- Early engagement is crucial for startups, investors, and researchers. It involves startups connecting with investors and industry experts, investors building relationships with universities and researchers, and researchers actively engaging with industry professionals. Conducting due diligence and networking within specialized networks are key for attracting investors in deep tech projects.
- When spinning out a company from a university, swift and clear transfer of intellectual property (IP) to the new entity builds investor trust. University support in IP generation is valuable. Minimizing ongoing university IP involvement, securing future IP for the company, and avoiding public institutions in the cap table are essential for attracting investors. In Denmark, public funds often provide grants instead of direct investments in companies.
- It's typically not advisable to invest in a single-founder company.

2.2 ECOSYSTEM AROUND THE UNIVERSITY OF CAMBRIDGE (UK)

The Cambridge tech cluster is recognized as one of the most important in Europe, supported by impressive figures. As of January 2023, in the small university city of Cambridge with around 150,000 inhabitants, there were over 5,300 knowledge-intensive firms employing more than 71,200 people and generating combined revenues of £19 billion, according to the University of Cambridge's data. Cambridge boasts the **highest rate of patent applications per capita in the UK.** The cluster has also witnessed the emergence of at least 23 companies, each with a realized price exceeding $1 billion through trade sales or IPOs. In the Cambridge ecosystem the leading sectors are in ICT, Life Science and Services, there's 37,000 people employed in research institutions and 309 patent applications published per 100,000 residents (highest in the UK).

The development of the Cambridge cluster occurred in multiple waves. In the 1960s and 1970s, there was limited physical infrastructure, such as science parks, to support new technology-based firms. Venture capital was not prominent until the 1990s. A national initiative in 2000 by the central government to support university entrepreneurship, led by Minister for Science Lord Sainsbury (later Chancellor of the University). During this period, various student entrepreneurship programs, which are now thriving and taken for granted, were established. Simultaneously, Cambridge Angels, a club comprising successful tech entrepreneurs, was formed. This influential but discreet club played a key role in recycling both funding and entrepreneurial talent. Additionally, new venture funds such as IQ Capital and Martlet Capital emerged as part of the growing ecosystem.

Photo 2. Simon Thorpe (member of Cambridge Angels) explaining operation mechanics.

The evolution of Cambridge as a tech cluster is striking in its serendipity, without a master plan or active government intervention. Although the current cluster focuses on "deep science" solutions (business-to-business) rather than digital or business-to-consumer products, the University only began developing science and engineering departments in the late 19th and early 20th centuries. It was not until the 1970s, with the relaxation of strict planning regulations and the establishment of specialist science parks and incubators, that supporting a cluster of start-ups or spinouts became feasible. Today, these science parks and incubators cater to various sectors and stages of entrepreneurial development.

Alongside serving as role models for academic entrepreneurship, the University of Cambridge has made a significant contribution to the cluster through its guiding ethos, as articulated in its mission statement. **The university's primary focus is not solely on winning prizes or generating the highest commercial rewards. Instead, its mission is dedicated to contributing to society through the pursuit of education, learning, and research at the highest international levels of excellence.** This commitment to excellence and societal impact underscores the university's influence on the Cambridge cluster and its emphasis on fostering innovation and knowledge for the betterment of society.

While the University of Cambridge has a strong research pedigree, its approach to technology transfer is permissive rather than directive. Academics are not obligated to commercialize their research or use Cambridge Enterprise, the university's technology transfer office. However, if they do work with Cambridge Enterprise, the remuneration terms are generous. University spinouts, defined as companies formed to commercialize university IP with university funding, are relatively rare, with only around twenty or so established each year.

Cambridge Enterprise is responsible for supporting the translation of university research to create globally leading economic and social impact. Deeply embedded in the UK's leading innovation and entrepreneurial ecosystem, Cambridge Enterprise has strong relationships with the University of Cambridge, industry, investors, and visionaries. Cambridge is described to be like a rainforest – rich and chaotic system, about letting curiosity take the lead and drive its innovations, whereas the university isn't trying to build that ecosystem but is one of the components to connect the stakeholders. Cambridge enterprise offers the commercialization support of tech transfer and is trying to provide path through from getting started to commercializing technology.

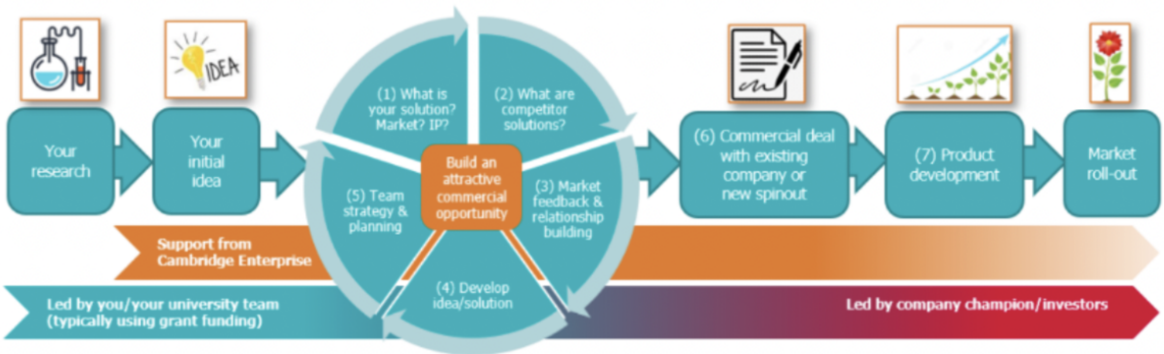

Figure 3: Cambridge commercialization journey for a university idea (based on the presentation of Brian Corbett from Cambridge Enterprise)

University has 20k students in total. It has a follow-on funding activity to provide seed funding for those companies coming out of the university:

1. **Licensing** – 55 patents applied for annually, managed and funded by Cambridge enterprise.
2. **Consultancy** – provides income to support the listed activities.
3. **Seed fund** – number 1 globally providing funding to spinouts. It is an evergreen fund, focusing on reinvesting the returns and feeding it back to the ecosystem.

The University (via Cambridge Enterprise) has first rights to file any registrable IP, usually a patent, that has been developed by an employee of the University:

- Opt-in/Opt-out.
- Students are not employees of the University and therefore own then IP in the material they create.

Cambridge Enterprise demonstrates impressive figures (table 1) across various categories: licensing 130 licenses annually, holding 2000 Patents in Portfolio, which has brought in £50M within 5 years. In the consultancy department they are supporting 240 faculty members and consulting 340 organizations per year, which has made over £30 million income in five years; it highlights robust financial performance. The Cambridge Enterprise seed fund is managing a diverse portfolio of 130 companies. With a substantial portfolio value of £107 million. The organization's efficacy is evident in a remarkable 90% survival rate of companies within five years. A noteworthy 4.2x multiple return on investments further underscores its impactful role in facilitating innovation and entrepreneurship.

LICENSING		**CONSULTANCY**		**SEED FUNDS**	
IDF's Annually	150	CONSULTANCY AGREEMENT	>400	INVESTMENTS ANNUALLY	~25
Patents in Portfolio	2000	ORGANIZATIONS SERVED ANNUALLY	340	IN FOLLOW ON INVESTMENTS	>£2.4bn
Patents Annually	55	FACULTY SUPPORTED ANNUALLY	240	COMPANIES IN PORTFOLIO	130
Licenses Annually	130	IN INCOME (5 YEARS)	>£30m	PORTFOLIO VALUE	£107m
License Income (5 Years)	£50m			SURVIVAL RATE OF COMPANIES (5 YEARS)	90%
Translational Funding (5 Years)	£60m			MULTIPLE RETURNS ACROSS INVESTMENTS	4,2x

Table 1. Figures of Cambridge Enterprise.

Table 2 outlines Cambridge University's revenue sharing structure from licensing technology. Net income is distributed based on income tiers. For the first £100k, inventors receive 90%, departments get 5%, and Cambridge Enterprise takes 5%. In the next £100k range, the split is 60% for inventors, 20% for departments, and 20% for Cambridge Enterprise. Above £200k, inventors, departments, and Cambridge Enterprise share at 34%, 33%, and 33% respectively. This model incentivizes innovation and aligns stakeholders' interests with increasing technology value.

Net Income (opt in)	**Inventor(s)**	**Department(s)**	**Cambridge Enterprise**
First £100k	90%	5%	5%
Next £100k	60%	20%	20%
Above £200k	34%	33%	33%

Table 2. Cambridge University's revenue sharing structure from licensing technology.

Cambridge Future Tech (CFT) is a Technology-First Venture Builder and works closely with the Cambridge Phenomenon (University and Angels) as well as other universities and cooperative spinouts. They work with early-stage founders, utilizing scientific discoveries and manufacturing innovations based on Deeptech from Digital (Artificial Intelligence & Big Data) to Physics and Materials (Quantum & Industry 4.0) and beyond (Including MedTech and Enterprise Tech), across several commercial verticals.

Cambridge Future Tech team members come in as commercial co-founders, bringing in full time support to help to realize the value of the company/founder and help them day to day until seed investment, after which they enter as non-exec advisors. The roles the CFT team can take on range from figuring out the business model to fundraising, bringing in tech founders, operations etc. There is a need to understand that deep tech companies and founders are different from the “regular” commercial co-founders. They need to focus on developing their IP and product and the rest can be outsourced.

Cambridge Future Tech comes in as commercial co-founders to give tech founders time to work on the product while CFT steps in on the operational level and create an innovation vehicle to accommodate the needs of a deep tech company and founder/s. Support the startup ecosystem with the support that is long term, flexible and easy to access. Share skills within the future tech team to help those portfolio deep tech companies with those needed skills – reviewing pitch, talking to the investors, cultivate relationships.

To support the deep tech ecosystem, main key take-aways from Cambridge Future Tech are as follows:

- Founders should primarily focus on product development and intellectual property (IP).
- Building a strong team and ecosystem is essential to support and align with the founders' focus and objectives.
- Investors actively contribute to ecosystem building by offering mentorship, support, and coaching to individuals and startups outside of their invested companies.
- Success requires collective dedication and effort from all parties involved.
- A commercial co-founder, like a Chief Commercialization Officer (CFT), plays a role in creating value for the company rather than competing with or replacing other team members.
- Hands-on approach is obligatory.

Key takeaways regarding deal flow specifically:

- Identifying and quickly assessing maturity is crucial.
- Effective communication with founders and finding the right fit are key elements in building a successful venture.

Some key lessons from the investor's perspective are the following:

- Angels as the primary link between founders and venture capitalists in the early stages can yield significant benefits. It is essential to foster and maintain strong connections between angels and venture capitalists to facilitate successful growth and investment in startups.
- Simplifying the cap table involves avoiding crowdfunding, encouraging universities to adapt as investors, pulling investors together in one vehicle, and implementing an efficient data model to scale with minimal effort.
- Having universities in a startup's cap table can offer historical perspective and continuity, but it may also present challenges related to scalability and hinder the pace of growth.

2.3 ECOSYSTEM AROUND THE EINDHOVEN UNIVERSITY OF TECHNOLOGY (THE NETHERLANDS)

Eindhoven University of Technology (TU/e) belongs to the top 200 universities in the world and is in the top 10 of technical universities in Europe. The university has been selected to the top 10 research universities in terms of industrial collaboration. For example, in 2006-2008, 10-20% of all their scientific publications were written collectively with industrial partners. It is noteworthy that about a third of TU/e's professors are working in the industry, instead of being full-time academic employees. Already 20% of the university's total revenue (80 MEUR) comes from contract research, with the pinnacle of their partnerships being the long-term close relationship with Philips. The university has also been considered as being the third in Europe in terms of the impactfulness of their research (and the first out of technical universities).

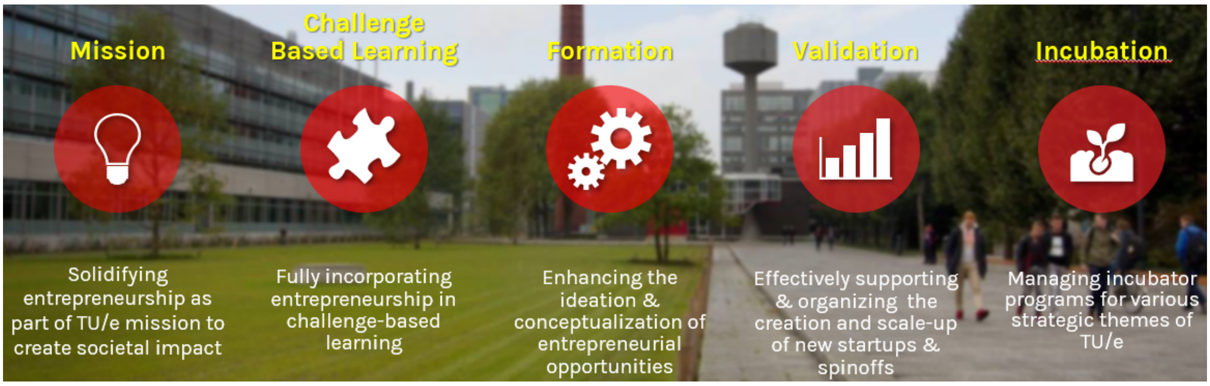

Figure 4: Key components of entrepreneurship support at TU/e

In the Eindhoven region, there have been clear efforts for decades to create an innovation and tech ecosystem around the university in close collaboration with the public and private sectors. A part of these efforts was the creation of a separate organization called **The Gate** which operates as the technology transfer office for the university and supports innovative companies within the whole region. Regarding its technology transfer office role, the Gate typically focuses on supporting teams that have reached Technology Readiness Level (TRL) 3 within the university. Therefore, their focus is on pre-seed and seed stages of startup development, and they aim at making the innovations scalable and investable. To reach their goals, the Gate provides a range of support activities, such as organizing masterclasses, providing early-stage funding, IP support, funding advice, and the Entrepreneur in Residence Programme.

The university is therefore in charge of creating the innovation projects and helping to take them to about TRL 3. There are several programmes and activities in place to increase the number of new spin-off and startup projects: Student Teams, Innovation Space, Eindhoven Engine, Honours Programme, and others. To encourage entrepreneurial thinking among the academic staff, the university allows researchers to take up to 0.8 FTE unpaid time off to work on creating a spin-off company as well as receive a portion of any revenue the spin-off ends up making. Academic staff is also financially rewarded for filing patentable inventions. There are also several financing options available within the university to support different stages of deep tech company development. The university is also engaged in measuring and analyzing the innovation ecosystem to provide data for improved decision making.

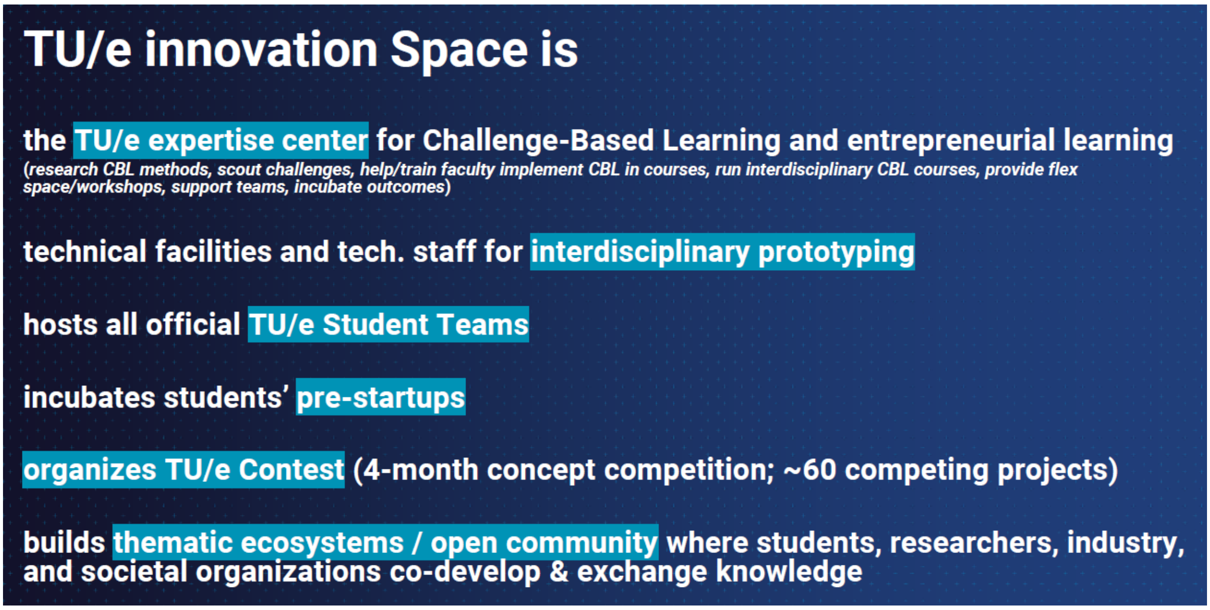

Figure 5: Role of TU/e innovation Space

Some key lessons that the Eindhoven region, typically called Brainport region within the innovation context, emphasizes for other ecosystems to consider implementing, are the following:

- Collaboration is key and should happen across the whole region. Not only is the university collaborating with industry, but also the governmental actors (including the municipal government) are closely involved in the so-called triple helix governance of the region. The tradition of cooperation goes back decades and there are clear concentrated efforts to strengthen the regional deep tech ecosystem. For instance, there are joint research projects, dual appointments of academics to industry roles, and co-publications.

- Although it is a good idea to build several innovation hotspots (campuses) to encourage competition and specialization, it is useful to end the fragmentation of startup support and establish a one-stop-shop for tech startups. In the Brainport region, 6 key partners came together and are now offering business development, IP protection, funding, and other startup support under one umbrella organization (The Gate). There are now well-developed paths for deep tech startups to follow.
- (Deep) tech entrepreneurship must remain the focus for key stakeholders and do so for years for strong competencies to develop. This means that universities must update their internal priorities and activities to encourage spin-off creation and other deep tech support activities.
- Starting to invest more into deep tech is a pivot for the investment community and should be treated as such. The community could benefit from support (including financial support) and guidance along the way as they move towards more deep tech based investment portfolios.
- IP managers and business development professionals should be domain specific, not generalists. However, they should combine both academic and business experiences. Furthermore, it is important for them to build strong relationships within the university.

There are two additional national programmes that may be relevant for other ecosystems:

- Thematic Technology Transfer support – a government funded programme that started in 2019 and is aiming at strengthening technology transfer around themes like A.I., MedTech, smart industry. Per theme, the government provides 8 MEUR support which is split between a consortium of universities and research organizations (3 MEUR) and an investment fund manager for a pre-seed investment fund (5 MEUR). The academic side uses this funding to provide early-stage business development vouchers of ca 25 kEUR and other support. The investment fund managers use their part of the funding to establish ca 250 kEUR convertible loans and other support. Having the investment funds involved gives early feedback to the startup teams and helps attract further investments.
- There is a national initiative in the Netherlands to create standardized deal terms and documentation for university spin-offs to increase transparency and improve the spin-off creation process.

Progress in Eindhoven for Fostering Student Innovation

What is of particular interest in Eindhoven is their focus on how students can create deep tech innovation. In Eindhoven, student teams are typically NGOs (comparable to MTÜ in Estonia) created and run by students over a period of several years. Each has a specific challenge that they work on. Students change over the years, but the challenge remains. Once there are mature technologies or innovations resulting from the work done, new companies are created to take the innovations to market, or the technology is licensed out. In Estonia, similar types of projects are the student formula teams and the student satellite teams. However, there are significantly more of such teams, and they have three assigned staff members supporting them at the university.

The university support for student teams is not focused on funding. Instead, the student teams must secure their own resources. As a result, every year these teams receive approximately 10-million-euro worth of in-kind contributions and financial support from companies in the region. Companies are happy to contribute because the student teams get a lot of publicity and are working on important causes, such as tackling climate or energy problems.

Photo 3: Nick Hol – Student @ TU/e having gone through TU/e's programmes with a startup called SOLID, now mentoring others.

Some key lessons from the student's perspective are the following:

- A lesson from Eindhoven for other ecosystems is to encourage and facilitate the creation of student teams. These are not companies, not startups, but rather volunteer-based teams that come up with new technologies and innovations. Eindhoven's experience has been that these are excellent at bringing the deep tech projects to the point where they can be turned into investment-ready startups. These teams need guidance, clear procedures, and rules (e.g., regarding intellectual property rights), training, as well as the technical facilities for prototyping. Especially important for students is to have the facilities open also on weekends and at night.

- The university is taking setting challenges for students seriously. They have staff members actively scouting academia and industry for new challenges that are open-ended, interdisciplinary, and collaborative. They recognize that working on these challenges can increase a student's study time by some months, but do not consider it as a problem because students significantly increase their employability by working on these practical and innovative challenges.

- Another interesting example for other higher education institutions to consider increasing the deal flow of student deep tech startups is the Honours Academy programme. Participation in the programme is offered to students across the university who have the highest grades. The participants are then given research challenges to tackle over a 2-year period as an extracurricular activity. The solutions these bright students come up with can then be the basis of the formation of new student teams or lead to scientific publications or other outcomes.

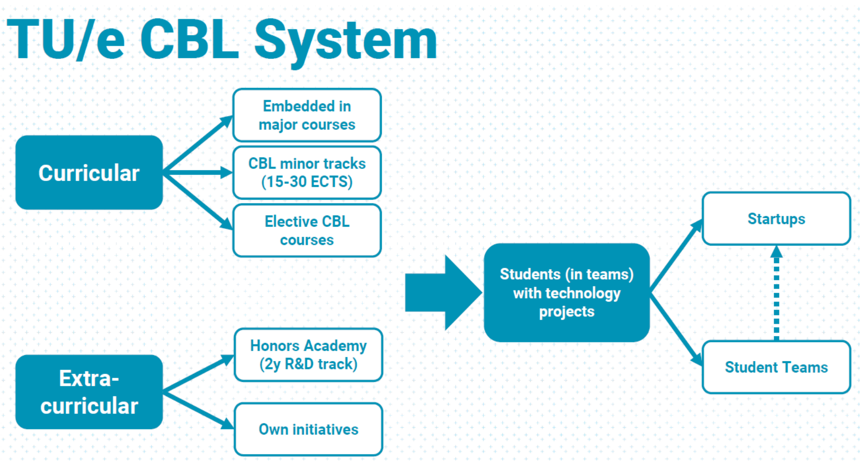

Figure 6: Key components of Challenge-Based Learning (CBL) at TU/e.

- Overall, it takes years of strategic efforts by the university and thousands of students to be working on hundreds of projects for there to be a handful of successful deep tech student startups. What helps to push the progress is that in Eindhoven the university is taking steps to prioritize flexible personalized learning paths and challenge-based learning. The hope is that, in addition to increased educational outcomes, this spurs innovation and encourages the creation of more deep tech startups. Classroom based approach is no longer seen as the way forward – instead, to motivate the current generation of students, Eindhoven recommends flexibility and mission-driven projects.

3. STAKEHOLDER GROUP DISCUSSIONS

During the seminars several group discussions were held by the stakeholders to find answers to the following questions:

1) **List and prioritize the needed main changes to increase the number and quality of science-based companies created at Estonian universities. How can I/my organization contribute?**
2) **Relevant Estonian deep-tech startup support in 2 years – list and prioritize support services, including programs and financing, that deep tech teams want and could get in Estonia in 2 years.**
3) **Investments to deep tech startups. Draw an ideal investment roadmap for a deep tech startup. Who are the players, what's their role, for what, when and in what size funding is needed?**
4) **How to attract early business focused co-founders to the university spin-off teams?**
5) **How can Estonian university spin-offs get to the TOP 100 prospects to the VC founders?**
6) **What are the top 2–3 changes to make per stakeholder group immediately vs in the next years to significantly increase the quality and quantity of Estonian deep tech startups.**

3.1 GROUP WORK #1 RESULTS

The first group work question that stakeholders collectively sought answers to in mixed groups was as follows:

List and prioritize the needed main changes to increase the number and quality of science-based companies created at Estonian universities. How can I/my organization contribute?

Main areas were as follows:

- **Investor education.** There is a need for investor education because the majority of investors lack a background in science. E.g., organizing "Lunch and learn" events, where bringing together research spin-offs at various stages of development and investors. Investors should collaborate and share their experiences among themselves, particularly because deep-tech investments often prioritize impact over profit.

- **Enabling entrepreneurship.** Promoting entrepreneurship and innovation by encouraging PhD students and researchers to engage in industry interactions and side projects that align with university guidelines. Making side-projects more transparent and sustainable, particularly through formal entrepreneurship training integrated into university programs and providing them with a level of security.
- **Building community.** Importance of establishing an extensive and professionally facilitated network of deep-tech. This network should include deep-tech investors, legal experts, accelerators etc. which are effective in providing proof-of-concept funding and connecting startups with angel investors.

The specific group responses are listed in Annex 4.1.

Photo 4. Group work discussion.

3.2 GROUP WORK #2 RESULTS

The topic of the second group session focused on the **relevant Estonian deep-tech startup support in 2 years. Stakeholders were asked to list and prioritize support services, including programs and financing, that deep tech teams want and could get in Estonia in 2 years.**

The main strategies outlined were as follows:

- **Support programmes.** There are sector-specific deep-tech accelerator programs (e.g., for Greentech), however, there is a lack of a unified horizontal vision for these programs. Advocating for the creation of a streamlined pathway for deep tech teams to transition from the lab to securing their initial funding. Also increasing science-based camps to facilitate team building and support with mentoring.

- **Common IP process.** Intellectual property (IP) transfer process needs to be transparent and unified. Implementation of a common IP protocol or set of rules to address IP matters through university agreements. Also, emphasizing the importance of raising awareness about existing IP technology transfer services, e.g., including the 5-hour free consultation provided by Enterprise Estonia for startups.
- **Funding.** Easier access to prototyping funding through universities as an initial step. As startups progress, early-stage venture capital, larger grants, and syndicates become relevant sources of funding. Involving international investors to facilitate scalability in the future.

The specific group responses are listed in Annex 4.2.

Photo 6. Group discussion.

3.3 GROUP WORK #3 RESULTS

The third group session focused on the **investments to deep tech startups. Discussion point included drawing an ideal investment roadmap for a deep tech startup. Who are the players, what's their role, for what, when and in what size funding is needed?**

Below are listed the main findings:

- **Angel/Pre-Seed Investment Phase:** Access funding for Proof of Concept (PoC) projects, with the potential to increase the volume for prototypes (easy access to the first-step grants/funding from universities). Considering forming broader syndicates or engaging early-stage venture capital with support from EU grants. Accelerator funds.
- **Seed Funding Phase (5 MEUR):** Combining EU funds for Deeptech startups with private investments at the relevant stage.

- **Building Strong Network:** Building a network of Technology Transfer Office (TTO) teams and investors, facilitating vertical-based meetings between investors and startup teams (e.g., lunch pitching sessions in universities). Actively participating in startup events and relevant networking opportunities to expand your knowledge and connections within the investment ecosystem. Scheduling introductory meetings to establish relationships without immediate investment objectives.

The specific group responses are listed in Annex 4.3.

3.4 GROUP WORK #4 RESULTS

Fourth group session searched for an answer to the question **how to attract early business focused co-founders to the university spin-off teams?**

To attract early business-focused co-founders to university spin-off teams, several strategies were mentioned:

- **Education and Communication:** Universities should educate scientist founders on business concepts and retrain businesspeople to work with scientists. Scientists need to effectively pitch their ideas to non-technical individuals. Universities should also communicate their openness to opportunities and showcase the value of their research.

- **Networking and Events:** Regular mingling events should be organized to bring together researchers, businesspeople, and investors. Universities should actively publicize their research results and inventions to attract co-founders. Engaging graduate students in initiatives and including residing businesspeople in startup programs can also foster connections.

- **Credibility and Support:** Universities should highlight excellent visionary science and use successful founders as examples to inspire the ecosystem. Building networks and providing business insights into science and vice versa can create attractive visions for outside business-minded founders. Clear rules on revenue sharing between inventors and universities, along with option pools, can increase credibility and incentivize co-founders.

- **Funding and Collaboration:** Governmental organizations should provide funding measures that reduce financial risk for early-stage ventures. Collaborating with support organizations/programs and partnering with local and international business schools can offer additional resources and challenges to attract co-founders.

By implementing these strategies, universities can create an ecosystem that appeals to early business-focused co-founders, foster collaboration between scientists and business professionals, and increase the success of university spin-off teams.

The specific group responses are listed in Annex 4.4.

Photo 5. Group discussion.

3.5 GROUP WORK #5 RESULTS

During the fifth group work, stakeholders put their heads together to find an answer to the question of **how Estonian university spin-offs get to the TOP 100 prospects of the VC founders?**

To get Estonian university spin-offs into the top 100 prospects for VC founders, the following strategies were mentioned:

- **Proving the Problem and IP/Business Strategy:** Spin-offs need to demonstrate that they are solving a real problem, with evidence such as Letters of Intent (LOI) and technical works. They should have a well-thought-out intellectual property (IP) strategy and a solid business strategy.

- **Choosing the Right Investor:** Finding the right investor is crucial. Spin-offs should seek warm leads and leverage mentors, advisors, and angel investors for credibility. They should also communicate with investors as regular people and put emphasis on their brand.

- **Preparation and Materials:** Spin-offs should prepare essential materials such as a data room, pitch deck, sales plan, and financial information. These materials should effectively communicate the business value and expertise of the founders.

- **Warm Introductions and VC Selection:** Warm introductions to VCs are important, as VCs often rely on trusted connections. Spin-offs should do their homework and prospect the right VCs based on their industry focus and investment preferences.
- **Commitment and Persistence:** Spin-offs should demonstrate their commitment to becoming successful entrepreneurs and persist in their efforts even in the face of challenges or initial rejections.

Additionally, specific factors were mentioned as important for spin-offs to be considered top prospects by VCs:

- **Strong Research and Scalability:** Spin-offs should have groundbreaking research that demonstrates vision and scalability in terms of technology and market size.

- **Research Funding Alignment:** Research funding should align with the spin-off's R&D strategy, showing that the funds are applicable to their goals.

- **Clear Technology Transfer Structure:** Universities should have a clear and systematic structure for technology transfer that is understandable to VCs.

By implementing these strategies and addressing the key factors, Estonian university spin-offs can increase their chances of becoming top prospects for VC founders, securing investment, and accelerating their growth.

The specific group responses are listed in Annex 4.5.

3.6 GROUP WORK #6 RESULTS

The content of the last group session included a discussion about **what are the top 2–3 changes to make per stakeholder group immediately vs in the next years to significantly increase the quality and quantity of Estonian deep tech startups.**

The groups focused mostly on discussing the different stakeholder groups and their activities, not the time horizon. Therefore, here are the recommendations with the implementation timeframe being ca 5 years:

- **Enhancing Education and University Collaboration:** It is essential to promote entrepreneurship, intellectual property, and deep tech subjects within the educational system. This includes integrating these topics into the curriculum. Establishing Entrepreneur in Residence programs at universities can provide valuable guidance and support to aspiring entrepreneurs. This enables researchers to simultaneously engage in industry work or pursue entrepreneurial ventures, fostering a more dynamic ecosystem.

- **Investor Engagement:** Raising awareness, shifting investment mentalities, and providing investor education are essential to better understand and support deep tech startups. Also strengthening collaboration with the public sector and universities can tap into valuable resources and expertise. Establishing specialized deep tech investment funds can channel resources effectively into startups in this sector.

The specific group responses are listed in Annex 4.6.

Photo 7. Group discussion.

The first gatherings with all key stakeholders, that provided an opportunity to exchange best practices from various ecosystems and engage in discussions surrounding the challenges and opportunities in deep tech, is marking an important milestone. Emphasizing the importance of ongoing learning, the project partners recognize the necessity for a follow-up project, to further advance the deep tech ecosystem development.

ANNEXES

ANNEX 1: GROUP WORK #1 SPECIFIC ANSWERS

Group work #1 specific responses to the question: **List and prioritize the needed main changes to increase the number and quality of science-based companies created at Estonian universities. How can I/my organization contribute?**

Group 1:

- University should help scientists to find business leaders, more connection between scientists and entrepreneurs:
    a) through LinkedIn group,
    b) special events (Startup Estonia, EstBAN etc.),
    c) hackathons with scientists and business leaders for defining product potential and market size and finding co-founders for prospective ideas,
    d) through communicating and presenting their ideas and technologies.
- University spin-off teams should have more freedom.
- Universities must make quicker decisions and not slow down the processes.
- Universities must tolerate more failures. Failing a startup is not a failing model. University risk tolerance is close to zero, which does not match with the essence of a startup.

Group 2:

- Encourage lecturers, researchers.
- Inspire and mentor students (UT Idea Lab).
- Make team building easier (UT Starter). More Science Base Camps (NGAL).
- "Lunch and learn" events for investors about science. Universities actively present science projects.
- Research projects intros to EstBAN.
- Active scouting to offer seed money.
- More governmental business development grants for early phase deep tech (such as RUP).
- Media coverage of promising scientists, projects to inspire, draw attention.

Group 3:

- Normalize side hustles.
- Expand the mouth of the funnel.
- Need to change culture at universities → Researchers need a side hustle → Universities need to support these side projects (maybe 1 day for it).
- Take startup activities into account in PhD studies.
- Entrepreneurship must be taught.
    a) Should be ingrown through all the training courses.
    b) Researchers need to work on business skills.

Group 4:

- General functionality of the ecosystem – from schools to manufacturing and internalization.
- Inspiration for potential founders – making the journey visible, transparent, success stories.
- Better scouting, 1/10 among talents are potential founders.
- Deep dive scanning of the opportunities + IP strategy for research teams, projects.
- Awareness about IP creation – know ABC and talk to experts before publishing. Quality IP creation service.
- Funding – small PoC and BD bets and bigger bets.
- Venture building – consortium pool of applied research.

Group 5:

- Not enough students to include in the teams.
- Postdocs/talents are leaving.
- Teams should be from very different sectors.
- Transparent path and process for commercialization.
- There is a lack of awareness and knowledge among students.
- Entrepreneurs/investors do not know about universities.
- Global talents are leaving and spreading tech and knowledge to especially to the developing countries.
- Academia and Investors/Industry are living in their own bubbles.
- Molecular biology PhD students: but how do I start?
    a) Check again the process – Solution → Problem to match with mentors.
    b) Teams-building skills.
- Linked and integrated system of commercialization supports/grants.
- Commercialization grants often do not serve the aim (rules and restrictions do not allow to buy what is needed).
- Testbeds for innovation.

- Universities need to solve the IP transfer: should be transparent and clear and follow worlds' best practices.

Group 6:

- Funding: Business development funding is desperately needed.
- Well-developed spin-off programme: strong filter when selecting teams that will receive the support; clear plan with milestones and support programmes (starting with an A4 overview); match the programme with the niche the team is in = mentoring based on your actual area (teams choose mentors); one contact person within university for each team.
- Internal communication: allocated contact person for each institute; promoting the entrepreneurship role models within university; building a network of entrepreneurship-minded researchers; building good personal relationships between researchers and entrepreneurship specialists (step into the office).
- Leadership: having a dedicated long-term leadership within the university.
- External communication: strong marketing of university success stories (wall of fame).

ANNEX 2: GROUP WORK #2 SPECIFIC ANSWERS

Group work #2 specific responses to the question: **Relevant Estonian deep-tech startup support in 2 years – list and prioritize support services, including programs and financing, that deep tech teams want and could get in Estonia in 2 years.**

Group 1:

- Agile prototype funding.
- Bigger monetary prizes on hackathons.
- Legal help.
- Obvious pipeline.
- University kicks teams out too soon.
- Focused support to specific sectors.
- Spinouts Denmark – Spinouts Estonia.
- Better timing for accelerators. Science acceleration programs.

Group 2:

- Business services support measures for startups. Market research, problem-market fit etc.
- Building an Investor community around Deep Tech.

- Deeptech-Only, long term accelerator programme (only verticals and seasonal accelerators exist).
- More visibility to IP and Tech Transfer services (available now at Enterprise Estonia).
- Putting content into the 3rd mission of universities – turning motivation for tech transfer from income to impact.
- Entrepreneur's stipend for scientists.
- Common IP protocol.

Group 3:

- While working at the university:
    a) Easy Access to Funding for building the prototype – grants (fundamental and applied research). Partially supporting R&D and partially commercialization.
    b) Mentorship program (includes alumni network, companies R&D team leads) → BoD.
- Clear path of TTO support:
    a) Patent before publishing – support the researcher before publishing the research as the publication.
    b) Help getting the letter of intent from potential customers – as a pre-requirement for grant.
    c) Patent help (novel, applicable, not obvious).
- Support on building teams – networking for finding co-founders.

Group 4:

- Pitching-presentation skills.
- Generic mentoring.
- Funding: Proof of Concept Fund → Prototype → Business Development/Market Validation (certification, licenses, demos etc.).
- Grants and private capital matching (big grants support/counseling).
- Network with early-stage investors and corporate VC, but the networking should be professionally facilitated.
- Deep-tech investors'+legal+other experts' community (for example, Deeptech Pub).
- IP transfer process across the universities.
- IP documentation.
- Showcases and visibility for Deeptech teams – support for different stages.

Group 5:

- Basic programme for all, but sector-specific variability for advanced programmes including business development funding.
- Mentoring: flexible, C-level, international mentors, sector-specific knowledge.
- International networking: public sector efforts to join international clusters, KIC-s etc.
- Financing: need financing for business development (e.g., international sector-specific events).

ANNEX 3: GROUP WORK #3 SPECIFIC ANSWERS

Group work #3 specific responses to the question: **Investments to deep tech startups. Draw an ideal investment roadmap for a deep tech startup. Who are the players, what's their role, for what, when and in what size funding is needed?**

To segment the answers to different parties in our startup ecosystem, the suggestions would be divided as follows:

Universities:

- Idea – feasibility research and lab-tests.
- More simple funds for the idea/concept. Get first step grant/funding from the University easily.
    a) Prototyping grants can't be underestimated (need a lot of small grants, easy to get).
    b) Spin-off programs in university – 10k and 75k€ for development (300k budget).
    c) Accelerator fund + mentoring.
- Universities facilitate Deeptech awareness and ecosystem development.

Startups:

- Start building a network towards accelerators, angel groups, advisors, venture investors of your industry. Have introductory meetings without focusing on getting investment.
- When ready to raise VC funding, work with other startup founders/angel investors for the best approach.
- Attend startup events.

Investors:

- Angel investment (prototype is ready). Add-on from grant.
    a) Network of TTO teams and investors – vertical based meetings between investors and teams.
    b) Domain specific investors with TTO – Private investors visiting university – Lunch pitching stage – get the team to support.
    c) Broader syndicate or early-stage VC + EU grants.
- Pre-seed/Seed 1…3 MEUR
    a) business angels + Extra structure to cover investment lead & tech expertise fees.
    b) should be included international investors.
- Seed – 5 MEUR.
    a) EU funds for Deeptech + relevant stage private money.

Governmental Organizations:

- Proof of concept/prototype funding.
    a) PoC – 30 kEUR prototypes (the volume should be increased).
    b) Booster – 70…100 kEUR (the volume should be increased).
- Potential EU grants for further developing the concept.

ANNEX 4: GROUP WORK #4 SPECIFIC ANSWERS

Group work #4 specific responses to the question: **How to attract early business focused co-founders to the university spin-off teams?**

To segment the answers to different parties in our startup ecosystem, the suggestions would be divided as follows:

Universities:

- Celebrating excellent visionary science.
- Educating scientist founders and retraining businesspeople to work with scientists.
- Creating opportunities for early-stage founders to find each other.
- Engaging graduate students in initiatives Including residing businesspeople in university startup programs.
- Active publicity of research results/inventions to attract co-founders.
- Forming networks and providing business insights to science and scientific insight to business students Proper and systematic structure of technology transfer in the university.
- Supportive structures within universities and more employees in technology transfer and entrepreneurship cooperation departments.

- Partnering with local and international business schools to set challenges.
- Support for scientists in making the first sales to reduce risk for business co-founders.
- Providing financial value proposition and support from universities.
- Interim programs and micro degrees in business for deep tech entrepreneurs.

Startups:

- Promote existing success stories.

Investors:

- Investors suggesting correct matches through organizations like EstBAN.

Governmental organizations:

- Soft landing for those ready to make the leap internationally.
- Providing funding measures to reduce financial risk.
- Attractive startup ecosystem.

Startup Support organizations/programs:

- Regular mingling events for researchers, businesspeople, and investors.
- Facilitating communication and networking between scientists and business-minded individuals.
- Validating information and building trust.

ANNEX 5: GROUP WORK #5 SPECIFIC ANSWERS

Group work #5 specific responses to the question: **How can Estonian university spin-offs get to the TOP 100 prospects to the VC founders?**

Segmentation of answers for attracting Estonian university spin-offs to the top 100 prospects for VC founders:

Universities:

- Ensure a clear and systematic structure for technology transfer.
- Align research funding with R&D strategy.
- Support spin-offs in proving problem and IP strategy.
- Foster credibility through mentors, advisors, and angel investors.
- Facilitate warm introductions to VCs.

Startups:

- Get warm leads to investors. Choose the right investor. Target the right VC investors based on research and industry focus.
- Prove problem and demonstrate IP strategy.
- Develop a clear business strategy.
- Prepare materials such as data room, pitch deck, sales plan, and finances.
- Communicate exceptional scientific and business excellence.
- Leverage unfair advantages and proof of excellence.
- Present a compelling pitch deck outlining motivation and expertise.
- Show commitment to becoming successful entrepreneurs.

Investors:

- Seek credibility through mentors, advisors, and angel investors.
- Make great introductions to deep tech VCs.
- Communicate as regular people.
- Emphasize brand.
- Persistence in engaging with investors.

Governmental Organizations:

- Provide research funding that aligns with spin-offs' R&D strategy.
- Support the development of a clear and systematic structure for technology transfer.
- Collaborate with startup support organizations to provide resources and assistance.

Startup Support Organizations/Programs:

- Provide support for spin-offs to prove problem and IP strategy.
- Assist in developing a clear business strategy, and help startups prepare materials such as pitch decks, data rooms, and sales plans.
- Offer mentorship and advisory services.
- Facilitate connections with angel investors and VCs.

ANNEX 6: GROUP WORK #6 SPECIFIC ANSWERS

Group work #6 specific responses to the question: **What are the top 2–3 changes to make per stakeholder group immediately vs in the next years to significantly increase the quality and quantity of Estonian deep tech startups.**

To segment the answers to different parties in our startup ecosystem, the suggestions would be divided as follows:

Universities:

- Integrating and promoting entrepreneurship, intellectual property, and deep tech topics more into education.
- Encouraging and facilitating double positions for academia (i.e., allowing researchers to simultaneously work in industry or as entrepreneurs).
- Establishing more collaboration within the ecosystem, such as having universities present at startup events.
- Creating an Entrepreneur in Residence programme in universities.
- Making the intellectual property policies more transparent and standardized.
- Updating university KPIs to encourage commercialization.
- Hiring more top scientists to create innovation and commercialization communities.
- Financing commercialization efforts made by scientists more.
- Identifying the individuals and organizations that can lead the change.
- Identifying the reasons behind the lack of engineers.

Investors:

- Raising awareness, changing mentality, educating investors.
- Cooperating more with public sector and with universities.
- All stakeholders funding deep tech more (including allowing for the stacking of loans and subsidies).
- Creating focused deep tech investment funds.

Startup Support Organizations/Programs:

- Making grants with low self-financing available.
- Identifying the strengths of each organization.