From Strategy to Scale: Unlocking Europe's Deep Tech Potential

ASCEND PRE-CONFERENCE REPORT

hello tomorrow | DTU

Funded by novo nordisk foundation

TABLE OF CONTENTS

FOREWORD 2

FROM STRATEGY TO SCALE: UNLOCKING EUROPE'S DEEP TECH POTENTIAL ASCEND PRE-CONFERENCE REPORT 3

Introduction 3

Executive Summary 4

PART 1 - ENABLING DEEP TECH SCALING IN EUROPE 8

Access to financing and investment 9

Regulatory and market integration 12

Innovation infrastructure 15

Specialised talent and skills 18

Recommendations: Selecting priority levers for scaling deep tech in Europe 21

PART 2 - IMPLEMENTING KEY INITIATIVES OF THE EU STARTUP AND SCALEUP STRATEGY 23

A. DEPLOY A SCALEUP EUROPE FUND ABLE TO MEET DEEP TECH CAPITAL REQUIREMENTS 23

A.1 Contextual landscape 24
A.2 Key stakeholders to engage 24
A.3 Implementation strategies at a European level 25

B. PROMOTE THE DEPLOYMENT OF REGULATORY SANDBOXES FOR THE TESTING AND INDUSTRIALISATION OF EMERGING TECHNOLOGIES 29

B.1 Contextual landscape 29
B.2 Key stakeholders to engage 29
B.3 Implementation strategies at a European level 31

C. FACILITATE ACCESS TO TECHNOLOGY INFRASTRUCTURES (TIs) FOR INNOVATIVE COMPANIES 33

C.1 Contextual landscape 33
C.2 Key stakeholders to engage 34
C.3 Implementation strategies at a European level 35

QUESTIONS TO BE ADDRESSED AT THE ASCEND INNOVATION CONFERENCE 38

ANNEX - METHODOLOGY AND DATA 39

REFERENCES 41

ACKNOWLEDGEMENTS AND AUTHORS 42

FOREWORD

Europe stands at a critical juncture. We possess world-leading research capabilities and a strong commitment to addressing global challenges, yet we still struggle to translate scientific excellence into new, global technology leaders.

In 2024, the Draghi report highlighted the key challenges to Europe's competitiveness, setting it as a top priority for the European Union. Europe now has a unique opportunity to strengthen its innovation system and ability to commercialise its scientific excellence. By creating stronger connections between markets and regulation, enhancing investment ecosystems, and fostering world-class talent, we can accelerate the scale-up and global impact of technologies – especially in deep tech – and position Europe at the forefront of solving the world's most pressing challenges.

In November 2025, during the Danish Presidency of the European Council, Technical University of Denmark (DTU) is proud to host the semi-annual EU innovation conference, together with the Danish Ministry of Higher Education and Science, and supported by the European Innovation Council and the Novo Nordisk Foundation.

The ASCEND Innovation Conference focuses on how Europe can strengthen its capacity to scale deep tech ventures. It takes its departure in the EU Startup and Scaleup Strategy published in May 2025 and zooms in on what it will take to realise the ambitions of this strategy.

To set the scene for the conference, DTU commissioned Hello Tomorrow to prepare this report, which was made possible through the support of the Novo Nordisk Foundation. It highlights the key opportunities and urgent actions needed to close Europe's scaleup gap and offers concrete recommendations for implementing three of the strategy's key flagship initiatives. At the conference, these initiatives, along with several other important topics, will be further examined and discussed with new input from key stakeholders and the latest policy developments.

At DTU, our mission is to be of benefit to society, to transform scientific discoveries and ideas into societal impact. Technical universities play a crucial role in turning ideas into innovation – and scaling this innovation – through research, talent development, collaboration with industry, state-of-the-art research and technology infrastructures and by fostering strong ecosystems for technology-based innovation and entrepreneurship. DTU exemplifies this by nurturing deep tech startups that scale research into real-world impact and drive Europe's technological competitiveness.



Anders Overgaard Bjarklev, President, Technical University of Denmark

I hope that the insights of both this report and the ASCEND conference will inspire policymakers, startups, investors, industry, academia and research institutions across Europe to act decisively. We must pursue a coordinated and ambitious effort to ensure that our research is transformed into sustainable solutions for the benefit of society, and for the benefit of Europe.

Anders Overgaard Bjarklev
President
Technical University of Denmark

INTRODUCTION

FROM STRATEGY TO SCALE: UNLOCKING EUROPE'S DEEP TECH POTENTIAL

ASCEND PRE-CONFERENCE REPORT

While Europe excels in scientific excellence and groundbreaking research, a persistent gap remains in turning innovation into scalable ventures, especially for deep technologies. The EU Startup and Scaleup Strategy, published in May 2025 by the European Commission, proposes a transformative agenda to address this challenge. However, turning strategy into tangible impact requires a sharp focus on implementation.

This report synthesises the main challenges to scaling deep tech in Europe, based on a review of recent literature and interviews, with particular attention to insights from the 2024 Draghi Report. It also examines key initiatives from the EU Startup and Scaleup Strategy to provide a practical, stakeholder-informed view for implementation. Our analysis draws on a questionnaire completed by 61 handpicked deep tech actors throughout Europe to prioritise and refine barriers identified in the literature, as well as 21 interviews with members of the EU Startup and Scaleup Strategy implementation task force and future beneficiaries, including deep tech scaleups.

We identified three strategic initiatives based on expected impact, feasibility across Member States, and short-term tangible results to explore how the EU Startup and Scaleup Strategy's ambitions can be realised. We then analysed these three initiatives further through additional interviews and workshops with founders, investors, regulators, and support organisations.

Commissioned by Technical University of Denmark (Danmarks Tekniske Universitet, DTU), this report supports the preparation of the ASCEND Conference under the Danish EU presidency. With this report and the upcoming discussion during the conference, we aim to move the conversation forward, helping to kick-start the rollout of the EU Startup and Scaleup Strategy, provide inputs to the upcoming European Innovation Act, and turn ambition into action.

We invite you to join the conversation at ASCEND and contribute to driving Europe's emergence as a true global deep tech powerhouse.

EXECUTIVE SUMMARY

ENABLING DEEP TECH SCALING IN EUROPE – KEY CHALLENGES AND STRATEGIC INITIATIVES

This report draws on extensive desk research and stakeholder input (including interviews, survey, and workshops) to synthesise the key structural barriers that hinder the scaling of deep tech startups in Europe, and presents them alongside the corresponding initiatives outlined in the Startup and Scaleup Strategy.

A detailed methodology and data analysis can be found in the Annex – Methodology Data (page 39).

The analysis is structured around four key themes, representing critical levers for closing Europe's scaleup gap. For each theme, the report outlines the main challenges facing Europe and highlights priority initiatives in the Startup and Scaleup Strategy identified by leading actors in the deep tech community:

1. Access to financing and investment, focusing on the critical capital gaps faced by deep tech ventures, particularly during the growth phase.

CHALLENGES	PRIORITY INITIATIVES
Late-stage investment gap: Stakeholders highlight a major barrier in late-stage funding as the European VC ecosystem is underpowered, offering **70-80% less funding than the US**.	**Deploy the Scaleup Europe Fund**: A privately managed vehicle, co-financed by the European Innovation Council (EIC), is the key priority intended to mobilise significant private capital and deploy large tickets (€50 million or more), with a total required capacity of at least €10 billion.
Fragmentation and exits: Regulatory, legal, and fiscal fragmentation limits cross-border VC investment. **Limited exit options, with lower M&A valuations** and less competitive stock exchanges, drive many European companies to list in the US. **Untapped institutional capital**: Europe's bank-centric financial system leaves large pools of institutional funds **(€1,390 billion in 2022)** largely **uninvested in deep tech**.	**Unlock institutional funds**: A voluntary European Innovation Investment Pact is proposed to incentivise institutional investors to fund high-growth startups. Regulatory changes, such as revising the Solvency II Directive, would lower capital requirements for venture investments by insurance companies and pension funds.

2. Regulatory and market integration, exploring how fragmentation and complexity across 27 national legal frameworks slow down market access, along with the absence of targeted public procurement measures.

CHALLENGES	PRIORITY INITIATIVES
Fragmentation and complexity: Europe's **27 national legal frameworks** create a fragmented ecosystem, making cross-border scaling costly and difficult. Half of survey respondents rate this as the most critical barrier to solve.	**Develop a unified regime**: The proposal for a European 28th regime aims to create a single legal status for innovative European companies, streamlining setup and reducing the cost of failure across the European Union.
Regulatory red tape: Founders face complex, costly procedures from over 100 EU tech-related directives, causing significant administrative burdens and long development timelines (e.g., **industrial permits taking 3-5 years**).	**Promote regulatory sandboxes**: The European Innovation Act will promote regulatory sandboxes, offering controlled, flexible spaces for innovators to test and deploy new technologies, accelerating time-to-market and industrialisation.
Restrictive public procurement: The **€2 trillion public procurement market** is largely inaccessible to deep tech startups, with only one third of contracts awarded to small and medium-sized enterprises (SMEs). Requirements like high turnover or prior experience systematically exclude new innovators.	**Foster pro-innovation procurement**: The European Commission plans a proposition to simplify access to public procurement by limiting over-specification and excessive financial requirements in tender documents.

ENABLING DEEP TECH SCALING IN EUROPE – KEY CHALLENGES AND STRATEGIC INITIATIVES

3. Innovation infrastructure, examining the lack of supportive environments for scaleups including innovation hubs and facilities which, even when available, are often too costly and complex to access.

CHALLENGES	PRIORITY INITIATIVES
Financial and administrative barriers: high costs, limited visibility, and complex application processes hinder startup access to technology infrastructure. Publicly funded facilities often prioritise academic objectives, limiting their suitability for commercial use.	**Facilitate access to technology infrastructures**: The core initiative is the **Charter of Access** for industrial users, which aims to harmonise and simplify access and contracting conditions for technology infrastructures. **Bring visibility and legal clarity**: Single-entry points (one-stop shops) are planned to enhance technology infrastructure visibility, while the Innovation Act will clarify State Aid rules for access, ensuring legal certainty.
Inadequate scaling infrastructure: Europe lacks a unified strategy for technology infrastructures, such as test beds and pilot lines. These are essential for scaling deep tech, especially in the **energy and semiconductor industries**, where up to **90% of startups face a lack of available infrastructure**.	**Increase capacity and mobilise investments**: Strengthen and modernise Europe's technology infrastructures through increased EU investment, coordinated prioritisation, and targeted voucher schemes.

4. Specialised talent and skills, covering key challenges such as the acute shortage of skilled deep tech talent, regulatory barriers to cross-border mobility, and the ongoing brain drain of skilled professionals.

CHALLENGES	PRIORITY INITIATIVES
Critical skills shortage and brain drain: Europe faces a severe deep tech talent shortage, with a **7% decline in science, technology, engineering, and mathematics (STEM) doctoral graduates** between 2015 and 2022. Skilled professionals increasingly migrate to non-EU markets, especially the US, while fragmented legal frameworks (complex visas, work permits, and lack of mutual qualification recognition) hinder cross-border mobility.	**Launch of the Blue Carpet initiative**: This is a strong strategic step intended to attract and retain highly skilled and diverse talents from both within and outside the EU, potentially by deploying the Blue Card Directive and introducing fast-track visa processes.
Downstream bottleneck: As deep tech scales, there is a lack of specialised 'advanced blue-collar workers' needed for production and process optimisation, hindering industrial deployment.	**Provide academic-industry blueprints**: Developing a blueprint for academic career development that rewards research commercialisation activities will help unlock academic potential and narrow the gap between academia and industry.

EXECUTIVE SUMMARY

ENABLING DEEP TECH SCALING IN EUROPE – KEY CHALLENGES AND STRATEGIC INITIATIVES

Implementation recommendations on three priority initiatives

Initiatives in the Startup and Scaleup Strategy were assessed according to the three criteria listed below:

1. **Impact**: Would this initiative make a significant difference for the growth and global competitiveness of deep tech scaleups in Europe and was it highlighted as a priority by our respondents?
2. **Ease of implementation**: Are there major implementation challenges identified? Can it be supported by existing frameworks/initiatives?
3. **Timeframe**: Can the initiative be initiated now, with expected benefits in the near term?

Based on this assessment, three initiatives were deemed high-impact and particularly crucial in the early roll-out of the Startup and Scaleup Strategy.

This prioritisation aims to guide EU policy action, starting with the most actionable initiatives while maximising EU-level impact. To tailor our analysis to deep tech specificities, we engaged investors, entrepreneurs, regulators, and public institutions from the European deep tech ecosystem through workshops and interviews. In collaboration with these stakeholders, we identified practical considerations and critical factors for short-term implementation, resulting in a stakeholder-informed summary of key points to advance Europe's deep tech ecosystem.

A. Deploy a Scaleup Europe Fund able to meet deep tech capital requirements

The Scaleup Europe Fund is key to closing Europe's late-stage investment gap, strengthening the region's economic security, and attracting private investments for growth stage companies. Co-financed by the EIC, it should meet the substantial capital needs of growth-phase ventures and prevent relocation abroad. The following key success factors and implementation recommendations were formulated:

- **Strategically align investments** with Europe's defined **critical technology areas** (e.g., quantum, biotech, semiconductors) rather than adopting a sector-agnostic approach.

- **Aim for Series C** (or large Series B) stage investment, using technology progress rather than revenue as eligibility, so as not to exclude high-potential ventures with long R&D cycles.

- Target **€30-50 million per investment**, with fund size toward **€10 billion**, and position the fund as a **lead investor** to reduce perceived risks and effectively crowd-in private capital.

- **Provide incentive mechanisms**, such as first-loss protection, to maximise private sector engagement, with a long-term goal of achieving a **1:4 public-private investment ratio**.

B. Promote the deployment of regulatory sandboxes for the testing and industrialisation of emerging technologies

Regulatory sandboxes offer controlled, flexible environments for testing new technologies while helping regulators adopt innovation-friendly rules. To ensure equitable access and effective translation of regulatory sandbox learnings into scalable regulatory reforms, the following key success factors and implementation recommendations were formulated:

- **Establish EU-wide regulatory sandboxes** for cross-border or EU legal areas (e.g., The EU AI Act) while supporting alignment among Member States in decentralised schemes.

- **Install the EU to act as the main authority**, setting the legal framework, rulebook, operational procedures, participant admission, evaluation criteria, and ensuring transparency. The EU will in this way function as a secretariat for pan-European experimentation.

ENABLING DEEP TECH SCALING IN EUROPE – KEY CHALLENGES AND STRATEGIC INITIATIVES

B. Promote the deployment of regulatory sandboxes for the testing and industrialisation of emerging technologies

- **Adopt bottom-up approaches**, involving startups, SMEs, and innovators early to identify key policies and challenges, thereby aligning regulatory sandbox focus with market needs.
- **Provide ongoing technical, regulatory, and legal assistance**, including compliance tools, templates, and centralised knowledge-sharing platforms for regulators.

C. Provide facilitated access to technology infrastructures for innovative companies

Facilitating cost-effective, agile access to technology infrastructures is key to de-risking research and development (R&D), accelerating industrial deployment, and strengthening Europe's strategic autonomy. To address barriers like inconsistent access and complex procedures, the voluntary Charter of Access should be reinforced with additional measures:

- **Integrate the Charter into a legally binding instrument** (e.g., the European Innovation Act) to ensure adoption and effective implementation.
- **Develop standard contractual models** for technology infrastructure agreements, with clear IP policies, to reduce legal costs and build scaleup trust.
- **Launch a centralised one-stop shop portal** to improve technology infrastructure visibility and streamline applications, with sustainable funding.
- **Establish EU-wide voucher schemes and co-funding mechanisms** to subsidise access for startups, prioritising strategic sites in critical domains (e.g. AI and quantum).

The findings from this report will be discussed further at the ASCEND Innovation Conference under the Danish EU presidency and summarised in a post-conference report enhanced with the contributions made during the conference. Together, these will kick-start the rollout of the EU Startup and Scaleup Strategy turn ambition into action.

PART 1

ENABLING DEEP TECH SCALING IN EUROPE

This section builds upon key pillars identified in the **EU Startup and Scaleup Strategy**, published in May 2025 by the European Commission. The strategy outlines five strategic areas to support startup growth in Europe: innovation-friendly regulation, better finance, fast market uptake and expansion, support for the best talent and access to infrastructure, networks and services. These elements shape the direction of EU initiatives designed to unlock startup and scaleup potential.

Building on this framework, the following section synthesises the **main structural barriers to scaling deep tech startups in Europe**, as identified through our research and stakeholder inputs. It also highlights how planned initiatives under the EU Startup and Scaleup Strategy aim to address these challenges.

The analysis is structured around the following four key themes:



Access to Financing and Investment, as outlined in the strategy as Better Finance for Startups and Scaleups, focuses on the capital gaps faced by deep tech ventures.



Regulatory and Market Integration, linked to Innovation-Friendly Regulation as well as Fast Market Uptake and Expansion, explores how regulatory complexity and fragmentation across Member States slows down market access and highlights the absence of targeted public procurement measures to support deep tech.



Innovation Infrastructure, echoing Access to Infrastructure, Networks and Services, examines the lack of supportive environments for scaleups - including innovation hubs and facilities – that, when existing, are are costly and complex to access.



Talent and Skills, based on Support for the Best Talent in Europe, covers key challenges such as regulatory barriers to talent mobility, persistent gender imbalances in tech leadership, and the ongoing brain drain of skilled workforce.

Together, these key scaling levers reflect messages and priorities voiced by the deep tech community, offering a grounded perspective on the enablers that matter most to support scaleup success in Europe.

Access to financing and investment remains a significant barrier at the growth stage

1. KEY CHALLENGES

While early-stage support in Europe (from pre-seed to Series A) has almost tripled over the past decade[1], a critical barrier emerges when startups need to raise funds to transition to the growth and scaleup phase. In our survey, **50 out of 61 respondents rated the 'late-stage investment gap' as a major scaling barrier** in Europe.

In this section, we explore the root causes of the European scaleup funding challenge.

Lack of large European venture capital funds able to support the capital-intensive scaling of deep tech ventures.

The EU's VC industry remains underpowered compared to other regions:

- Venture capital funding in the EU is **less than 1/3 that of the United States** as a share of GDP.[2]
- European startups receive **70-80% less capital** than their US competitors across all development stages, with this gap being particularly pronounced in later-stage financing.[2,3]
- In 2021, **the number of VC funds larger than €500 million was 6-8 times higher in the US than in the EU** (according to the European Innovation Fund [EIF]). Since 2013, only 11 funds larger than €1 billion in the EU have been able to support companies to unicorn status.
- Level of cross-border investment remains low as investors prefer to allocate capital to companies based in their own countries.[4,5]

As a result, **40 out of 147 European unicorns relocated their headquarters abroad between 2008 and 2021**.[6] This data reveals that many promising deep tech startups are compelled to seek funding outside of Europe, often relocating to the US. This pattern was confirmed in our interviews, as highlighted by Markus Bohl, Managing Partner at Intel Next, '*The Series B gap is particularly damaging to the European ecosystem. When companies require follow-up investments of €30 million or more, they often leave for the US, taking with them their intellectual property, talent, and future economic returns'.*

Overall, the fragmentation of the European venture capital market, and the resulting difficulties in investing across borders, stem from a combination of regulatory, legal, and fiscal barriers. Investors face heterogeneous rules on fund structuring, taxation, and investor protection, which create inefficiencies and increase transaction costs.[3] For example, inconsistent tax rules for venture capital discourage cross-border flows of venture capital. Legal frameworks for insolvency and shareholder rights also vary significantly, creating uncertainty for investors operating in multiple jurisdictions.

As highlighted in the Draghi report, *'The EU lacks a single securities market regulator and a single rulebook for all aspects of trading'.* This makes scaling funds across Europe more complex to raise compared to the US, where a more unified framework enables venture funds to deploy capital more flexibly and at greater scale.

Limited exit opportunities

The scarcity of attractive exit opportunities in Europe stems from different factors. The valuation levels offered by European acquirers, especially industrial ones, are often lower than what foreign industrial buyers might offer. As a result, there is a great disparity in M&A activity in the US, totalled at US$1.4 trillion versus $598.1 billion in Europe in 2023.[6] In addition, **over 60% of European startup buyouts are by non-EU companies**.[7]

Moreover, the European stock exchanges are considered less attractive than the National Association of Securities Dealers Automated Quotations (NASDAQ) due to lower trading volumes, less liquidity, and a historical lack of successful deep tech initial public offerings (IPOs). As a result, 130 European companies have moved their primary listing to the US stock market (such as Arm and BioNtech) over the past decade, collectively worth $676 billion at the time of their move.[8]

Unavailability of key institutional funds

The EU's financial system is heavily bank-centric, with bank assets totalling 300% of the EU's GDP, far exceeding the 85% in the US. However, banks, which tend to be risk-averse and limited by strict regulations, are often not suitable for funding innovative deep tech projects that need patient and risk-tolerant equity investment.[2,7]
Pension funds and household savings also have a limited role in investment and venture capital across

most EU Member States. Between 2013 and 2023, pension funds contributed only 7% of total VC funding in the EU.[2] Yet, institutional investors are crucial sources of risk-tolerant long-term capital, but, as highlighted by Ivo Denemark, Director of the venture investment division at CzechInvest, *'Current pension fund rules prevent large capital pools from being invested into deep tech'.*

Echoing this limitation, Francesco Matteucci, European Innovation Council (EIC) Advisor, emphasised the need for structural change: *'We need to introduce targeted incentives and make regulatory adjustments to enable pension funds to support the deep tech ecosystem'.*

In addition to institutional funds, citizens' private savings remain largely untapped as a source of capital for deep tech ventures, despite representing a significant potential to support innovation. The European Union has ample household savings, amounting to **€1,390 billion in 2022, compared to €840 billion in the US for the same year**.[2] However, at present, these savings are not being channelled into productive investments. Europeans save mostly in bank accounts, while US citizens invest much more in markets. In 2022, **for every $1 Europeans put into stocks, funds, or pensions, US citizens invested $4.60.**[5]

2. SYNTHESIS OF PLANNED MEASURES

A central initiative of the EU Startup and Scaleup Strategy is the **Scaleup Europe Fund**. This is intended to be a privately managed vehicle co-financed by the EIC to mobilise significant private capital through direct equity investments. Frits de Vries, Deep Tech Investor at Invest-NL, commented that *'To make this fund effective for deep tech ventures to scale, it must be able to deploy large tickets (€50 million or more) with a total capacity of at least €10 billion'.*

Patrik Sobocki, Head of Deep Tech Investment practice at Industrifonden, added that *'The Scaleup Fund must be a top priority and will serve as a catalyst, not only unlocking much-needed capital, but also generating the data we need to bring more investors into the European deep tech ecosystem'.*

Indeed, creating a proven growth and scale investment track record through an EU-backed fund will be essential to build trust and reduce perceived risk for investors considering high-risk deep tech ventures.

To unlock precious institutional funds, the strategy also proposes the launch of a **voluntary European Innovation Investment Pact**, encouraging institutional investors to allocate part of their capital to unlisted, high-growth startups. These proposals are supported in recent national and EU-level reports:

- A French government study[9] and the Draghi report[2] stress the need to **redirect institutional capital** (such as pension and insurance funds) toward deep tech ventures.
- Various interviewees (including investors, corporates and scaleup stakeholders) emphasised the urgency of **unlocking institutional capital**, especially from pension funds, through regulatory incentives.

One of the key enablers for unlocking institutional funds, which is not specifically addressed in the EU Startup and Scaleup Strategy, is the review and adaptation of the **Solvency II Directive**[2,3] to reduce capital requirements for venture capital investments made by insurance companies and pension funds. This would help free up significant private funding currently constrained by regulatory barriers and encourage greater institutional participation, like the U.S. model.

In July 2025, the European Commission published a draft update to the Solvency II delegated regulation proposing dedicated treatment for long-term equity investments by insurers, aiming to encourage equity financing of European firms and facilitate their access to stable, long-term capital.

In addition, the proposed **Savings and Investment Union** aims to address the liquidity needs of startups and scaleups by implementing regulatory and administrative adjustments to better channel private savings into productive investments. Similarly, the Draghi report highlights that unlocking private capital will require the EU to establish a fully functioning **Capital Markets Union** (CMU), supported by a stronger pension system.

A revision of the **EU merger guidelines** is also planned in the Strategy, aiming to better account for the impact of existing regulations on innovation. The European Commission has already launched a consultation on the forthcoming review of these guidelines. Preliminary inputs highlighted that the review should bring greater certainty to investors and reinforce the *significant impediment to effective competition (SIEC)* standard. Stakeholders also stressed that regulatory intervention should remain a flexible framework that accounts for the innovation-driven benefits that mergers bring to society.[10]

3. STRATEGIC INITIATIVES PRIORITISATION AND IMPLEMENTATION

'Better access to scaling financing' is a critical pillar of the EU Startup and Scaleup Strategy. This pillar stands out because it addresses core structural barriers, including the unavailability of key institutional funds, limited exit opportunities in Europe and the lack of large venture capital funds capable of supporting the scaling of deep tech ventures.

To capitalise on the EU Startup and Scaleup Strategy, we highlight here complementary actions that should be pursued to reinforce its impact and ensure effective execution:

Deploy a Scaleup Europe Fund able to meet deep tech capital requirements

The Scaleup Europe Fund clearly emerges as a key priority, both from our research and from the stakeholders consulted. It will be crucial to ensure that Europe's venture funding landscape remains competitive and able to retain critical technologies at the pivotal scaling phase.

Additional proposed action: In addition to the deployment of the Scaleup Europe Fund, a suggestion that emerged is to implement effective incentive mechanisms to engage private sector stakeholders (e.g. delaying the taxation of capital gains from the sale of shares in unlisted companies if these gains are reinvested in innovative early-stage companies[2], loss compensation to make risk-bearing assets more attractive[3] or adoption of a 'deep tech label' for investment funds).[9]

Strengthen exit markets to incentivise late-stage investments

Improving exit opportunities will be key to attracting more investors into deep tech. Making European stock exchanges more competitive with NASDAQ will require deeper changes, however some measures could help to facilitate M&As. With this purpose, the European Commission's strategy plans to review merger guidelines to ensure they do not restrict innovation.

Additional proposed action: To significantly simplify business exit procedures (M&As, IPOs), it would be key to implement unified rules across the EU to reduce administrative burdens and speed up approvals. Clear and consistent exit strategies, with cross-border recognition of filings and disclosures, would enhance predictability and attract more investment.[3]

Engage institutional investors through the European Innovation Investment Pact

As proposed in the EU Startup and Scaleup Strategy, the European Innovation Investment Pact aims to unlock private capital for investment in EU venture funds. In our stakeholder discussions, this emerged as a recurring priority, seen as essential to significantly expanding the pool of funding available for European scaleups.

Additional proposed action: To complement this effort, supporting actions aiming at de-risking investment will be key, such as return guarantees, and adaptation of the Solvency II Directive to lower capital requirements for venture capital investments.[2,3]

Regulatory hurdles and limited access to a true single market hinder the development of scaleups

1. KEY CHALLENGES

Europe is known for its strong regulatory standards, which support startups' development. However, regulations, taxes, labour codes and other critical policy issues are **fragmented across Member States**. Fragmentation and over-complexity of regulations result in lost competitiveness in the global race for emerging technologies as they struggle to commercially scale and benefit from the size of the European Union. **Half** of our survey respondents **identified the European regulatory hurdles as the most critical barrier to scaling**, making it a key topic to address in the coming European Innovation Act.

In this section, we explore the current regulatory challenges limiting the scaling of new technologies in Europe.

Complex and fragmented regulatory procedures

Europe's startup ecosystem is fragmented across 27 distinct national legal frameworks, making cross-border scaling more challenging than in unified economies like the US or China. This impacts aspects such as company registration, licensing, labour laws, social security arrangements, tax treatment of employee stock options, as well as international expansion for innovative companies. The absence of a single security market regulator or a unified rulebook for trading and post-trade environments further exacerbates this issue.[11]

This European fragmentation is also a particular obstacle when trying to launch new technologies across borders: *'National divergences make it difficult to plan unified go-to-market strategies, delaying deployment and increasing compliance costs. For us, deploying membrane reactors across borders means navigating differing requirements for our hydrogen product, from purity specifications to certification frameworks. On top of that, governments have announced forthcoming regulations that have yet to materialise, leaving us uncertain about the standards we'll ultimately need to meet. This uncertainty and fragmentation drain limited resources and slow progress',* underlined Léa Chauvin, Public Affairs and Advocacy Manager at H2SITE (France).

Regulatory red tape

Founders face costly and complex procedures and an increasing number of EU regulations, resulting in a significant regulatory burden. For instance, more than 100 tech-related directives are now active in Europe,[12] which induce overlapping requirements such as duplicated reporting obligations or short adaptation periods.[13] Markus Bohl, Managing Partner at Intel Next, shared that *'Overly complex processes for starting companies, hiring and firing, reporting and regulatory requirements, as well as tax requirements are especially burdensome for deep tech firms in their first 5 years'.*

In addition to complexity, cost associated with legal procedures can be challenging for innovative companies. For instance, setting up a business in some European countries may require nearly €10,000.[14]

Moreover, excessive regulatory requirements on new technologies dramatically extend development times. Obtaining permits for industrial projects, including those for clean technologies, can take 3 to 5 years and sometimes up to 9 years for onshore wind farms, due to insufficient administrative capacity.[12] As noted by Natalia Kupsik, Innovation Expert from the Polish Development Fund, *'Complex tech transfer rules and tax disincentives hinder startup growth, especially in deep tech sectors. Founders often lack standardised IP agreements, model contracts, and simplified procedures*

Addressing regulatory complexity in practice: Ofgem's energy regulatory sandbox in the UK

In 2020, the UK's energy regulator Ofgem introduced a regulatory sandbox to help innovators trial and launch new products or services without some of the usual rules applying. This was part of their strategy to adopt more agile, adaptive and responsive regulations.[15]
As an example, the startup Emergent Energy was granted temporary derogation to not comply with Electricity Distribution License conditions. This derogation helped the startup trial their innovative business model integrating household renewable generation, battery storage and data analytics to reduce residents' bills. The company stated that the regulatory sandbox was critical to deliver their innovative business model and prove their technology.[16]

that would reduce friction and accelerate commercialisation. Countries like Sweden and France offer instructive examples: Sweden has built a strong university spin-off ecosystem while retaining the professor's privilege, while France has institutionalised tech transfer through dedicated regional agencies and national frameworks. These models show that operational capacity and founder-centric support are just as critical as legal reform'.

Restrictive access to public and private procurement

EU public procurement, which represents approximately €2 trillion annually, remains a largely untapped market for deep tech startups.[12] Only about **1/3 of the total value of public procurement contracts goes to small and medium-sized enterprises (SMEs)** and even much less to startups. The existing public procurement rules differ in each country, and in many cases, structural practices prevent or discourage innovation companies to bid for public tenders, as shown by only 29% of startups attempting to access public procurement in 2021.[17]

Among non-adapted procurement practices, various countries require specific labels for compliance. However often these labels conflict with one another, and some public authorities only display procurement specifications in the local language, making it difficult for suppliers to comply with tender specifications. In addition, traditional tender requirements require high annual turnover, financial guarantees and previous contracting experience; as newcomers and innovative companies cannot comply with these, they are excluded by default from the process.[18]

Implementing procurement incentives (both for public and private actors) to support the scaling of critical technologies could encourage corporates to source local solutions and support strategic European innovations. Patrik Sobocki, Head of Deep Tech Investment at Industrifonden (Sweden) added that *'More than new regulations, a cultural shift in how we support entrepreneurial risk in Europe is also needed'.*

2. SYNTHESIS OF PLANNED MEASURES

To reach a true European single market with harmonised regulations on the EU Startup and Scaleup Strategy, the European Commission introduced the proposal of a **European 28th regime**. This consists of a specific legal status accessible to European innovative companies with a single set of rules, including an EU corporate legal framework that is 'digital-by-default'. The framework offers solutions to traditional barriers, such as helping entrepreneurs set up a company within 48 hours, or helping scale ups to reduce the cost of failure in areas like insolvency, labour, and tax law.

In addition, the European Commission will put forward proposals through forthcoming sectoral legislations, such as the EU Biotech Act, the EU Bioeconomy Strategy, the EU Life Science Strategy, the Advanced Materials Act, the Medical Devices Regulation, and the Omnibus Defence Simplification Package. The **Standardisation Regulation** will also be revised to make **standard-setting processes faster and more accessible**, especially for SMEs and startups. This measure aims to smooth and speed up market entry across the single market.

The **European Innovation Act** will also introduce the promotion of **regulatory sandboxes**, allowing innovators to develop and test new ideas more easily. It will include a common legal definition and basic principles for establishing regulatory sandboxes, including cross-border or place-based ones, while accommodating sector-specific needs.

Finally, the European Commission will engage in a series of propositions to **improve and simplify access to public procurement for startups and scaleups. These include limiting overspecification and excessive financial requirements in tender documents.** On the **private procurement side**, the strategy proposes, in the context of the European Innovation Act, to incentivise private buyers to adopt innovation-friendly sourcing strategies.

Addressing public procurement in practice: Startup-friendly initiatives for public procurement in Spain

Spain has already implemented a framework to promote startup-friendly public procurement, including initiatives such as the Demand-Driven Innovation Promotion Line (FID Line), which provides financing to public procurers to undertake innovation procurement projects, with a focus on pre-commercial and innovative solutions. Administrative simplification, such as self-declaration requirements for SMEs and startups in tenders, has also reduced barriers to entry and accelerated processes. In addition, the INNODEMANDA agency supports pre-commercial procurement by launching tenders for prototypes and innovative services acting as a first buyer for startups.[19,20]

3. STRATEGIC INITIATIVES PRIORITISATION AND IMPLEMENTATION

The *'Innovation-friendly regulation'* chapter of the EU Startup and Scaleup Strategy addresses core structural barriers for technology scaling in Europe. However, to maximise its impact, the Strategy's policy roadmap should prioritise rapidly deployable and impactful measures first, before addressing long-term structural changes.

We highlight here complementary actions that should be pursued to further enhance policy reform impact.

Recommended short-term, rapidly deployable measures:

Promote the deployment of fast regulatory sandboxes for the testing and industrialisation of emerging technologies

This measure aims to remove regulatory barriers for innovative companies and reduce time-to-market for new technologies. Before implementation, legal requirements and the level of involvement of the European Union towards other cross-border sandbox initiatives will need to be clarified.

Streamline EU legislations

Many regulatory burdens can be avoided by simplifying procedures and streamlining compliance processes. These include standard compliance contract templates to facilitate cross-border activities, and promoting a unitary patent system.

Additional proposed action: Develop an EU-level 'One-stop shop' for online information and applications, combining all financial and business opportunities available for companies.[2]

Develop pro-innovation frameworks for public procurement

Improving frameworks in public procurement requires multiple stakeholders' alignment and a cultural mindset change. Sharing best practices and success stories between Member States should be encouraged at the European level.

Additional proposed actions:

- Provide an innovative suppliers catalogue, backed by the European Commission, to bring trust and potential guarantees to public contractors.[13]
- Provide standard procurement tenders requiring a collaboration between large industrials and scaleup companies to foster access to large contracts for startups and scaleups.

Recommended long-term, structural reforms:

Develop a unified 28th Regime for innovative companies

As an unprecedented legislative reform, the 28th Regime will require strong alignment between Member States. The innovation community is strongly engaged in the implementation process, and the results of a public consultation from the European Commission are expected by the end of 2025, with a legislative proposal by Q1 2026.

Increase private procurement in European technology scaling

As with public procurement, the private sector should be more actively engaged to help European innovators realise their market potential. Since the current version of the EU Startup and Scaleup Strategy does not emphasise actions on this matter, we propose additional measures to increase corporate collaborations with innovative companies.

Additional proposed actions:

- Define incentives to encourage private buyers to adopt sourcing strategies that prioritise innovation/deep tech.
- Deploy fiscal and investment incentives to facilitate strategic technology piloting, such as R&D tax credits, loan guarantees and public-private partnerships.
- Enhance matchmaking between corporates and startups based on commercial needs and industrial challenges, and introduce additional services such as startup business coaching and corporate innovation management based on findings from the EIC Corporate Partnership Programme.

Research and technology infrastructures are difficult to access for innovative companies

1. KEY CHALLENGES

Although infrastructure supporting deep tech innovation has progressed, a unified EU-level strategy is appearing, formally acknowledging the urgent need to strengthen technology infrastructure. Our findings reinforce this as a priority, with **half of respondents** identifying insufficient scaling infrastructure as a major barrier to the growth of deep tech solutions.

In this section, we explore how current technology infrastructures are limiting the scaling of technologies in Europe.

Lack of enabling technology infrastructures

Technology infrastructures are critical enablers for deep tech ventures, offering equipment and services such as test beds and pilot lines. Despite existing cutting-edge facilities available, Europe's portfolio is less developed than those in leading ecosystems like Silicon Valley and the Shenzhen region. The industrial specialisation of these regions also allows smooth integration of prototyping and scaleup facilities with established supply chains, resulting in a competitive and fast-paced innovation and scaling environment.[2,21] Collectively, this creates a significant gap for European startups and scaleups.

The need for additional infrastructure in Europe is uneven, and varies among technological sectors. A report from the EU Expert Group on Technology Infrastructure (EGTI) revealed that companies in the Energy and Semiconductor industries faced the most limited access to technology infrastructures. **90% of firms in the hydrogen sector and 71% in the micro/nano-electronics and photonics sector reported inadequate infrastructure availability**.[22] Among those, **46% of startups and SMEs** identified the lack of existing offer as the main issue.

Furthermore, even if substantial infrastructure has been already deployed, such as for precision fermentation technologies, startups face a lack of large-scale infrastructure suitable for commercial production. Although bench-scale and pilot-scale are available in 29% and 41% of current fermentation facilities, respectively, only 16% provide commercial-scale infrastructure in Europe. This creates a significant backlog and slows down industrial deployment of innovations.[23]

Persisting financial and administrative barriers to the use of infrastructures

Beyond the availability of the infrastructure itself, startups and SMEs must navigate several critical barriers to access. Among them, high services costs, lack of visibility about their offer and complex applications procedures prevent startups and SMEs from taking advantage of these resources.[25] In the published EGTI survey, the lack of financial resources is cited by **69% of startups** as a barrier to access existing technology infrastructures. In addition, application procedures and business conditions can be unclear, leading to **40%** of startups being concerned about losing industrial secrets or having IP management issues.

Furthermore, many technology infrastructures are publicly funded. This means they often prioritise other objectives over financial sustainability and lack clear business mandates for engaging with the innovation ecosystem. As a result, their offerings can be misaligned with the needs of startups and SMEs. Milja Kalliosaari, Government Relations Manager at quantum scaleup IQM, notes that *'EU-funded infrastructures, such as the European High-Performance Computing Joint Undertaking (Euro-HPC) and pilot lines, are primarily designed for academic purposes, effectively excluding startups from practical usage'.*

Addressing scaling infrastructure needs in practice: Finland's technology enabling offer

Designed to meet the needs of startups and scaleups, the VTT Bioruukki Pilot Centre in Espoo, Finland, consolidates state-of-the-art, open-access pilot facilities for the bio-based and circular economy[24]. The centre supports not only research and development in materials, chemicals, and biotechnology, but also facilitates the critical scaling of production capacity, which can include outsourced manufacturing. It specialises in the development, scale-up, and demonstration of new processes (such as biomass and thermochemical processing) using pilot lines capable of demonstrating technologies at technology readiness level (TRL).[6,7]

To address these challenges, universities and academic institutions play a key role in the European deep tech ecosystem, as they are uniquely positioned to bridge this gap. They provide state-of-the-art facilities that can serve both academic needs and innovation commercialisation. By evolving into dynamic, innovation-friendly hubs, academic infrastructures can better align their capabilities with the needs of startups and scaleups, thereby turning a critical challenge into a key competitive advantage for Europe.

2. SYNTHESIS OF PLANNED MEASURES

The core initiative from the EU Startup and Scaleup Strategy is the **Charter of Access**. This streamlines access for industrial users, such as startups and scaleups, to research and technology infrastructures. To support its promotion, the strategy also plans to **clarify the State aid rules** linked to the upcoming Innovation Act and reinforce the EU's commitment to ensuring facilitated access for ventures in priority sectors.[4]

Building on the Charter of Access, the recent **European Strategy on Research and Technology Infrastructures proposes pilot schemes for startups and scaleups** in **technology infrastructures**, along with several key strategic actions proposed by the European Commission.

The strategy also proposes testing **transnational access schemes for joint research and technology infrastructures**, with implementation targeted for 2027. This will be complemented by the creation of single-entry points ('one-stop shops') to increase awareness of available technology infrastructures and their specific offerings, thereby improving visibility and access for scaleups.

For deep tech scaleups and startups to benefit the most from technology infrastructures, the EU needs to ensure world-class research and technology infrastructures to keep up with the level of technology development of these companies. For that, increased **funding and investment to build and sustain critical capacities** is currently being considered in both mentioned strategies. As an example, **financial support to access artificial intelligence (AI) computing facilities** is planned under the EU Startup and Scaleup Strategy, amid the deployment of 15 AI factories throughout Europe as part of the EuroHPC JU computing infrastructure in 2025 – 2026.[4,26t]

Finally, a simplified **common EU Governance framework** for technology infrastructures is being explored, which aims to align priorities among the EU Member States and stakeholders. This includes strengthening coordination across funding sources and increasing the impact of public investment.



Yury Soldatov / Shutterstock.com

3. STRATEGIC INITIATIVES PRIORITISATION AND IMPLEMENTATION

The *'Access to infrastructure, networks and services'* section of the EU Startup and Scaleup Strategy is an important framework for harmonising the current variation in infrastructure, governance models, and access policies across the European Union.

To foster collaboration among organisations, this framework should be coupled with the following recommendations:

Facilitate access to technology infrastructures through concrete legal measures

The current fragmentation and uncertainty in the different access frameworks to technology infrastructures across the EU create significant operational risk and deter innovation. While this could be addressed through the new **Charter of Access**, which will present a blueprint for operational frameworks, connecting these recommendations **to concrete legal measures** is critical to ensure their adoption. Future guidance on applicable State Aid rules for access conditions will create a robust framework of complementary actions.

Additional proposed action: As mentioned on the European Strategy on Research and Technology Infrastructures, deploying **pilot fast track schemes** will be key to ensure effective access and serve as a reference to encourage the widespread adoption of the Charter's principles. However, insights from various ecosystem actors show that research and industry partners have different expected outcomes. While academic infrastructures typically prioritise intellectual property or scientific publications, companies utilising technology infrastructures have distinct commercial objectives. This misalignment must be addressed in the scheme's design to ensure effectiveness.

Increase critical capacity and mobilise investment

The EU Startup and Scaleup Strategy's focus on improving access to infrastructure must be matched by a commitment to enhancing the infrastructure itself. Additional actions from the European Strategy on Research and Technology Infrastructures are of great importance. These include increasing funding to build new critical capacities, and ensuring the maintenance and technological upgrading of facilities.

Additional proposed actions:

- Map best practices and create portable, transnational funding solutions. Regional co-funding for SMEs is often geographically confined, even though companies frequently require access to specialised infrastructures in other Member States.
- Set up an EU-level investment prioritisation mechanism for TIs, which would require the development of a dialogue platform for stakeholders' alignment and coordination.
- Test different voucher schemes, including co-funding for startups and scaleups, integrated to the pilot of fast-track schemes previously mentioned.

Acquiring specialised talent and skills in Europe remains difficult

1. KEY CHALLENGES

Europe is facing a shortage of skilled deep tech talent that particularly constrains the growth of startups and scaleups. The Eurobarometer 2023 survey reveals that 70% of EIC-consulted startups and scaleups identified workforce shortages as a major development challenge, while 79% of European SMEs struggle to find workers with appropriate skills, and 53% express difficulties retaining them.[27]

The workforce shortage in highly technical fields is increasing in Europe

EU companies increasingly struggle to hire technical talent, especially information and computer technology (ICT) specialists. In Malta, 84% of companies report difficulties, followed by Germany (80%) and Czech Republic (79%).[28] As Frits de Vries, Deep Tech Investor at Invest-NL, notes, *'The skills gap is huge in Europe, particularly in AI, semiconductors, photonics, quantum, and software, worsened by brain drain'.*

Meanwhile, EU science, technology, engineering, and mathematics (STEM) research talent is still declining, with doctoral graduates dropping 7% between 2015 and 2022, while the US saw a 16% increase. Shortfalls are most pronounced in natural sciences and mathematics (−13%) and ICT (−25%). Key causes include low pay, short-term contracts, slow career progression, and limited post-PhD pathways, driving brain drain to North America. This disproportionately affects EU scaleups and startups, which often cannot match wages offered by larger companies.[29,30]

The European Institute of Innovation and Technology (EIT) Health and EIF VC Survey also indicate that highly skilled management teams can be scarce in Europe, while they are a crucial investment criterion for VCs decisions to close deals.[31]

Operational downstream talents remain scarce

Deep tech solutions typically originate in research labs and are brought to market by highly skilled specialists. However, once these solutions start to scale, new challenges arise. Growing companies require expertise that goes beyond core technology. Skills in areas such as manufacturing execution, process optimisation, system integration, automation, quality management, and supply chain management become critical for expanding production capacity effectively.

Lars Frølund, Board Member of the European Innovation Council, emphasised the need for technically skilled talent to deploy solutions at scale: *'Deep tech scaleup areas often require incredibly specialized people for industrialising their novel solution... It's very, very advanced workers who can set up these very advanced production facilities'.*

Regulatory complexity is affecting talent mobility

European talent allocation is hindered by fragmented legal frameworks that limit efficient cross-border mobility, particularly for companies scaling across multiple countries. Key barriers include complex visa and work permit processes for non-EU talent (slowing hiring), a lack of mutual recognition of qualifications across Member States (restricting recruitment), and inconsistent labour and tax regulations (adding operational costs). These fragmented systems prolong time-to-hire for critical non-EU talent and increase overheads for scaling companies. Transitioning to a coordinated EU talent mobility framework could help close the talent gap, although implementation remains complex.[4,34]

Addressing the EU skills gap in deep tech: EIT Tech Talent boosting upskilling and reskilling access[32]

To address Europe's industrial competitiveness challenges and the deep tech skills gap, the EIT Talent program was established to connect education, research, and industry, and accelerate scaling capabilities.
EIT Manufacturing contributes by:

- *Running programs like the Deep Tech Talent Initiative, offering courses and platforms in collaboration with multiple stakeholders.*
- *Leveraging a network of 3,200+ partners, including training providers, companies, universities, public authorities, and financiers.*

By June 2025, the Deep Tech Talent Initiative had already trained one million talents, ahead of its December target. The program helps mitigate the skills shortage and equips new talent for emerging technologies, supporting lifelong employability and future-ready careers.

Gender disparity is also a supply constraint

The talent gap is strongly impacted by persistent gender imbalances in deep tech leadership. The latest research indicates deep tech founding teams include approximately 83% all-male composition, followed by 11% mixed gender and 6% all-female (including solo founders).[35] In addition, capital investment flows had shown that 82% of deep tech funding goes to all-male founding teams, while mixed-gender teams capture only 15%, and all-female teams account on average for only 3% of investments.

However, majority-women management teams exceeded the performance of men-only teams by 9.3%, as measured by annual internal rate of return (IRR). Additionally, a report from the EIT's Women Founders in European Deep Tech Startups found that every 10% increase in the representation of women in senior management was associated with a 1.3% increase in IRR. Together, this highlights the importance of fostering greater participation of women entrepreneurs in deep tech to both bridge the talent gap and accelerate the performance of European companies.[36]

2. SYNTHESIS OF PLANNED MEASURES

Several EU initiatives target deep tech talent, notably the **STEM Education Strategic Plan**, which aims to strengthen the talent pipeline by enhancing basic skills in primary and secondary education and expanding vocational and adult training (VET). While education remains a Member State responsibility, the **European Commission's Union of Skills** proposes coordinated actions to build strong foundations in education and promote innovation and entrepreneurship. A notable initiative is a **blueprint for academic career development** that rewards research commercialisation, with universities playing a strategic role in shaping the future talent pool.[29,34]

The **European Innovative School Award** encourages STEM programs to integrate entrepreneurship and innovation more meaningfully. One example is setting a baseline of **20 hours annually** of entrepreneurship education, compared to the current average of 4 ECTS often bundled with unrelated electives. Other proposals include virtual STEM study fairs supported by Erasmus Mundus, Digital Europe scholarships, and European University alliances, potentially extending to pre-university levels to secure the long-term talent supply.
On gender equality and diversity, current EU strategies are limited. Effective measures must go beyond appeal, addressing structural barriers through transparent hiring, mandated diversity in committees, and aligned grant evaluation criteria to improve the attraction and retention of women and underrepresented groups in deep tech.

The European Strategy for Startups and Scaleups reinforces the efforts from the European Commission to address talent needs. Complementary initiatives such as the **Lab to Unicorn Initiative**, set by the European Commission to be launched in 2026, aims to accelerate the commercialisation of research results. A key objective is to leverage the **strengths of universities within the deep tech ecosystem**. By designing a blueprint on licensing, royalties, revenue-sharing, and equity for universities and inventors, the initiative will enhance the capacity of Technology Transfer Offices and strengthen venture builder roles in research organisations.[4]

The blueprint seeks to strengthen the university ecosystem's capacity in two main areas. First, to provide end-to-end support on the early-stage phases including efforts on R&D and testing up to a startup creation. And second, moving beyond this phase to effectively nurture growth of ventures on early scaling phase, thereby narrowing the gap between academic research and industrial commercialisation.

Promoting the **Blue Carpet Initiative** to support the attraction and retention of highly skilled and diverse talents from within the EU and from non-EU countries is also a strong strategic action. Deploying the **Blue Card Directive** as well as introducing fast-track visa processes will help on harmonising immigration rules across Member states. Proposing an EU-wide Visa with simplified tax treatment and fast track processes not only facilitates attraction and retention but also aligns with the single-market initiatives. Overall, the key deliverables expected from the Union of Skills are comprehensive and fitting with the challenges identified and the perspective of industry players and interviewed stakeholders.[4]



AnnaStills / Shutterstock.com

Addressing the evolving skills needs in practice: Reskilling coal industry workers for the renewable energy sector[33]

The renewable energy sector is rapidly expanding, while coal-related jobs are declining, with an estimated loss of 76,000 jobs by 2025 and up to 154,000 by 2030. This shift, driven by the EU's decarbonisation goals, will particularly impact Greece, Germany, Austria, Romania, Bulgaria, and Poland, which employ 81% of the EU's coal workforce.

Given coal workers' transferable skills in hazardous environments and advanced technologies, there is strong potential for their transition into renewable energy with minimal retraining. The RES-SKILL project addressed this opportunity by:

- *Mapping skill overlaps and gaps between coal and renewable energy roles.*
- *Developing transition profiles, self-assessment tools, and skill portfolios.*
- *Supporting the creation of Joint Competence Centres for reskilling and career guidance.*

The project brought together VET providers, industry partners, social actors, and regional agencies from the six affected countries to jointly design curricula and training pathways.

3. STRATEGIC INITIATIVES PRIORITISATION AND IMPLEMENTATION

The *'Support for the best talent in Europe'* section of the EU Startup and Scaleup Strategy holds many ambitious initiatives addressing the remaining talent and skills gap as well as structural evolutions needed, whereas the Blue Carpet Initiative and blueprints for academic-industry talent development stand out as strong and impactful measures. Placing universities at the core of strategies' deployment, we strongly support its development, and highlight here complementary actions that should be pursued to enhance its impact.

Launch the Blue Carpet Initiative with a unified framework

As the central mechanism for addressing the talent gap, this initiative is a top priority due to its comprehensive portfolio of strategic actions. Established measures including the promotion of entrepreneurial education and the fair mobility package can strongly impact the European's competitiveness on talents. Additionally, attracting and welcoming global talent by fast-track schemes and visas, including the Blue Card use can accelerate the expansion of the talent pool.

Additional proposed actions:

- Develop clear strategies for upskilling and reskilling to follow the market trends and the increasingly faster cycles of deep tech solutions skills needs.
- Design programs to accelerate reskilling existing advanced blue-collar workers from adjacent industries (I.e., aerospace, electronics, chemical processing, automotive) and target sectors where technical skills overlap is clearly defined (such as industrial equipment and machinery).
- Include technicians and operators with vocational diplomas (VET) in the scope of the strategic initiatives (including mobility fast-tracks, visas, and qualification recognition).

Develop a blueprint for academic-industry talent development

Rewards and incentives to research commercialisation activities along with an improved academic career development framework will help to unlock untapped academic potential, connecting academia and industry. Building legislative measurements to harmonise employee stock options in a coordinated framework among Member States adds on a more clear, attractive career path for STEM professional both in academia and industry.

RECOMMENDATIONS: SELECTING PRIORITY LEVERS FOR SCALING DEEP TECH IN EUROPE

We propose in the figure below a prioritisation for the implementation of key strategic initiatives of the EU Startup and Scaleup Strategy. Measures have been assessed based on the combined three criteria below (cf. more rating detail in the Annex – Methodology Data):

1. **Impact:** Would this initiative make a significant difference for the growth and global competitiveness of deep tech scaleups in Europe and was it highlighted as a priority by our respondents?

2. **Ease of implementation:** Are there major implementation challenges identified? Can it be supported by existing frameworks/initiatives?

3. **Timeframe:** Can the initiative be initiated now, with expected benefits in the near term?

The prioritisation was guided by the approach of this report, aiming to trigger EU policy action by starting with the most actionable initiative in the short term and considering the impact at the EU level.

FIGURE 1. PRIORITISATION OF KEY STRATEGIC INITIATIVES OF THE EU STARTUP AND SCALEUP STRATEGY

Pillar	Strategic Initiative	Impact	Ease of Implementation	Timeframe
Access to financing and investments	**Deploy a Scaleup Europe Fund**	High	Medium	Short
	Engage institutional investors through the European Innovation Investment Pact	High	Low	Medium
	Strengthen exit markets to incentivise late-stage investments	Medium	Low	Medium
	Involve citizens' savings through the Savings and Investment Union	High	Medium	Long
Regulations and market integration	**Promote the use of regulatory sandboxes for emerging technologies' testing and industrialisation**	High	Medium	Short
	Bring simplification and streamline EU legislations	Medium	High	Short
	Increase corporate involvement in European technology scaling	Medium	Medium	Medium
	Develop pro-innovation frameworks for public procurement	High	Medium	Long
	Develop a unified 28th regime for innovative companies	High	Low	Long
Access to research and technology infrastructures	**Provide facilitated access to technology infrastructures**	High	High	Short
	Increase capacity and mobilise investment	High	Medium	Medium
	Enhance promotion and visibility	Medium	Medium	Long
Specialised talent and skills shortage	Launch the Blue Carpet Initiative with a unified framework	High	Medium	Medium
	Develop a blueprint for academic-industry talent development	Medium	Low	Medium
		Impact colour key: Low Medium High	Implementation colour key: Low Medium High	Expected time to delivering early results: Short: <1 year Medium: 1-3 years Long: >3 years

RECOMMENDATIONS: SELECTING PRIORITY LEVERS FOR SCALING DEEP TECH IN EUROPE

The assessment resulted in a selection of three initiatives (highlighted in the previously presented figure), to be explored in greater detail in Part 2 of this report, aiming to illustrate how strategic actions can be deployed.

For specialised talent and skills, the timeframes for most initiatives are long and particularly impacted by lack of consistency of talent, visa and tech transfer issues between Member States. For this reason, we chose not to provide an in-depth analysis of talent-related initiatives. This, however, does not imply a reduced level of importance or attention to these necessary initiatives.

Deploy a Scaleup Europe Fund

Europe currently lacks sufficient late-stage investment suitable for deep tech companies, which remains the most critical bottleneck for scaling within Europe and often pushes companies to seek funding abroad. While significant efforts have been made through earlier-stage instruments such as the EIC, InvestEU, and the European Investment Bank (EIB), these do not sufficiently address the growth-stage gap. Deploying the Scaleup Europe Fund is therefore a key priority: it will directly target this missing link, with the dual objective of providing adequate financing and catalysing private investment. Mobilising private capital will be central to its success, as the Fund's impact will depend on its ability to crowd in investors. Synergies with existing European instruments will be essential to maximise efficiency and ensure seamless implementation.

Promote the use of regulatory sandboxes for emerging technologies' testing and industrialisation

Regulatory sandboxes offer safe and adaptable environments for companies to test and scale their technologies. As such, they represent a key policy tool to address one of the most significant barriers to scaling for European scaleups, a measure that has long been in high demand within the ecosystem. Strengthening the promotion and coordination of regulatory sandboxes could substantially accelerate technological development and industrialisation. This initiative can build on existing pilot projects; however, several implementation challenges remain. These include establishing a common definition, clarifying the EU's coordination role, and determining practical mechanisms to ensure that regulatory sandboxes deliver lasting impact on EU legislation and innovation outcomes. These challenges need to be addressed as a high priority to enable the rapid and effective deployment of the initiative.

Facilitate access to technology infrastructures for innovative companies

Many breakthrough deep tech innovations rely on high investments in CAPEX. Costly pilot lines, testbeds, and advanced lab structures pose financial burden that startups and SMEs cannot afford alone. Therefore, access to technology infrastructures for innovative companies is a strategic imperative to secure Europe's technological sovereignty. Without shared access to these facilities, Europe risks losing its most promising companies to non-EU competitors and stalling the development of key technologies. Initiatives like the Charter of Access, with its straightforward implementation timeline for late 2025, are critical to address these hurdles. By lowering these critical barriers, we can directly speed up innovation cycles, strengthen Europe's deep tech ecosystem, and ensure that strategic technologies are developed and scaled domestically.

PART 2

IMPLEMENTING KEY INITIATIVES OF THE EU STARTUP AND SCALEUP STRATEGY



DTU NanoLab / Photo Bax Lindhardt

A. Deploy a Scaleup Europe Fund that can meet deep tech capital requirements

A.1 CONTEXTUAL LANDSCAPE

Europe needs to significantly boost scaleup investment to prevent the loss of promising companies and critical technologies. When startups are forced to relocate outside of the EU due to funding gaps, Europe's economic security and technological sovereignty are undermined. One of the most pressing barriers to developing European deep tech scaleups, and keeping them within Europe, is the lack of sufficient late-stage investment.

The Scaleup Europe Fund, proposed under the EU Startup and Scaleup Strategy and expected to launch in 2026, is designed to meet the substantial capital requirements of deep tech companies and fill the critical gap in later-stage financing. The EU Startup and Scaleup Strategy describes it as a market-based, privately managed and co-financed vehicle, embedded within the EIC, that will mobilise significant private funds to make direct equity investments in strategic sectors.

The Scaleup Europe Fund will directly strengthen European security and sovereignty by ensuring that critical and strategic technologies can raise sufficient funding to scale and remain within the EU. In addition to providing direct investment, it will act as a catalyst, leveraging public resources to attract further private capital into deep tech.

The Scaleup Europe Fund will be deployed alongside existing EU financial instruments. To maximise its impact and avoid duplication, it should build strong synergies with the following financial instruments:

- The **EIC Fund**, which plays a key role in supporting high-risk deep tech startups at early stages, with more than 261 portfolio companies and €1 billion in investment agreements signed to date.
- **InvestEU**, the EU's largest risk-sharing instrument, which leverages a €26.2 billion EU budget guarantee to stimulate private investment in strategic sectors.
- The **European Tech Champions Initiative (ETCI)**, which pools public funds from several Member States and the EIB to build large pan-European VC funds. By late 2024, it had closed fund deals worth €2 billion and supported 16 scaleups.

Despite the existing funding instruments, many deep tech entrepreneurs continue to face major challenges in raising scaleup funding. The Scaleup Europe Fund therefore emerges as an urgent measure to be implemented. The EIC is currently working on its design, key success factors (such as its core investment thesis), and strategy. Nonetheless, the pooling of private capital and critical dimensions still need to be clarified, with regards to the following:

- **Who will be the key stakeholders to involve and what will be their role in the implementation and success of the Scaleup Europe Fund?**
- **What will be the critical dimensions and investment modalities of the Scaleup Europe Fund to ensure its success?**

The following section addresses these questions and provides practical recommendations for stakeholders working toward the successful deployment of the Scaleup Europe Fund.

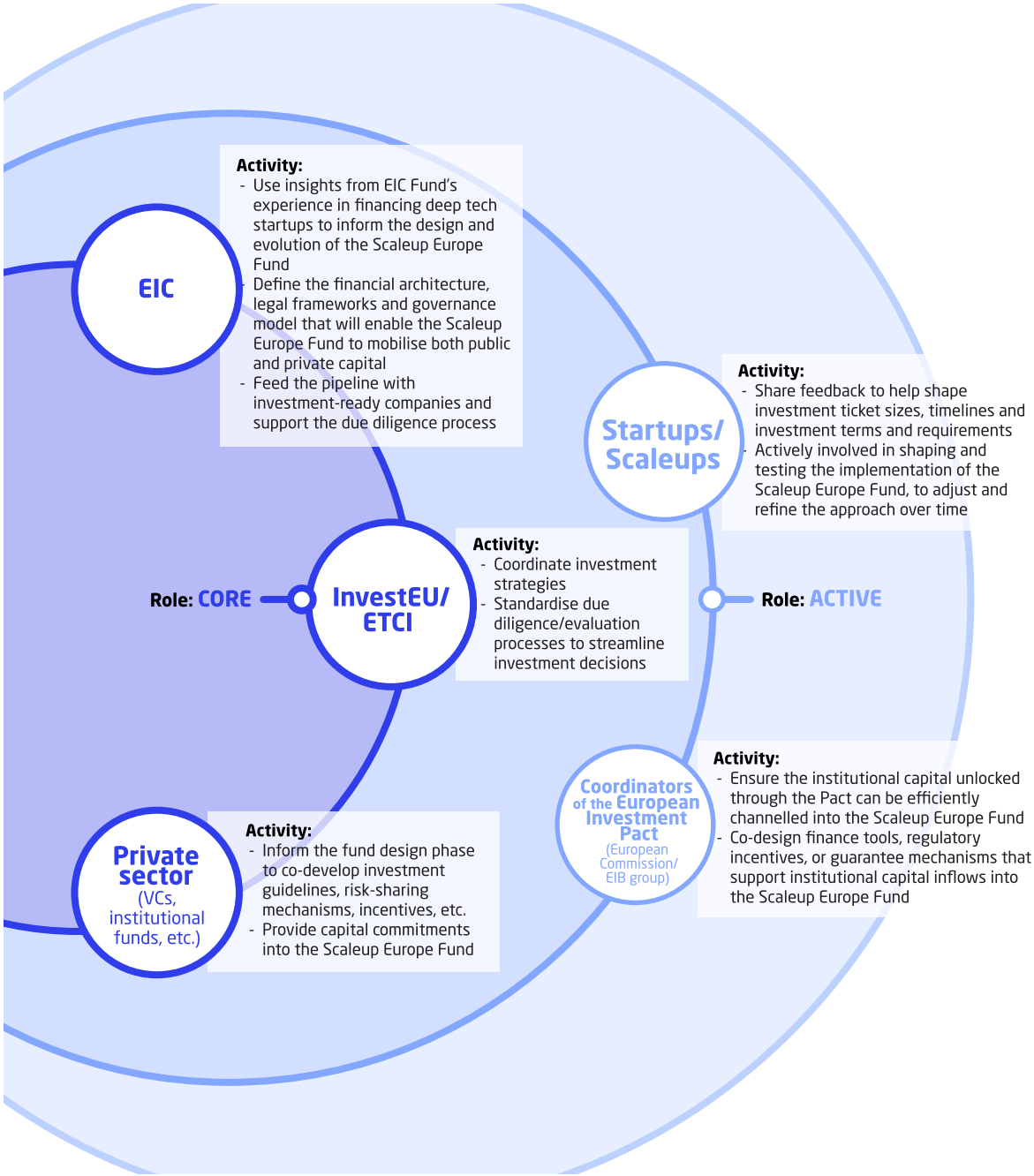


S.Toey / Shutterstock.com

A.2 KEY STAKEHOLDERS TO ENGAGE

The successful implementation of the Scaleup Europe Fund depends on strong collaboration and active engagement from key stakeholders, each with distinct

FIGURE 2. KEY STAKEHOLDERS FOR THE IMPLEMENTATION OF THE SCALEUP EUROPE FUND



A.3 IMPLEMENTATION STRATEGIES AT THE EUROPEAN LEVEL

There are various dimensions that will be critical for the Scaleup Europe Fund to help European deep tech to scale and to strengthen Europe's economic security. Defining these dimensions in close collaboration with primary stakeholders (EIC, InvestEU/ETCI, coordinators of the European Investment Pact), private investors and startups is essential to ensure the fund is well-targeted, effective and complementary to existing initiatives.

We identified recommendations for several critical success factors, based on our interviews and workshops (20 participants) and our survey (61 respondents) with these stakeholders, as well as our discussions with EIC representatives and broader research.

These critical success factors are as follows:

Addressing Europe's strategic priorities

It will be key to determine whether the Scaleup Europe Fund should concentrate on a set of strategic sectors or remain sector-agnostic, identifying the approach that best ensures efficiency while maximising its contribution to Europe's economic security.

Recommendations:

- The Scaleup Europe Fund should **align with Europe's strategic objectives** (economic security, resilience, competitiveness) and focus on the defined 'critical technology areas for the EU's economic security' rather than an agnostic approach.[50]

- Certain sectors and technologies (e.g. quantum, space, fusion) will require dedicated strategies and specialised teams.

Attention point: Ultimately, the Scaleup Europe Fund's effectiveness will depend on having a highly experienced team with the necessary expertise to manage each strategic area. Deep expertise will be essential not only to properly evaluate investment opportunities but also to tailor support mechanisms, raise investor's confidence and attract the right private co-investors.

Selecting the right beneficiaries

Criteria will be developed to define which companies will benefit from the Scaleup Europe Fund. These criteria should target the right scaleups (e.g. appropriate maturity) to meet its ultimate objective, while avoiding requirements that are unsuitable or too restrictive.

Recommendations:

- The Scaleup Europe Fund should solely target companies in the **growth phase**, avoiding earlier-stage overlap with existing EIC instruments.

- Series C funding appears most aligned with the Scaleup Europe Fund's objectives, as this stage is where scaleups face the greatest difficulty accessing sufficient capital within the EU. However, **starting with large Series B rounds** could be a more realistic entry point, given the initial challenge of mobilising European funds at the scale required for Series C.

- Revenue or creditworthiness should not be used as eligibility criteria, as they are not suited for evaluating deep tech companies in the growth phase. These companies typically face long R&D cycles before generating significant revenue; this reality demands that the Scaleup Europe Fund adapt its approach to focus more on technological progress than on traditional criteria like revenue or creditworthiness, which would otherwise risk excluding high-potential companies.

Attention point: Regarding public financing instruments, beneficiaries often highlight that application processes are overly time- and resource-intensive, and insufficiently streamlined, and therefore not suited to the reality of deep tech companies, which already have limited resources to allocate to activities outside of developing their technology. The Scaleup Europe Fund's structure should remain streamlined and transparent for beneficiaries. For example, a **two-step application process** for beneficiaries is recommended to minimise administrative burden. In such a process, the first step remains light and focused mainly on the technology and its contribution to the Scaleup Europe Fund's objectives. Only successful applicants are asked in a second step to provide more detailed financial and administrative information.

Aiming at the right fund and ticket size

The overall size of the Scaleup Europe Fund and its individual investment tickets need to be defined to align with the growth-stage needs of deep tech companies and to ensure their retention in the region.

Recommendations:

- While a €2 billion fund size could serve as a solid starting point, addressing the true funding gap in Europe will ultimately require increasing the Scaleup Europe Fund towards €8-10 billion as a long-term goal. The European Commission will face the challenge of defining a clear plan to mobilise these public resources within the expected timeline (2026).

- For most of the EU's strategic areas (e.g. quantum, biotech, semiconductors), supported by insights gathered through interviews and workshops, the Scaleup Europe Fund will need to **target a minimum of €30-50 million per investment** to meet the scaleup's needs and remain competitive with other regions. As a reference, the average Series C funding raised by European startups in 2023 was €39.74 million, although this figure is not specific to deep tech companies.[51]

- The Scaleup Europe Fund should combine flexibility with ambition to address sector-specific capital needs.

Attention point: The Scaleup Europe Fund should be designed to fill growth-stage funding gaps, ensuring it **complements existing EU financial instruments rather than duplicates them**. To do this, the funding gap in the current EU funding landscape must be very precisely defined, and the target beneficiaries should be carefully aligned with this gap to ensure the fund effectively addresses unmet needs.

Balancing public and private capital

The investment modalities, including the right balance between public financing and private co-investment, should be designed to effectively meet the Scaleup Europe Fund's core objective while maximising the crowding-in of private capital.

Recommendations:

- The Scaleup Europe Fund should **play the key role of lead investor**. Acting as lead investor will attract follow-on commitments from private investors as well as lowering the perceived financial risks. In this role, the Scaleup Europe Fund will be able to shape terms and investment modalities to make participation more attractive for private co-investors.

- At the outset, the Scaleup Europe Fund should aim for a **balanced ratio between public and private capital**. A balanced model will prevent the perception of public over-reliance. Moreover, by matching public with private money, European scaleups will be more likely to raise funding rounds of comparable size to other global regions.

- In the longer term, the balance should **gradually shift toward a higher share** (e.g. 1:4 public/private ratio) **of private investment**. To do so, in the first years, the Scaleup Europe Fund will need to establish credibility and demonstrate successful early investments.

- To maximise private crowding-in, lead investment should be **combined with incentive** risk-sharing mechanisms such as first-loss protection or covering half of the financial risk with public money.

- Ratios should remain flexible depending on company stage and sector. Some early-stage or highly capital-intensive sectors (e.g. quantum or biotech) will require a higher share of public funding to de-risk investments, whereas more mature sectors/companies can attract larger private tickets.

Implementing complementary enablers

Beyond direct investments, enabling measures should accompany the Scaleup Europe Fund to maximise its impact. Funding alone cannot achieve the desired impact. Several key measures could significantly enhance the Scaleup Europe Fund's effectiveness, ensuring that investments are supported by the resources and environment that startups need to scale.

Recommendations:

External to the Fund:

- Leverage public-private procurement to accelerate market adoption in Europe.

Internal to the Fund:

- Establish connections/matchmaking between beneficiaries and sector-focused experts (e.g. Green Assist under InvestEU).

- Establish dedicated desks, organised per country or sector, to facilitate matchmaking between companies and investors, monitor progress and provide financial analysis.

B. Promote the deployment of regulatory sandboxes for the testing and industrialisation of emerging technologies

B.1 CONTEXTUAL LANDSCAPE

In the pursuit of a more agile and innovation-friendly regulatory environment, regulatory sandboxes have proven to be one of the key instruments to offer controlled environments for innovative products, while maintaining robust regulatory frameworks. Although definitions vary across Member States, they can be defined as *'concrete frameworks which, by providing a structured context for experimentation, enable in a real-world environment the testing of innovative technologies, products and services with temporary loosening or suspension of applicable rules and under regulatory supervision, ensuring that appropriate safeguards are in place.'* [39]

Regulatory sandboxes offer a dual benefit: enabling startups and scaleups to test and validate their offerings, while assisting regulatory agencies in evaluating innovation alignment with end-user needs and informing the development of future regulations for emerging technologies. It is for these benefits that many actors highlighted regulatory sandboxes as a key solution to improve technology development, market access and regulatory learning, and indeed why their promotion was selected as a top priority measure.[40]

Existing policy frameworks and practical experience with regulatory sandboxes in Europe are predominantly concentrated at the national and regional levels, although several important EU-level initiatives are emerging. The EU AI Act mandates the creation of regulatory sandboxes to support the development, training, testing, and validation of AI systems, while the Interoperable Europe Act establishes a framework for cross-border regulatory sandboxes facilitating digital public services.

In addition, sector-specific initiatives are increasingly shaping the regulatory landscape: the Net Zero Industry Act (NZIA), adopted in 2024, provides options for net-zero regulatory sandboxes; the ongoing revision of EU pharmaceutical legislation foresees the introduction of dedicated regulatory sandbox schemes; and complementary initiatives such as the Automotive Action Plan and the Life Science Strategy highlight the EU's commitment to advancing innovation-friendly regulatory environments across strategic sectors.[40,41,42]

Despite this strong familiarity with regulatory sandbox instruments among European institutions, there are still many lessons to be learned in terms of their effective operation and addressing long-term legislative evolution. Furthermore, the optimal role of the EU and its scope regarding regulatory sandboxes across different Member States remains to be clarified. The following questions will therefore be addressed in this document:

- **What are the key success factors driving the success of regulatory sandboxes?**
- **How should future regulatory sandbox instruments be implemented and operated at the European level to maximise their impact?**

The following section addresses these questions and provides practical recommendations for regulators aiming to deploy regulatory sandboxes. While the upcoming EU Innovation Act will provide a common definition and principles for regulatory sandboxes, we recommend further actions to clarify and strengthen the European Commission's coordination role in guiding and aligning regulatory sandbox initiatives across Member States.

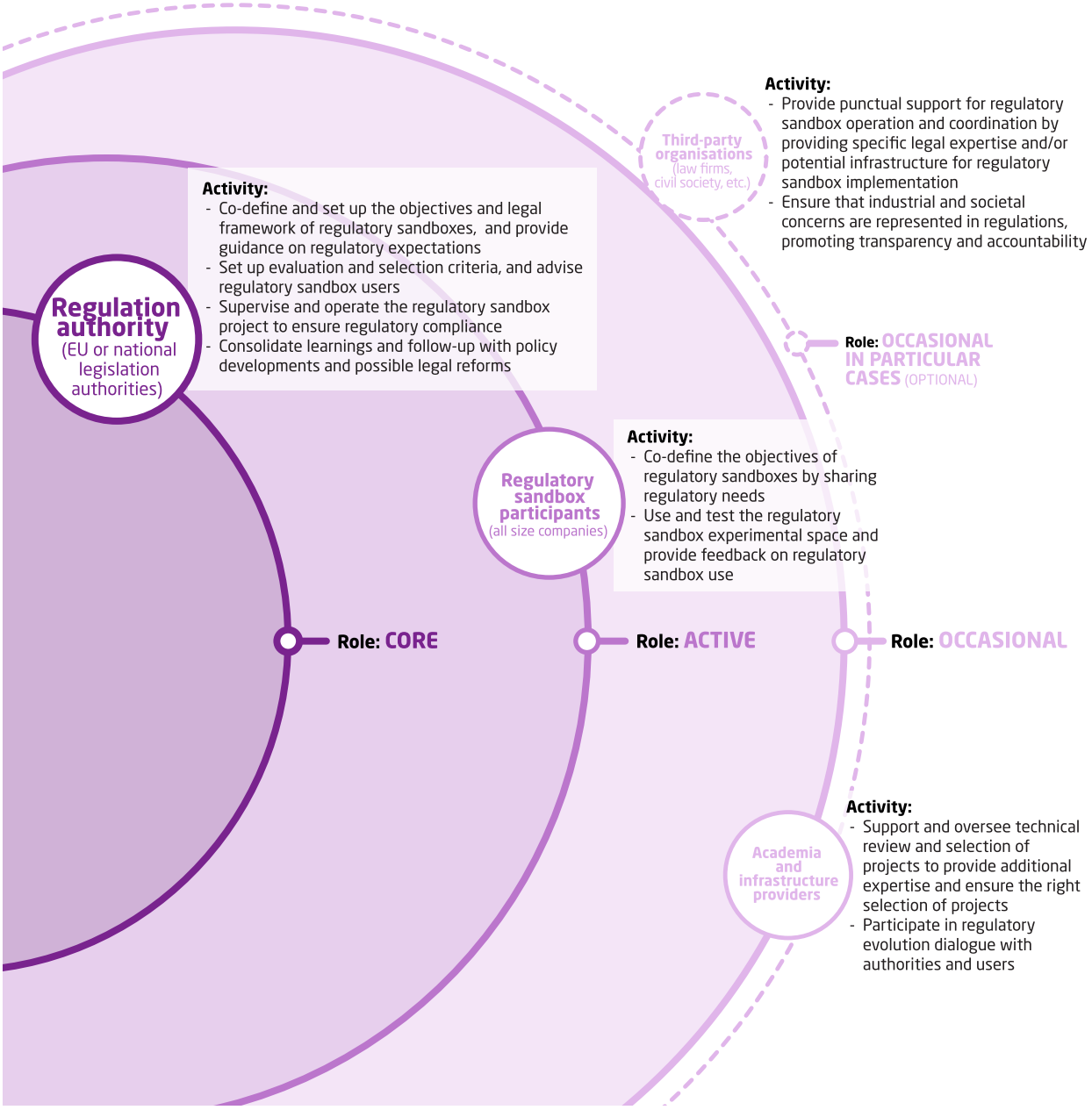


TongTa25 / Shutterstock.com

B.2 KEY STAKEHOLDERS TO ENGAGE

The success of a regulatory sandbox experiment relies on effective collaboration and involvement of several key stakeholders with various roles and responsibilities. These are outlined in **Figure 3**.[41,43,44]

FIGURE 3. KEY STAKEHOLDERS IN THE IMPLEMENTATION OF REGULATORY SANDBOXES



We identified the critical success factors, based on insights collected from more than 15 representative organisations (scaleups, European regulatory bodies and academics) with previous regulatory sandbox experience, along with broader research. These critical success factors are as follows:

A. Maintain **time-bound** experiments whose primary purpose is to identify regulatory gaps and test solutions that inform legal reforms within a fixed period (e.g. 18 months).

B. Foster a **multi-stakeholder approach** that promotes: clear communication on the scope and objectives of the regulatory sandbox, integration of a structured dialogue and learning process among all involved stakeholders, regular reporting and publishing of results contributing to experimentation transparency, and ensuring that safeguards for consumers and the public are in place.

C. Aim for **scalable and sector-wide innovations** with clearly defined policy objectives, a transparent and efficient project selection procedure, and evidence-based impact measurement for policy learning.

D. Ensure **coordination of different authorities** running similar schemes at regional, national and EU levels. This will prevent fragmentation and ensure systematic sharing of lessons learned.

B.3 IMPLEMENTATION STRATEGIES AT THE EUROPEAN LEVEL

Fostering a centralised operating model, where the EU holds a strong coordination role

As of today, regulatory sandboxes have been operated following a decentralised model, which mandates individual Member States to establish at least one national framework. This creates a distributed network across the Union, and will be used effectively for AI regulatory sandboxes under the EU AI Act. This approach fosters local innovation, leverages national expertise, and aligns operations with national priorities. However, it carries the **risk of legal divergence and market fragmentation**, and could be **unfair to countries that have less technical knowledge or financial resources** in a specific domain (e.g. AI or cybersecurity).

During our workshop and interviews, various stakeholders advocated for a **centralised model**, which would task a central governing body, such as the European Commission, with directly establishing and orchestrating one or a few 'EU-wide' regulatory sandboxes.

The European Commission would then establish the legal framework, rulebook, operational procedures, and manage participant admission and ensure transparency. The European Commission would also provide continuous technical, regulatory, and legal support, guide the interpretation of EU law, and monitor compliance with EU legislation. It would allocate financial resources, including through EU funding programmes, to support regulatory sandbox infrastructure and projects, ensuring fairness and efficiency. It would also mediate cross-border issues, coordinate enforcement, and represent the EU internationally.

This model would offer advantages in achieving greater legal harmonisation, cross-border consistency, and lower administrative burdens for innovators seeking to scale up, while also addressing national staffing shortages and budget constraints. This model is particularly suited for emerging and deep technologies that lack defined EU frameworks.

Nonetheless, centralisation **risks exacerbating a 'one-size-fits-all' approach, increasing central bureaucracy** and thus **disconnect from market realities**. This model could also face **strong barriers in highly regulated fields** such as energy distribution where Member States possess their own sovereign legislation.

Recommendations:

- Promote centralised, **EU-wide regulatory sandboxes** where possible (e.g. when regulatory sandboxes are provisioned in the EU law such as the EU AI Act or in case of cross-border legal challenges, e.g. export control of new technologies requiring specific certifications in each Member State) and encourage **regional or bilateral cross-border regulatory sandboxes** as a middle ground between national and EU-wide models.

- The EU should also **monitor and aggregate regulatory learnings** as the central governing authority and recommend corrective action.

Attention point: In the case of decentralised regulatory sandboxes across Member States, the EU should still aim to facilitate the harmonisation of regulatory responses among Member States, act as a mediator for cross-border challenges, and ensure compliance of regulatory reforms with the EU law. To this end, valuable insights can be drawn from the EUSAiR project, which underpins the EU AI Act by coordinating the implementation of AI regulatory sandboxes across Member States. It provides adaptable frameworks, strengthens technical and legal capacities, and promotes cooperation to ensure broad, cost-efficient access for SMEs and startups, while developing best practices and guiding future regulatory improvements. Consolidated results are due to be published by the end of 2025.

Addressing resource and expertise gaps

Not all countries have the regulatory capacity or resources to set up effective regulatory sandboxes, leaving smaller or less advanced Member States at a disadvantage, and European regulations fragmented.

Recommendations:

- **The EU should provide continuous expertise and guidance to participating companies and regulators** on technical, regulatory, and legal matters, specifically on interpreting and improving EU law during regulatory sandbox activities.
- **Offer compliance tools** such as centralised digital platforms for communication, and standardised compliance templates.
- Facilitate centralised **knowledge-sharing platforms** and peer learning between regulators.
- Foster **joint experimentation in strategic areas** (e.g., AI and the energy transition) to pool expertise and resources.

Ensuring relevance through a bottom-up approach

Regulatory sandboxes risk being misaligned with market needs if they are designed top-down and without input from innovators. Prioritisation of key legislations would greatly benefit from the innovation ecosystem's input.

Recommendations:

- Engage **startups, SMEs, and networks of innovators early** to identify priority policies, regulatory challenges and define the objectives of regulatory sandboxes before launch.
- Draw inspiration from **citizens' initiative-style processes** at the EU level to shape regulatory sandbox focus areas. A centralised platform where innovative companies form consortia and gather proposals to new regulatory sandboxes could be created.

C. Facilitate access to technology infrastructures (TIs) for innovative companies

C.1 CONTEXTUAL LANDSCAPE

The EU Startup and Scaleup Strategy identifies facilitating access to cutting-edge research and technology infrastructures as a critical lever for de-risking and accelerating the market uptake of deep tech solutions. However, a central challenge to this ambition lies in the heterogeneity of governance models for technology infrastructures across Europe, which range from regional to EU level, and from public to private or hybrid approaches. Such diversity often results in inconsistent access conditions, lengthy application procedures, and limited transparency, further complicating the user journey of innovative companies.

The European Commission's efforts to promote the Charter of Access, first introduced by the EU Startup and Scaleup Strategy, are a positive step. Its provisions, however, remain a voluntary guide to how technology infrastructures could harmonise contractual conditions for startups and scaleups. To secure widespread adoption, it should be integrated into a legally binding instrument. This is supported by Andras Inotai, the European Commission's Acting Head of Taskforce on Startups and Scaleups: *'It is important that the EU Charter of Access has legally binding actions, including regulatory provisions to ensure that what is presented in the Charter of Access is effectively implemented among Technology Infrastructures'.*

Through the EU Innovation Act, the European Commission also intends to clarify State Aid rules, defining the conditions under which public research and technology infrastructures can grant access to innovative companies. This provides the legal certainty needed to confidently offer facilitated access to startups and scaleups without fear of infringement. For initiatives involving co-funding and public-private partnerships, a clear framework is equally vital to ensure public money effectively catalyses private investment in line with the 'funding gap' principle. This also avoids market distortion and fosters genuine collaboration rather than just subsidy. This comprehensive clarity is essential to mobilise the entire ecosystem (both public and private) toward the common goal of scaling deep tech.

To complement these efforts, the recently published European Strategy on Research and Technology Infrastructures[49] provides a comprehensive additional set of actions complementing the initial propositions, to be implemented from 2025-2027. The full set of strategic actions can be grouped by focus:

1. Increase capacities and mobilise investment (2025-2026)
    - Definition of criteria to select, invest, and maintain critical capacities. Mapping and implementation roadmaps for new technology needs, and coordination with funding sources.
2. Maximise the potential of digitalisation and AI (2025)
    - To create a unified, AI-powered European data ecosystem for science, where research data is automatically findable, accessible, interoperable, and reusable (FAIR), fuelling scientific discovery and innovation.
3. Bolster accessibility (2025-2027)
    - Designing, testing, and piloting new access schemes and integrating frameworks to research and technology infrastructures.
4. Attract and grow talent (2026)
    - Developing research and technology infrastructures strategies with actions aligned with the 'Choose Europe' approach, like providing training to research and technology infrastructure staff.
5. Improve and simplify the governance framework (2025-2026)
    - Proposing and implementing coordinated governance mechanisms in collaboration with Member States.
6. Strengthen the international dimension and resilience (2025)
    - Expanding international partnerships while simultaneously securing its research ecosystems against risks and dependencies.

Strong stakeholder alignment is needed to achieve an effective implementation plan. The following questions will therefore be addressed in this section:

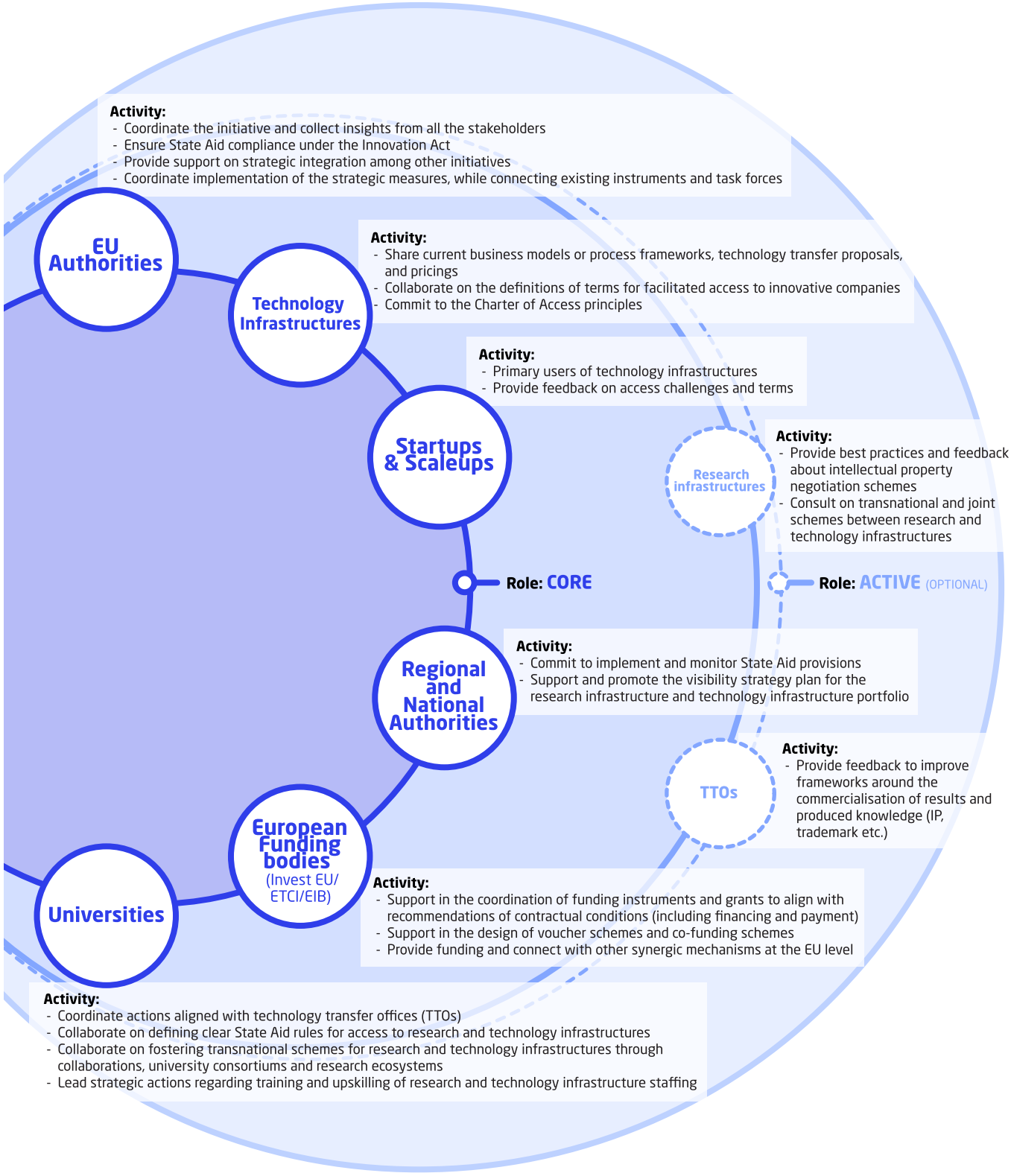
- **What are the priority initiatives to address the main barriers preventing scaleups and technology infrastructures from collaborating effectively?**
- **What are the key success factors to ensure that processes, conditions, and information are applied consistently across all governance frameworks (regional, national, transnational, private, and hybrid models)?**

The following sections explore these questions and offer practical recommendations for regulators to build on the proposed initiatives. It also outlines alternative approaches for coordinating the roles of the EU and other key stakeholders and securing effective implementation.

C.2 KEY STAKEHOLDERS TO ENGAGE

Effective governance and a well-defined business model will be key to the success of the EU Startup and Scaleup Strategy on Infrastructures. The key stakeholders to align and onboard are outlined in **Figure 4**.[41,43,44]

FIGURE 4. KEY STAKEHOLDERS OF TECHNOLOGY INFRASTRUCTURES



C.3 IMPLEMENTATION STRATEGIES AT THE EUROPEAN LEVEL

The following insights were gathered through a pan-European assembly of 15 stakeholders, ensuring a wide range of national perspectives. The session engaged scaleups and technology infrastructures from Western, Central, and Northern Europe, capturing a significant cross-section of the ecosystem's regional diversity.

Insights from scaleups and technology infrastructure representatives show that, while harmonising contractual conditions and legislative alignment is crucial, it must be complemented by measures that address key operational barriers.

These interviewed stakeholders suggested several critical success factors for improving access to technology infrastructures:

A. **Reduce the transnational barriers** to accessing non-local facilities.
B. Increase dedicated **funding to cover technology infrastructure capital and operational costs**.
C. Improve the **visibility and standardisation of information** on available technology infrastructures and their services.

We identified the priority actions by cross-checking the inputs from workshops with scaleups and technology infrastructures. The strategic actions considered most valuable, extending beyond the Charter, were as follows:

a. Testing pilot access schemes for startups and scaleups.
b. Transnational and multisite collaboration among technology infrastructures.
c. One-stop shop portal to improve visibility and accessibility of technology infrastructures across the EU.
d. Invest in building and sustaining critical new capacities.
e. State Aid rules linked to the Innovation Act.

These stakeholders recommended a set of best practices to secure effective implementation of the strategic actions outlined, as well as recommendations on what to avoid, in order to ensure effective long-term implementation.

Ensuring harmonised legal conditions and operational frameworks to increase access of startups and scaleups to technology infrastructures

What are the most critical barriers to the adoption of a harmonised access framework across technology infrastructures?
What legal, operational, and incentive changes are needed to overcome these barriers?

Recommendations:

- Conduct a formal assessment and market analysis to outline the **key operational aspects to be harmonised** from the Charter of Access. **Secure clear tracking when analysing insights from scaleups and when it comes from startups**. The proposed strategy timeline for implementation may not consider this assessment at this stage.

- In collaboration with legal experts, develop a model of standard contractual conditions for technology infrastructure collaboration agreements. It will help to reduce legal costs, build scaleups' trust, and speed up approvals.

- Clearly define **IP handling and transfer policy measures** across all participating technology infrastructure providers, presenting alternatives to licensing and technology transfer. Identify clear needs and differences among startups and scaleups.

- **Test pilot access schemes for scaleups** to fast-track the application process and facilitate access, by providing standard offers and fewer transnational hurdles.

Recommendations:

- Secure legislative commitment backed by the **Innovation Act**, to ensure adoption by anchoring these recommendations directly in the instrument, including guidance and definitions to classify ventures as startups or scaleups.

- Extend **State Aid rules** beyond public research infrastructures (as initially proposed), since the needs of scaleups often align more closely with technology infrastructures, especially regarding the outsourcing of manufacturing. It should secure the criteria of diversity to receive ventures from multiple geographies, accelerating transnational applications.

Attention point: Avoid 'one-size-fits-all' governance models. The harmonised frameworks must distinguish between research infrastructures for academia and technology infrastructures for industry, allowing for tailored governance, KPIs, and access rules that meet their distinct missions.

Increasing visibility of available EU technology infrastructures and simplifying interactions by centralising application processes through a single digital gateway

How can the Charter reduce administrative burdens for scaleups to find information and apply for **suitable technology infrastructures** across the EU?

Recommendations:

- Launch a minimum viable product (MVP) of the EU **'one-stop shop'** platform with selected **technology infrastructures** and scaleups. This will be used to collect feedback and improve usability prior to the official launch, which will be key to gaining trust from users.

- Include **incentives for cross-national collaborations**, both within the EU but also to facilitate access to non-EU initiatives.

- **Drive adoption and usability** by backing the platform with a dedicated support team and a proactive EU-wide communication plan to promote the registered technology infrastructures.

- **Incentivise technology infrastructure engagement** by leveraging the platform's value. Offer participating infrastructures EU-wide visibility, streamlined administrative back-office support, and access to a broader client base.

Attention point: Avoid creating a temporary project. The platform should be institutionalised in EU law (ideally the Innovation Act) and sustainably funded to become a permanent, trusted feature of the innovation ecosystem, similar to other success cases like the EURAXESS platform. Its value proposition should be compelling for both infrastructure providers and users to ensure widespread participation.

Reducing financial burden for users and ensuring facilities upgrade by integration of financial initiatives

How can we ensure both long-term financial viability of **technology infrastructures** and affordable access for capital-constrained startups and scaleups?

Recommendations:

- Establish EU-wide **voucher schemes** and **scale co-funding mechanisms** to subsidise access costs for startups and scaleups.

- **Improve coordination between EU and national funding** to create cohesive, cross-border support schemes instead of fragmented regional programs.

- Integrate funding instruments and grants as EU-wide alternatives to cover startups and scaleups **OPEX** from the use of technology infrastructures.

- Secure a dedicated budget line for **technology infrastructures** in the next Framework Programme, supporting **CAPEX** for **building and upgrading cutting-edge facilities**.

Attention point: Funding must be structured for strategic impact. This means concentrating investments on excellent, large-scale sites in the EU-defined critical technologies (i.e. AI, quantum, and semiconductors). Ensuring complementarity should be key to avoiding duplication while maintaining necessary local capacities.

QUESTIONS TO BE ADDRESSED AT THE ASCEND INNOVATION CONFERENCE

A. Deploy a Scaleup Europe Fund that can meet deep tech capital requirements

- Given the very large amount of funding the EU will need to achieve its objectives, how does the Scaleup Europe Fund plan to mobilise these public resources?
- What measures will be critical to implement alongside the Scaleup Europe Fund to ensure its maximum impact on scaling European deep tech and attracting private investment?
- How can we ensure complementarity between the Scaleup Europe Fund and existing initiatives like the EIC, InvestEU, and ETCI?
- How should primary stakeholders of the Fund (startups, VCs and institutional funds) be engaged throughout design and implementation?

B. Promote the deployment of regulatory sandboxes for the testing and industrialisation of emerging technologies

- What are the best practices for knowledge sharing and effective translation of regulatory sandbox results into policy development and potential regulatory reforms, including monitoring and follow-up mechanisms?
- What are the benefits and practical implementation requirements of a centralised operating model for EU authorities (general principles definition, minimum requirements, examples of relevant cases and expected benefits)?
- How should resources (funding, expertise and legal provisions) be allocated within the EU Innovation Act to promote centralised and cross-border regulatory sandboxes?

C. Facilitate access to technology infrastructures for innovative companies

- Which contractual provisions in existing frameworks should be adapted, included, or avoided? Should the focus be on how to make manufacturing outsourcing more attractive and accessible for startups and scaleups?
- How can the European Charter for Access for industrial users of research and technology infrastructures provide useful guidance to infrastructure operators and industrial users? How can it be ensured that a wide range of infrastructures take ownership of this and uphold its values and guidance?
- What guidance is necessary regarding the application of State Aid rules for technology infrastructures, and what adaptations might be necessary to meet the needs of users?
- What should be the overarching EU coordination framework for the research and technology infrastructures ecosystem proposed under the European Strategy on Research and Technology Infrastructures?
- What possible conditions should be prioritised for harmonisation across the multiple governance models of technology infrastructures?

ANNEX - METHODOLOGY AND DATA

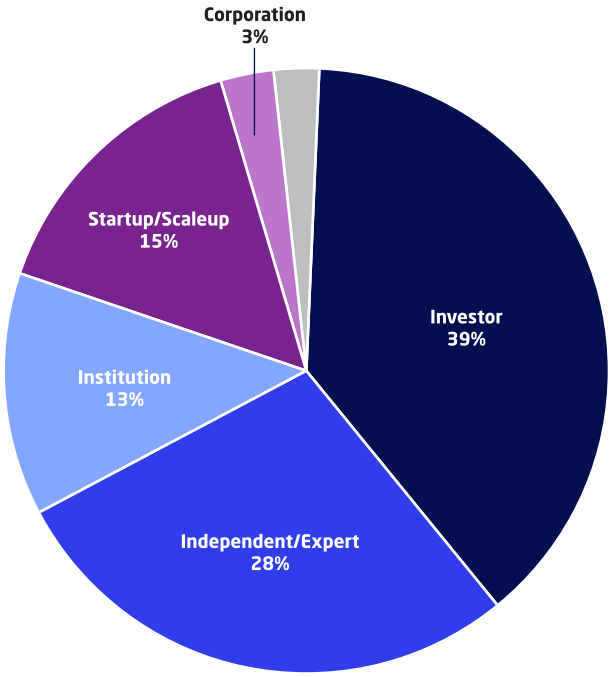
This report is based on a comparative analysis of transversal scaling challenges centred on four pillars: **access to financing, regulatory and market integration, innovation infrastructure,** and **talent and skills**, within the European deep tech ecosystem.

All elements developed from this report are intended to guide the conversation at the ASCEND conference, serve as a first step toward implementing a consolidated EU Startup and Scaleup Strategy to support scaling deep tech solutions, and pave the way for the European Innovation Act.

To conduct this analysis, we gathered data at the national and regional (EU) levels through a mixed methods approach using:

- **Desk research** on EU innovation strategies based on available reports, focusing mainly on the recent Draghi report, the Letta report and the EU Startup and Scaleup Strategy published in May 2025.
- **Exploratory questionnaire** gathering the answers of 61 handpicked participants distributed among key European players, including scaleups, public authorities, ecosystem builders, corporates and investors, as well as leveraging the Hello Tomorrow database, Dealroom, and other external sources.
- **Qualitative data analysis** to gather insights on specific ecosystems, success stories, or technology sectors, as well as insights from expert interviews and a comprehensive literature and report review on the European Deep Tech ecosystem. To gain access to relevant qualitative insights, we conducted a total of 21 interviews and organised 3 workshops with deep tech ecosystem leaders (scaleups, investors, academics, innovation agencies and infrastructure providers) to deep dive on key success factors for prioritised EU Startup and Scaleup Strategy actions.

FIGURE 5. PROFILE DISTRIBUTION OF RESPONDENTS TO THE SURVEY ENTITLED 'BARRIERS TO SCALING DEEP TECH IN EUROPE'



Total number of respondents =61; 98% of respondents operate in Europe.

To identify the priority initiatives to be explored in depth and considered for implementation at the EU level, we applied the following evaluation criteria outlined in **Figure 1** to guide our selection process.

ANNEX – METHODOLOGY AND DATA

TABLE 1. EVALUATION CRITERIA TO IDENTIFY PRIORITY INITIATIVES TO SUPPORT SCALING OF GROWTH-STAGE DEEP TECH STARTUPS FOR IMPLEMENTATION AT THE EU LEVEL

Impact	What would be the impact for the growth of deep tech scaleups in Europe? Was the initiative highlighted as priority by our survey and interview audience?	**High** - The initiative addresses a critical challenge for European scaleups and has been highlighted as a core priority in survey and interviews.
		Medium - The initiative addresses an important, but not critical, challenge for European scaleups or was not highlighted as a core priority in survey and interviews.
		Low - The initiative addresses a niche/secondary challenge for European scaleups and was not highlighted as a priority in survey and interviews.
Ease of implementation	Are there major implementation challenges identified? *e.g. high implication and alignment needed from Member States; undefined scope and objective of the measure...*	**High** - The initiative can be easily implemented without identified blocking challenges.
		Medium - The initiative can be implemented if some challenges are resolved.
		Low - Strong challenges to implementation identified.
Timeframe	Can the initiative be deployed in a short amount of time and can we anticipate early results in the near term? Can the initiative benefit from already existing pilots and experience?	**Short** - The initiative benefits from existing pilot projects/schemes and can be implemented with results in less than one year.
		Medium - The initiative can be implemented in the near term but will deliver early results in a 3-year timeframe.
		Long - The initiative will require structural changes and will take more than 3 years to be effectively deployed.

REFERENCES

1. The 2025 European Deep Tech report, Dealroom, 2025
2. The future of European competitiveness: In-depth analysis and recommendations, European Commission, 2024.
3. From-Seed-to-Scale, Eurochambers, 2025.
4. EU Startup and Scaleup Strategy: Communication from the Commission, European Commission, 2024.
5. Europe Can Better Support Venture Capital to Boost Growth and Productivity, IMF, 2024.
6. In search of EU unicorns - What do we know about them? European Commission, 2022
7. EU Startup and Scaleup Strategy: Communication from the Commission, European Commission, 2024.
8. A reality check on international listings. New Financial., Wright, W., Thornhill, J., Breen, C., &and Hames, 2025
9. Ministère de l'Économie, L'innovation de rupture au défi du passage à l'échelle, 2025. (French)
10. Horizontal and Non-Horizontal Mergers Guidelines Consultation, AmCham EU, 2025
11. Beyond Fragmentation: The Connectivity of Startup Ecosystems in Europe, StepUp StartUps, 2024.
12. The Future of European Competitiveness, Part. A, European Commission, 2024.
13. Key recommendations on the single market, Orgalim, 2024.
14. Building a competitive Europe: the role of startup and scaleup ecosystem, ESNA, 2025.
15. Energy Regulation Sandbox: Guidance for Innovators, Ofgem, 2020
16. Emergent Energy develop new smart local energy solution backed by Ofgem 'Energy Regulation Sandbox' award, Unlock NetZero, 2024
17. Startups and public procurement - an untapped strategic tool for European innovation, France Digitale, 2025.
18. Unlocking the full potential of the European Public Procurement Market, Business Europe, 2023.
19. Compendium of good practices for integrity in public procurement, OECD, 2025
20. Innovation Procurement in Spain – key barriers, the role of SMEs and next steps, IPP, 2019
21. The Silicon Valley Model and Technological Trajectories in Context, Carnegie, 2024.
22. Towards a European Policy for Technology Infrastructures, Independent expert report, European Commission, EGTI Report, 2025.
23. State of global fermentation, Synonym, 2023.
24. More information at: vttresearch.com/en/technology-infrastructures/
25. Policy challenges in exploiting research and innovation infrastructure, Interreg Europe.2019.
26. The European High Performance Computing Joint Undertaking, EU, 2025.
27. Flash Eurobarometer 529 European Year of Skills: Skills shortages, recruitment and retention strategies in small and medium-sized enterprises – May 2023.
28. ICT specialists – difficulties in recruitment. Eurostat, 2024.
29. Communication on The Union of Skills, COM 90 final, European Commission, 2025
30. Commission Staff Working Document: 212 final, Brussels, European Commission, 2025.
31. Addressing skills needs in the European Health sector, Skills gaps, solutions, and strategies for VC-startup cooperation, IT Health and EIF, 2024.
32. EIT Deep Tech Talent Initiative reaches its goal of 1 million talents trained, EIT, 2025.
33. Reskilling Coal Industry Workers for the Renewables Energy Sector. PLACES Case Study Library. June 19, OECD, 2024
34. A STEM education strategic plan: Skills for competitiveness and innovation, European Commission, 2024.
35. Women founders in European deep tech startups: Main findings report. Supernovas, EIT, 2024.
36. Returns with gender diversity in European venture capital firms, EIT Digital and European Women in VC, 2023
37. Commission Recommendation on critical technology areas for the EU's economic security for further risk assessment with Member States, European Commission, 2023
38. State of European Tech 24, Atomico, Orrick, HSBC Innovation Banking, AWS, Slush, 2023
39. Council Conclusions on Regulatory Sandboxes and Experimentation Clauses as tools for an innovation-friendly, future-proof and resilient regulatory framework that masters disruptive challenges in the digital age, 020/C 447/01, OJ C 447
40. Regulatory Sandboxes, Analytical paper for Business Europe, Winnovation, 2020
41. Regulatory learning in the EU - Guidance on regulatory sandboxes, testbeds, and living labs in the EU, with a focus section on energy, SWD (2023) 277/2 final
42. AI Regulatory Sandbox Approaches: EU Member State Overview, AU AI Act, 2025
43. Making space for innovation, The handbook for regulatory sandboxes, Federal Ministry for Economic Affairs and Energy (BMWi), 2019
44. European Blockchain Sandbox, Best practices report 2nd Cohort Abstract and Executive Summary, 2025
45. European Strategy on Research and Technology Infrastructures. European Commission, 2025

ACKNOWLEDGEMENTS AND AUTHORS

Hello Tomorrow would like to thank **DTU** and the **Novo Nordisk Foundation** for their trust and support in drafting this report. We would like to thank the steering committee of the ASCEND Innovation conference: Marianne Thellersen, Senior Vice President of Innovation and Entrepreneurship (DTU), Jakob Fritz Hansen, Director of the Office for Research, Advice and Innovation (DTU), Mikkel Sørensen, Managing Director (DTU Skylab), Anja Boisen, Professor & Head of Section (DTU Health Tech), Mark Riis, Head of Innovation (DTU Compute), Mette Mørk Andersen, Head of the EU Secretariat (Danish Ministry of Higher Education and Science) and special thanks to Lone Falsig Hansen, Head of the Office for Research, Advice and Innovation (DTU), Maria-Theresa Norn, Associate Professor (DTU Entrepreneurship), Julie Stubbe Jensen, EU Advisor in the Office for Research, Advice and Innovation (DTU) and Lukas Markus Overgaard, Academic Officer in the Office for Research, Advice and Innovation (DTU). Their guidance and support have been key to the production of this report.

We would also like to sincerely thank the members of the European Commission who contributed to the insights and review of this content: Andras Inotai (European Commission), Kat Borlongan (European Commission), Lars Frølund (EIC), Ann-Sofie Ronnlund (European Commission), Hanna Vuorinen (European Commission), and Guillaume Milot (European Commission).

And to all the members of the deep tech community — founders, investors, policy experts and institutions who generously shared their insights and expertise through interviews and workshops between May and September 2025: Ana Catarina Gomes (ADVID), Brigitte Bach (AIT Austrian Institute of Technology), Mario Noto (Basquevolt), Stef Denayer (BBEU), Willem-Jeroen Stevens (Clear Corporate Finance), Ignacio Gimenez Losano (Creative Destruction Labs), Calvin Compajnen (Delft Circuits), Ivo Denemark (CzechInvest), Fabio Seferi and Ludovica Ciarravano (CybeRights Centre - University of Florence), Jörg Hübner (DTU), Francesco Matteucci (EIC Advisor), Anne Lanigan (Enterprise Ireland), Sophie Viscido (Eurotech Universities), Robert Brüll (Fibrecoat), Katia Merten-Lentz (Food Law Science), Florian Ascherl (Fraunhofer), Lars Fremerey (GTS), Christian Weinberger (Hydrogen advisers), Léa Chauvin (H2SITE), René Højmark (IDA), Patrik Sobocki (Industrifonden), Sven De Cleyn (Imec), Markus Bohl (Intel Ignite), Alberto Venditti and Federico Pozzi (Intellera Consulting), Frits de Vries (InvestNL), Max Vellguth (Joachim Herz Stiftung), Milja Kalliosaari (IQM), Christine Funck (LBST), Valerie Anne Lencznar (Ministry of Energy of Moldova), Rene Giese (Motion Lab), Albert Bravo-Biosca (Nesta), Theodor Nielsen (NIL Technology), Alexandra Paul, and Daphné Ricard (Pasqal), Natalia Kupsik (Polish Development Fund), Maria Trinidad Navarro (Solaria), Pasi Vainikka (Solar Foods), Erkki Seppäläinen (SisuSemi), Helmut Schönenberger (UnternehmerTUM) and Gabriele Tatzberger (Wirtschaftsagentur).

About the authors:

At **Hello Tomorrow Consulting**, we partner with corporations and public institutions to turn deep tech into real business opportunities. With over ten years of building Europe's largest deep tech ecosystem, we bring together science, industry, and policy to help our clients stay ahead of disruption and spot what's coming next.

Alizée Blanchin - Director & Partner at Hello Tomorrow
Alberto Garcia Picazo – Senior International Projects & Innovation Consultant at Hello Tomorrow
Lucas Maurice - Senior Deep Tech & Innovation Consultant at Hello Tomorrow
Emma Carnus - Deep Tech & Innovation Consultant at Hello Tomorrow
Eduardo Rodrigues - Deep tech & Innovation Consultant at Hello Tomorrow

For further contact:
If you would like to discuss this report, please contact: Alizée Blanchin, Director & Partner at Hello Tomorrow (alizee.blanchin@hello-tomorrow.org). Maria-Theresa Norn, Head of Scientific Advice at the Centre for Technology and Entrepreneurship at DTU (tnorn@dtu.dk)

For information or permission to reprint, please contact Hello Tomorrow at contact@hello-tomorrow.org

From Strategy to Scale: Unlocking Europe's Deep Tech Potential. ASCEND INNOVATION PRE-CONFERENCE REPORT
© 2025 by Hello Tomorrow is licensed under CC BY 4.0. To view a copy of this license, visit https://creativecommons.org/licenses/by/4.0/

