This is a background memo produced for Sitra's project, Digital single market repair kit. The project aims to develop concrete proposals to address the biggest bottlenecks in Europe's digital single market. The project focuses on analysing regulatory, legislative, and administrative barriers that limit cross-border integration and EU competitiveness, and on developing practical policy solutions to address them.

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Bottlenecks in the Digital Single Market

Desk study on ten critical bottlenecks for organisations seeking to operate and scale across the European Union's Digital Single Market

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1. FOREWORD

We are living in challenging times. The competitiveness of the Member States of the European Union has increasingly been called into question in ways that do not align with European values or the principles of the rule of law. Europe's success stories have often been described as peace and the Single Market of 450 million people.

Exports account for approximately 40 % of Finland's GDP, with about two-thirds directed to Europe. Yet the current situation does not reflect the estimated export potential. Our open economy is not reaping the full benefits we expect from the Single Market.

A well-functioning Single Market is therefore a key instrument for supporting and maintaining the welfare state, which faces a number of challenges, including those stemming from demographic developments in the Member States. At the same time, we are also engaged in a form of internal trade conflict within the European Union, reflected in multiple barriers to trade growth.

In recent years, the European Union has adopted extensive new legislation regulating the data economy and digitalisation. Its objectives include enhancing competitiveness, innovation and economic growth. The question remains: do these objectives align with the current reality?

Sitra has sought to map the state of the digital Single Market together with the law firm Bird & Bird, which has prepared this report. The report draws on key studies and analyses published between 2023 and 2026 that assess the condition of the Single Market. Based on these, we have identified several remediable bottlenecks that hinder Single Market development. Following this situational analysis, Sitra will continue preparing the report and the related policy recommendations.

This desk study, prepared by Bird & Bird, is intended to serve as the foundation for a broader analysis of the development of the digital Single Market, to be produced by Sitra in spring 2026. The forthcoming analysis will examine the most significant bottlenecks and propose concrete measures to address them. Sitra's "Single Market Repair Kit" report will be published in June.

Sitra extends its gratitude to Bird & Bird for their valuable work.

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2. EXECUTIVE SUMMARY

The EU Digital Single Market faces critical bottlenecks that prevent European companies from achieving their full potential. Drawing from 15 source documents, a rather clear consensus emerges on the nature and severity of the most critical bottlenecks. In this desk study, we have identified the ten of them. Fragmented regulation across Member States creates different national markets rather than one integrated market, forcing companies to navigate contradictory rules and multiplying compliance costs. Divergent national implementation through gold-plating and uneven enforcement undermines harmonisation efforts, with the conformity deficit remaining well above the target. Connectivity and digital infrastructure gaps persist, with the EU behind its 2030 Digital Decade targets and requiring an estimated EUR 200 billion investment in digital infrastructure, whilst fragmented telecommunications markets and high energy costs further constrain deployment.

Excessive administrative and compliance burdens cost the EU economy an estimated EUR 150 billion annually, disproportionately affecting SMEs, whilst fragmented public procurement discourages cross-border participation. Lack of clear and timely guidance on new legislation creates legal uncertainty, particularly for the Digital Services Act, Digital Markets Act, and Artificial Intelligence Act. Talent shortages and labour mobility barriers include skills gaps affecting one-quarter of companies, burdensome posting procedures, and complex professional qualification recognition processes.

Barriers to data flows and fragmented data markets result from divergent GDPR interpretations and conflicting requirements across regulations, particularly affecting health data. Slow and complex permitting, certification, and approvals can delay projects for years, whilst limited access to financing sees EUR 300 billion of household savings flow abroad annually due to fragmented capital markets. Finally, lack of support and coordination in R&I manifests through siloed national innovation efforts and limited academia-business collaboration, preventing Europe from converting research excellence into commercial success.

3. INTRODUCTION

3.1 The Digital Single Market

This study examines the Digital Single Market and identifies the ten most relevant barriers that hold Europe's growth back. We look in particular at those bottlenecks that organisations face when seeking to operate and scale across the European Union's (EU) Digital Single Market.

The Digital Single Market refers to a market in which the free movement of goods, persons, services and capital is ensured and where individuals and businesses can seamlessly access and exercise online activities under conditions of fair competition, with a high level of consumer and personal data protection, irrespective of their nationality or place of residence. This concept was formally articulated in the Digital Single Market Strategy for Europe, which set out a plan to remove barriers and make the transition from 27 national markets to a single one in the digital sphere. The objective is to build a Digital Single Market on three pillars: better access for consumers and businesses to online goods and services across Europe; creating the right conditions for digital networks and services to flourish; and maximising the growth potential of the European Digital Economy (European Commission 2015.)

With a population of over 450 million people, a skilled workforce and stable institutions, the Member States of the EU are in an excellent position to compete globally. Yet according to economic indicators, the EU is falling behind the United States and China. What is holding us back?

3.2 Bottlenecks in the Digital Single Market Context

In the context of this study, bottlenecks refer to barriers, obstacles and friction points that impede European companies from fully benefiting from, entering and operating in the Digital Single Market. These bottlenecks prevent businesses from scaling across Member States, increase compliance costs and ultimately undermine Europe's competitiveness in the global digital economy.

Barriers to achieve a true Single Market fundamentally limit companies' ability to scale. Despite the Single Market's promise of integration, the EU market is still fragmented. Businesses effectively face 27 different national markets with divergent interpretations, requirements and regulatory approaches. New barriers and sources of fragmentation continue to appear even as older ones have been removed.

Many organisations have written about the fragmentation in the recent years. BusinessEurope warns of "persisting fragmentation" that undermines the promise of a truly integrated market. This association links this to deteriorating competitiveness and a less attractive investment environment

(BusinessEurope 2023). In its report Empowering the Single Market, CEPS describes a "not-so-single market" characterised by "many hundreds of barriers", noting that fragmentation is "rampant and widespread" (CEPS 2024). CCIA Europe highlights that persistent regulatory fragmentation and overlapping obligations hinder business and innovation, stressing the need for predictable, harmonised rules (CCIA 2025).

This fragmentation forces companies to navigate contradictory rules, multiplies compliance costs, and prevents the achievement of economies of scale that would be possible in a truly unified market. Market fragmentation drives high-growth companies to move overseas and hinders capital market development. As a result, Europe suffers from a scale deficit, which inhibits the emergence of globally competitive European digital companies.

3.3 Methodology

"Bottlenecks in the Single Market" is an enormous topic. We therefore made two initial decisions to facilitate the task of transforming potential source material comprising thousands of pages to produce a final report of less than 30 pages. First, we focused on reports that addressed shortcomings in the Digital Single Market; we left those reports out that described bottlenecks in the European Single Market but did not focus on bottlenecks relevant in the Digital Market. As the topics are often interconnected, this was not always an easy choice. For instance, the issue of energy shortages may have an impact on general industry growth, but it also impacts how profitable it is to run a data centre in Europe. Second, we only took relatively recent reports as source material: our analysis is based on reports and studies published on the topic between 2023 and 2026. We did so because digital markets move fast and the EU has passed a number of ground-breaking laws during the last five years. While the full effect of these laws still has to be felt, they were adopted when the studies we take as a base line were written.

We also want to be transparent about several limitations to this study. To begin with, this is a desk-based research, meaning that we analysed reports written by other organisations and distilled them. This report does not include original research or interviews with experts. Second, this desk study does not include every bottleneck mentioned in the reports published on the topic. To write this desk study, we first selected reports we deemed most important to analyse bottlenecks in the Digital Single Market. When choosing the sources, we focused on including especially those produced by the EU institutions, by thought leaders such Mario Draghi and Enrico Letta, in addition to sources from think tanks and business representative organisations. After choosing the sources, we compiled a list of 10 bottlenecks we regarded most significant among all bottlenecks that were identified in the selected reports. The last limitation concerns the timing: the study is written at a moment when the EU is

in the progress of regulatory reform and EU leaders have called on the European Commission to come up with a roadmap for the European Council in March 2026, to turn the Single Market into a reality. At the time of writing, no change has yet been decided. It is likely that some of the concerns will be addressed by the various Omnibus initiatives, in particular the bottleneck dealing with excessive administrative burden (see below at 4.3).

The source material for identifying bottlenecks includes 15 reports. They are listed at the end of this report with their full references. To strike a balance between transparency and readability, where information is drawn from a specific report, that report is cited directly in the text. For all other information, the relevant sources are listed at the end of each chapter.

3.4 Structure of this Desk Study

This desk study is structured around the ten most critical bottlenecks we have identified for companies seeking to enter and operate in the Digital Single Market. Bottlenecks in question are: (1) fragmented and overlapping rules across Member States; (2) divergent national implementation, 'gold-plating', and uneven enforcement; (3) excessive administrative burdens; (4) lack of clear and timely guidance; (5) connectivity and digital infrastructure gaps; (6) skills shortages and labour mobility barriers; (7) barriers to data flows; (8) slow and complex permitting, certification and approvals; (9) limited access to financing; and (10) lack of support and coordination in research and innovation (R&I).

Each bottleneck section synthesises findings from the sources to provide an overview of the barriers. Additionally, we describe some of the solutions to tackle the bottlenecks proposed in the sources. As examples of some potential solutions, we have picked solutions that are mentioned in various sources and/or that we believe are most relevant to the bottleneck based on the sources. The proposed solutions that we have listed in this desk study are not exhaustive, as sources include often several solutions.

A list of sources and abbreviations conclude this report.

4. 10 BOTTLENECKS

4.1 Fragmented and Overlapping Rules Across Member States

Description of the bottleneck

In many reports, the Single Market is characterised as fragmented. This fragmentation emerges as a result of different legal systems, leading to divergent national laws and varying implementation of common rules. In this section, we discuss the divergent and overlapping rules across EU. In the next section, we discuss the divergent implementation of the EU rules.

Companies seeking to operate cross-border in the Digital Single Market face heterogeneous national requirements and many national regulators. This complex landscape deters firms from providing cross-border services and expanding, also via subsidiaries, and raises compliance costs.

An example of an area in which national regulations deter the development of businesses in the Digital Single Market is the establishment of operations. Fragmented rules for establishing operations mean that freedom of establishment is not yet a reality. Significant differences in laws and regulations across Member States limit organisations' ability to operate seamlessly across the EU, despite a current proposal for an EU-wide statute to allow operation via subsidiaries without separate incorporation in each Member State.

In the digital context, fragmentation is driven not only by national divergence but also by an EU-level landscape of overlapping rules. This creates additional compliance burdens and hampers innovation and growth. Companies face cumulative and overlapping obligations for example in the digital laws across the General Data Protection Regulation (GDPR), the Artificial Intelligence Act (AIA), the Digital Markets Act (DMA) and the Digital Services Act (DSA), with risks that for example GDPR/AIA overlaps and inconsistencies could undermine AI development. Business stakeholders have expressed concern about a steep increase in the regulatory burden over recent years.

A concrete example of overlapping digital rules giving rise to administrative burden is that there are seven cyber laws with different incident-reporting requirements—the AIA (including AI Code of Practice), CRA, DORA, EECC, GDPR, NIS2, and PSD2. Each of these laws demand incident reporting with different reporting thresholds, timelines, languages and respective authorities. In case of a data breach for example in a financial institution, several of these laws currently require separate notifications.

The proposed Digital Omnibus (2025/0360) would introduce a single entry point for incident notifications, establishing the once-only principle for reporting.

Proposed solutions

Various solutions have been proposed to address the fragmented and overlapping rules.

In general, it is essential to strengthen preventive tools, such as proportionality tests before introducing new legislation, to counter excessive legislation. BusinessEurope recommends adhering to better regulation principles, avoiding an "uncontrolled spiral of new regulations" (BusinessEurope 2023). DIGITALEUROPE urges comprehensive mapping and coherence before

introducing new laws (DIGITALEUROPE 2023). It specifically calls for a "stock-taking" of the full data regulatory package and willingness to repeal or amend ineffective laws. To tackle the specific barrier related to fragmented incident reporting obligations, streamlining incident reporting towards a single process and possibly a single regulator of main establishment could provide a solution. The Digital Omnibus proposal aims to address this challenge.

The European Commission has also proposed the "28th regime" approach to simplify rules for businesses operating across Member States. This proposed framework addresses the complicated business establishment procedures and operations resulting from fragmented legal rules. The goal of the proposal is to simplify and reduce the cost of operating across Member States. It covers corporate, insolvency, labour, and tax aspects, with measures aimed at ensuring faster and digital establishment procedures. One proposal to help scale-ups operate across the EU is also the introduction of an EU-wide legal status, so that they would not need to incorporate separately in each Member State.

Additionally, in general, enhanced cooperation between Member States and the EU could accelerate Single Market integration.

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, CCIA 2025, CEPS 2024, DIGITALEUROPE 2023 and 2024, Draghi report, ECIPE 2024, ERT 2024, European Commission 2025A, 2025B, 2025C and 2026, European Parliament 2025 and Letta report.

4.2 Divergent National Implementation, Gold-Plating and Uneven Enforcement

There are two aspects to this bottleneck: divergent national implementation and uneven enforcement of rules. First, we will look into the bottlenecks related to national implementation. After that, we will investigate the bottleneck caused by uneven enforcement across the Member States.

4.2.1 National Implementation and Gold-Plating

Description of the bottleneck

Problems arising from fragmentation are not simply a result of Member States having different laws or the excessiveness of EU and/or Member state regulation. Even when EU legislation aims to harmonise rules, divergent national implementations and contradictory interpretations recreate the very fragmentation the EU legislation sought to eliminate. Member States often add

national layers even to harmonised EU digital legislation, creating 27 different versions of supposedly harmonised rules.

Member States fragment the Single Market in three ways: by failing to transpose a certain Directive, by transposing it incorrectly or by adding extra requirements and stricter rules going beyond EU directives ("gold-plating"). According to European Commission's Annual Single Market and Competitiveness report 2026, the level of incorrect transposition of EU directives is measured with conformity deficit. In 2025, the conformity deficit was 1.1 %, exceeding the target level of 0.5 % significantly (European Commission 2026). In MEP Anna-Maja Henriksson's report for the European Parliament on the implementation and streamlining of EU internal market rules to strengthen the single market, it is underlined that gold-plating of EU directives and differing enforcement of EU rules remain an obstacle for the single market (European Parliament 2025).

Gold-plating and divergent national transpositions constitute a major source of additional administrative burdens on organisations. This situation has severe consequences. The regulatory burden tends to be bearable mainly for larger, often non-EU companies. At the same time, emerging, innovative firms from Europe and abroad may choose not to operate in the EU, or in only limited ways. SMEs are disproportionately impacted by divergent implementation since navigating national variations across each Member State can be very costly. An example of this is the market for hyperscalers, i.e. companies that serve as the backbone for the provision of various cloud-related services to European enterprises and therefore essential components of a European Digital Single Market. There are currently no European hyperscalers, not least due to the fragmented data and cloud rules in the EU.

EU regulations, unlike directives which are subject to national implementation, are directly applicable on EU Member States. Yet even regulations can allow Member States a significant margin of manoeuvre in certain areas. For instance, the GDPR was passed with the aim of achieving one common standard of data protection across Europe, which should in turn have facilitated the further adoption of digital services. Although the GDPR is directly applicable EU-wide, it allows Member States to specify rules in various areas, which has led to fragmentation and legal uncertainty due to widespread use of specification clauses, gold-plating and inconsistent enforcement by national Data Protection Authorities (including multiple Data Protection Authorities in some countries, e.g., 18 in Germany). Some national Data Protection Authorities go beyond their own competences by providing diverging interpretations of both the text and the spirit of the law.

A concrete example for fragmentation despite having one regulation is the divergent "age of consent" for children's data across Member States under the GDPR. The age of consent is 13 in Belgium, Denmark, Estonia, Finland, Latvia, Malta, Portugal, Sweden; 14 in Austria, Bulgaria, Cyprus, Spain, Italy, Lithuania; 15 in the Czech Republic, Greece, France; and 16 in Germany, Hungary, Croatia, Ireland, Luxembourg, the Netherlands, Poland, Romania, and Slovakia. This creates uncertainty for companies offering digital services to public including minors across borders.

Another problem in this area highlighted in the reports concerns the processing of health data for secondary use. This is crucial for medical research, including R&I in the health tech industry. The GDPR allows processing of health data for certain purposes based on EU or national law, but Member State uptake has been uneven, resulting in ineffective secondary use of health data. This constrains for example AI deployment in the pharmaceutical and life science sector.

In addition to having different implementation of rules, national authorities also interpret the same EU rules differently. In the digital rules, this is evident for example regarding cookies, consent mechanisms and data transfer requirements, which are interpreted in different ways in different Member States. This also contributes to legal fragmentation.

Proposed solutions

The solutions proposed to overcome the challenge of varying national implementations range from the abstract to the more concrete. As a general solution, the Letta report proposes prioritising maximum harmonisation by giving preference to regulations over directives, ensuring discipline regarding transposition, and systematically using Article 114 of the Treaty on the Functioning of the European Union (TFEU) to avoid minimum-harmonisation fragmentation (Letta 2024). Article 114 TFEU authorises the EU legislators to adopt measures harmonising national legislation that has as its object the establishment and functioning of the internal market.

BusinessEurope proposes investing in administrative cooperation between Member States to ensure uniform implementation and introducing anti-gold-plating procedures at national level (a "gold-plating test"). According to BusinessEurope, the Commission should be also more active in using "infringement procedures for breaches of Single Market law by Member States" (BusinessEurope 2023).

Overall, reports recommend strengthening the Single Market Enforcement Taskforce (SMET) to address incorrect transposition and transposition

exceeding directive requirements, in addition to streamlining or merging national enforcement authorities.

Regarding the cloud sector in particular, common EU-wide cloud and data rules with limits on gold-plating are recommended. Among the suggestions addressing specifically the cloud sector are recommendations for a single EU-wide policy for public administrations' cloud procurement and data residency requirements and EU-wide sensitive data security policies for collaboration with hyperscalers. Additionally, an EU Single Market passporting regime has been proposed to eliminate Member State gold-plating.

4.2.2 Uneven Enforcement

Description of the bottleneck

Even where EU legislation achieves harmonisation on paper, the reality can be undermined by weak or uneven enforcement between Member States. Uneven enforcement creates market distortions whereby companies select jurisdictions based on lighter regulatory supervision rather than business fundamentals, undermining fair competition.

Insufficient and uneven enforcement and market surveillance undermine the level playing field and trust in cross-border services and products. When companies cannot rely on consistent enforcement across Member States, they face uncertainty about whether their competitors are subject to the same rules, distorting competition.

According to Letta report and CEPS analysis, detection, reporting and monitoring of major infringements is inadequate and infringement procedures are too slow and insufficiently dissuasive (Letta 2024 and CEPS 2024). Additionally, Letta states that SOLVIT is not operating as well as it could, as case handling is delayed, cases are unsolved, and the EU law is applied in an inconsistent matter (Letta 2024).

Due to this bottleneck, businesses and workers requiring a rapid resolution to the misapplication of EU rules face delays. This can lead to lost opportunities to operate across borders, or to appeal rulings.

Proposed solutions

To speed up enforcement of cases where Single Market legislation is breached, CEPS proposes a fast-track procedure to Court of Justice of the European Union (CJEU) and possible suspension of national laws when infringement proceedings have started.

Letta report recommends creating a binding legal framework for SOLVIT through a Regulation and proposes to strengthen SOLVIT’s operational

capabilities. Additionally, Letta recommends consolidating enforcement instruments into national and EU "Single Market Offices". Other suggestions include setting binding minimum investigation criteria for potential infringements and using AI to spot major infringements faster. Additionally, Letta suggests that one possible way to provide visibility for this issue and to keep driving towards closer integration would be the appointment of a European Commission Executive Vice-President as a Chief Enforcement Officer for the Single Market. (Letta 2024.)

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, CCIA 2025, CEPS 2024, DIGITALEUROPE 2023 and 2024, Draghi report, ECIPE 2024, European Commission 2025A, 2025B, 2025C and 2026, ERT 2024, European Parliament 2025 and Letta report.

4.3 Excessive Administrative Burden

Description of the bottleneck

Within the EU, companies (especially SMEs) report struggles with administrative burdens and compliance with regulation, which together make doing business harder and reduce scale-up opportunities. Excessive administrative burdens create barriers to entry for new companies and disadvantage European organisations compared to international competitors with less administrative burden. Compliance costs divert resources away from more productive investment. SMEs face compliance burdens disproportionately because compliance costs represent a much higher percentage of their turnover compared to large corporations.

This problem of excessive administrative burden has multiple causes. First, overlapping and unclear rules create unnecessary compliance burdens, as discussed in the previous sections. One example of this are the multiple cybersecurity incident reporting regimes that have different thresholds, timelines, languages and relevant authorities.

Second, the transition to digitalisation of procedures is slow. Administrative procedures remain paper-based and fragmented across Member States.

Third, fragmented public procurement compounds these burdens. Inconsistent tendering, eligibility criteria and evaluation methods discourage SMEs from participating in cross-border procurement and slow innovation uptake. Complex procurement rules mean SMEs often cannot afford the administrative overheads of bidding, leaving public contracts primarily for large incumbents.

An additional challenge in reducing administrative burden is that the EU lacks a shared methodology for co-legislators to measure regulatory burden and to assess national transposition impacts.

Proposed solutions

Solutions to decrease administrative burden include for example setting reduction targets, simplifying reporting obligations and regulation, and digital tools.

The Commission has set quantified targets to reduce reporting burden, which is a subset of administrative burden (25 % for all companies; 35 % for SMEs). According to European Commission's communication "A Competitiveness Compass for the EU", these targets are proposed to be applied to the costs of all administrative burdens, not only reporting (European Commission 2025A). Other organisations also propose setting compliance-cost reduction targets and plan how to achieve these. BusinessEurope recommends high-quality regulatory impact assessments and systematic application of the SME Test in connection with new legislative initiatives (BusinessEurope 2023).

Tackling the reporting burden is highlighted in various documents. The 'once only' reporting principle in order to streamline compliance procedures is emphasized for example by MEP Henriksson and by Letta (European Parliament 2025 and Letta 2024).

Additionally, simplification Omnibus packages and a small mid-cap category for tailored simplification have been proposed to tackle the administrative burden. The proposed EU Digital Omnibus aims to streamline and simplify overlapping digital regulations, but its success will depend on whether it produces genuine simplification, rather than adding another layer of complexity. Letta report also recommends self-certification and fast-track for minor non-compliances as simplification tools (Letta 2024).

In its communication "The Single Market: Our European Home Market in an Uncertain World – A Strategy for Making the Single Market Simple, Seamless and Strong", European Commission calls for a shift from document-based compliance to interoperable, secure data-based exchange (European Commission 2025B). Digital tools and portals are also recommended to become the default. For example, accelerating the Single Digital Gateway and Once-Only Technical System connection and aligning with the EU Digital Identity Wallet would enable seamless online cross-border procedures. Also the Internal Market Information System (IMI) is presented as a way to improve access to information and reduce administrative burden, but progress is still needed.

Additionally, there are proposals to appoint a Commission Vice-President for Simplification.

We will discuss the administrative burden related to qualification recognition processes and posting of workers in section 4.6.

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, CCIA 2025, CEPS 2024, DIGITALEUROPE 2023 and 2024, Draghi report, ECIPE 2024, ERT 2024, European Commission 2025A, 2025B, 2025C and 2026, European Parliament 2025 and Letta report.

4.4 Lack of Clear and Timely Guidance

Description of the bottleneck

The EU has a plethora of tech-focused laws and over 270 regulators responsible for aspects of digital networks. This heavy regulatory architecture can lead to precautionary ex-ante approaches that hamper innovation. CCIA Europe argues that unclear and constantly evolving regulations and missing actionable guidance create "moving target" compliance. CCIA Europe highlights what the association regards as a fundamental governance failure: legislation is adopted without the implementing measures needed for companies to comply. (CCIA 2025.)

> The Artificial Intelligence Act (AIA) is an example of a very complex law triggering a need for guidance as not complying with the AIA might lead to serious fines for organisations.
>
> As of the time of writing, there are several instances where the Commission has missed deadlines of issuing guidance. For example, Article 6 (5) requires that the Commission provides guidelines on the practical implementation of high-risk systems, together with a list of use cases of AI systems that are high-risk and not high-risk. This guidance was due on 2 February 2026, but it has not been issued.

Efforts to comply with the DMA face similar challenges. CCIA Europe flags DMA legal uncertainty and lack of timely Commission guidance on procedural aspects (CCIA 2025). This complexity increases in the context of interactions between different legal regimes. Firms navigating interlocking GDPR, competition and telecom obligations face legal uncertainty, with unclear boundaries and potential conflicts between requirements.

Delays in tabling secondary legislation in the form of implementing and delegated acts compound uncertainty. When legislation enters into force, but

crucial implementing measures arrive late or not at all, companies face impossible compliance situations. Adequate lead times between publication of guidance and application dates are essential but often lacking.

Economic operators also report difficulties accessing information on rules and requirements. For example, stakeholders warn that applying traditional product-law concepts to software (e.g., "substantial modification") without common guidance risks divergent national approaches and barriers to EU-wide market access.

Furthermore, national regulators are often under-resourced and lack technical expertise to advise on or enforce these complex rules. This creates a double problem: not only is EU-level guidance missing, but national authorities cannot fill the gap due to capacity constraints. Differences in application by authorities can lead to uneven outcomes. Lack of coordination between regulatory authorities creates confusion about which authority is competent for which issues and what standards will be applied.

The consequences can be severe. Companies face increased compliance risk and reduced confidence to invest or innovate when rules remain unclear. Businesses must either over-comply (incurring unnecessary costs) or under-comply (risking enforcement), with no clear safe harbour. According to several tech industry associations, this particularly affects Very Large Online Platforms (VLOPs) and other platforms subject to the DSA as well as DMA gatekeepers. Additionally, CCIA Europe has warned that the sheer volume and complexity of EU digital regulation can create significant challenges for all businesses, including SMEs. An absence of timely guidance leads to delays in product launches and market entry. Legal uncertainty also deters cross-border operations and may keep innovative firms out of the EU market entirely.

Insufficient guidance is particularly problematic in novel areas such as AI regulation, where many concepts are not sufficiently defined and supervisory practices remain undeveloped. For example, in the health tech sector, clear and timely guidance is needed regarding access to health data and AI use, the conditions under which clinical data may be transmitted to the European Medicines Agency (EMA), and use of pharmacovigilance data.

Proposed solutions

In her report, MEP Anna-Maja Henriksson called on the Commission to develop a mechanism to set clear deadlines for the publication of guidelines and enforcement measures before a regulation takes effect, in order to avoid regulatory uncertainty and implementation delays (European Parliament 2025).

Similar proposals have been presented in other reports as well, including publishing clear implementation timelines with steps, guidance and tools, and

resourcing the Commission sufficiently to provide timely guidance. Establishing clear procedures for developing guidance, with mandatory timelines and consultation requirements, would help to prevent indefinite delays.

Additionally, ensuring adequate transitional periods between guidance publication and application of new legislation would allow companies time to adapt.

To improve access to clear and valid information, using structured EU coordination mechanisms and capacity-building for national regulators, including technical expertise and resources, has been proposed.

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, CCIA 2025, DIGITALEUROPE 2024, Draghi report, ECIPE 2024, ERT 2024, European Commission 2025B, 2025C and 2026, European Parliament 2025 and Letta report.

4.5 Connectivity and Digital Infrastructure Gaps

Description of the bottleneck

Europe is lagging behind its own 2030 Digital Decade infrastructure targets. Despite previous reforms, the telecommunications sector is still largely fragmented along national borders. According to the reports, fragmentation of the European telecom market may lead to negative consequences, especially at a time when the transition to cloud-based infrastructure and AI deployment requires improved access to secure, fast and reliable connectivity. Free movement of persons, goods, services, capital and data relies on connected and interoperable transport, telecom, energy and digital networks, yet significant gaps persist. Europe is not fully connected, with inadequate or missing cross-border transport links and incompatible national systems and requirements. Insufficient connectivity and computing competition can translate into digital bottlenecks. Infrastructure gaps constrain productivity growth. They may slow digitalisation, impair deployment of innovative technologies, and cause underinvestment.

Market fragmentation in EU telecommunications may hamper deployment of innovative technologies and slow digitalisation since connectivity services (like fixed broadband or mobile subscriptions) are generally not offered seamlessly across EU borders.

Additionally, while spectrum is partly coordinated at EU level, diverse spectrum policies pursued at national level and a proliferation of obligations leads to fragmentation. Spectrum is allocated by national governments and licenses are

typically awarded country-by-country through national auctions. There is lack of harmonisation of the rules relating to spectrum allocation at national level, with substantial differences between Member States regarding availability of spectrum bands, reserve prices, artificial spectrum scarcity and the design of auctions leading to excessive spectrum prices, annual fees and spectrum licence duration. Divergent national spectrum assignment progress and approaches have delayed 5G spectrum assignments in several Member States, undermining timely exploitation of connectivity innovations. There have therefore been recommendations for further harmonisation of EU-wide spectrum licensing rules and processes.

A concrete example of fragmentation in the context of spectrum assignment is the different sets of rules around spectrum licence duration. According to ERT, the spectrum licence duration is 40 years in Spain, but only 15 years in other Member States, like France (ERT 2024).

Telecoms operators are confronted with the proliferation of different Member State obligations, including with regards to cybersecurity standards, 'Lawful Interception' requirements, and emergency and public utility services that are essentially set at Member State level. For example, electromagnetic fields (EMF) rules in Belgium, Italy and Greece (and measurement methods in Germany) depart from international standards, creating legal uncertainty, delayed service launches and additional costs.

Energy costs compound digital infrastructure challenges. High energy prices affect data centres and other digital infrastructure negatively, as these facilities are energy-intensive. In some instances, high energy costs for data centres drive cloud computing and AI training offshore. CEPS highlights the need for more cross-border electricity interconnectors to move renewable power from supply to demand regions, which in turn would help reduce energy price disparities and support digital infrastructure viability (CEPS 2024).

Proposed solutions

Various solutions have been proposed in the reports to this bottleneck of connectivity and digital infrastructure gaps. These include facilitating telecommunications consolidation by defining markets at EU level, harmonising spectrum licensing and creating an EU-level public-private standards body for network APIs and edge computing. The proposed Digital Networks Act which still has to go through the EU decision-making process aims to improve the situation via an integrated single market for connectivity and more coordinated spectrum policy.

In his report, Letta suggests moving toward a "two layers" governance model with an EU-level regulatory authority for rules having a Single Market

dimension, whilst national regulatory authorities handle national issues. In his view, harmonising spectrum allocation criteria (low reserve prices, long licence terms; prioritising service quality over revenue maximisation) and using instruments like the Gigabit Infrastructure Act to remove administrative burdens hampering deployment could help. (Letta 2024). In addition, the Gigabit Infrastructure Act (GIA) establishes a regulatory framework designed to facilitate quicker and more economical deployment of very-high-capacity networks, commonly referred to as gigabit networks, throughout the EU.

Strengthening Commission oversight of cross-border infrastructure projects and mapping conformity assessment infrastructure needed for new legislation would improve coordination within the EU. For energy interconnectors, accelerating investment including via swifter permits and adapted cross-border transmission planning is essential.

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, CEPS 2024, DIGITALEUROPE 2023 and 2024, Draghi report, ECIPE 2024, EGOV 2024, ERT 2024, European Commission 2025 A, 2025B and 2026, European Parliament 2025 and Letta report.

4.6 Skills Shortages and Labour Mobility Barriers

4.6.1 Skills Shortages

Description of the bottleneck

Europe faces widespread skills gaps. According to the Draghi report, about one-quarter of companies struggle to find employees with the right skills, and 77% report even newly recruited employees lack required skills. Moreover, the Draghi report notes that the EU produces fewer STEM graduates per capita than the U.S., faces brain drain, and 42% of Europeans lack basic digital skills, including 37% of the workforce. (Draghi 2024.) At a time when nearly four out of five SMEs report difficulties finding workers with the right skills, lack of relevant skills hampers investment.

The skills gap is widening as technology evolves faster than education systems can adapt, with emerging needs in AI, cybersecurity, data science and cloud computing outpacing graduate production. The rapid evolution of technology means that even recent graduates often lack current skills, with employers reporting that computer science graduates require significant additional training.

While ICT specialists with advanced skills are hard to find, skills shortages affect not only technical roles but also the management capabilities. They are

necessary to lead digital transformation and implement new technologies. In the context of jobs becoming increasingly digital, digital skills in Europe are not what they need to be. According to the Commission, only 60% percent of Europeans have basic digital skills (European Commission 2026).

Shrinking working age population and low labour market participation exacerbate these issues. Some people are facing especially many barriers to finding work, including women, young people, older citizens, low-skilled workers, and people with disabilities. The Letta report highlights brain drain and "talent development traps" as factors that undermine regional skill profiles and growth potential (Letta 2024). Talent development traps are regions where the working-age population is shrinking and there is a low or stagnant level of third level educated people. Talent retention is needed for resilience, strategic independence and innovation capacity.

Proposed solutions

The Letta report proposes first using data more intensively to understand the skills gaps. Second, education systems should be made more responsive to the identified skill gaps and skill needs, and curricula should be updated with input from employers and stakeholders. Third, a common certification system should be introduced to help employers understand workers' skills across the EU. Fourth, funding for education and skills programs should have stricter oversight to ensure impact. Finally, additional special efforts are needed for certain sectors and skills, such as technical and STEM skills. A new Tech Skills Acquisition Programme is proposed to attract talent from outside the EU, offering visas, scholarships, internships, and contracts to retain skilled workers. (Letta 2024.)

The Commission has introduced a "Union of Skills" to tackle the skills shortage (European Commission 2025A). The aim of this initiative is to enhance quality education, lifelong learning, and training.

It is also important that labour market participation is on a sufficient level in order to maintain skilled workforce. Fair pay, good working conditions, work-life balance, and access to childcare and care services are important for improving job opportunities. As outlined in its communication to tackle these issues, the Commission has published a Quality Jobs Roadmap and an Affordable Housing Plan (European Commission 2025A).

4.6.2 Burdensome Procedures for Posting of Workers

Description of the bottleneck

Persistent barriers for posting workers arise from differing national legal and document requirements, practices and notification systems. Divergent posting

requirements increase barriers and compliance complexity for enterprises posting workers.

Companies must navigate multiple systems for social security, tax, labour law compliance and administrative notifications in each Member State when posting workers in the EU. Such administrative burdens particularly affect sectors relying on cross-border service provision and short-term postings.

Proposed solutions

Reducing administrative burden is proposed to be carried out mainly with introducing digital, harmonized systems. For example, the Commission has proposed a harmonised single digital declaration portal (EU eDeclaration). This portal would replace national forms when companies post workers in the EU and reduce the administrative burden of completing various documentation in each Member State.

Digitising and streamlining posting and social-security portability through Electronic Exchange of Social Security Information (EESSI), advancing European Social Security Pass, and considering a European Social Security Number for highly mobile workers would also reduce burdens.

The "Union of Skills" introduced by the Commission, also includes portability and recognition elements to enable people to work across the EU (European Commission 2025A).

4.6.3 Complex Processes for Recognition of Professional Qualifications

Description of the bottleneck

The European Commission links competitiveness to attracting and retaining talent. Lengthy and complex recognition procedures and limited digitalisation are further obstacles to worker mobility. The Commission also notes that automatic recognition is limited in scope. (European Commission 2025B.)

Even with high positive recognition rates, citizens still face practical problems when it comes to having professional qualifications recognised abroad. Slow recognition of third-country qualifications blocks mobility and limits labour-market integration. Lengthy and cumbersome recognition procedures reduce labour mobility and contribute to skills mismatches and shortages; recognition procedures are still often paper-based and could be sped up with full digitalisation. Inconsistent requirements for regulated professions also act as an obstacle, reducing occupational mobility and weakening capacity to respond to labour shortages.

The EU's Professional Qualifications Directive (Directive 2005/36/EC) established a legal framework, but its implementation remains patchy. National authorities apply different standards, request different documentation and take varying amounts of time to process recognition requests. Intra-EU labour mobility remains hindered by qualification recognition challenges and language barriers.

Proposed solutions

As mentioned in their communication, the Commission has proposed a Skills Portability Initiative, which aims to facilitate recognition of skills and qualifications across the EU to support worker mobility (European Commission 2025A).

Digitalizing, simplifying, and harmonising recognition processes has been proposed as a solution to tackle this bottleneck. Additionally, reviewing the necessity and extent of professional regulation would serve to remove barriers. It has been proposed that regulated professions with shortages are targeted as a priority.

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, CEPS 2024, DIGITALEUROPE 2023 and 2024, Draghi report, ECIPE 2024, EGOV 2024, ERT 2024, European Commission 2025A, 2025B, 2025C and 2026, European Parliament 2025 and Letta report.

4.7 Barriers to Data Flows

Description of the bottleneck

To date, Europe has not leveraged widespread access to free-flowing data in the Single Market, which is described as a prerequisite for a thriving tech industry. Limitations to data storing and processing create high compliance costs and hinder the creation of large, integrated datasets for AI training. This is viewed as a serious bottleneck for data-driven industries like artificial intelligence, since European firms cannot easily build large, unified datasets comparable to those in the U.S. or China.

Multiple obstacles prevent the emergence of truly integrated EU data markets. Barriers to data flows include technical interoperability issues, lack of common data standards, and insufficient data infrastructure. However, regulatory barriers may be the most notable challenge.

Industry stakeholders describe Member State data-localisation requirements, such as public-sector cloud restrictions and those following from accounting laws, as barriers. In some sectors, even when EU law permits data use for

certain purposes such as research, Member States implement the relevant measures unevenly. Data protection rules, whilst protecting fundamental rights, are sometimes applied in ways that unnecessarily restrict beneficial data uses including research and innovation. For example, as stated, GDPR options to use patient data for research have been unevenly taken up across Member States, constraining AI development in pharma. Under-utilised EU data and low start-up potential could give an advantage to non-EU entities, harming EU strategic autonomy and economic security.

In its report published in 2023, DIGITALEUROPE warned that new data rules (Data Act, Data Governance Act) can result in the creation of new internal barriers. It further noted that fragmentation could intensify with new "data bodies". (DIGITALEUROPE 2023.) Legal fragmentation and excessive rules create a risk that it is not easy or possible to utilize data in compliance with all applicable rules. CCIA Europe alerts that regulatory inconsistencies can mean complying with one law requires breaking another (CCIA 2025).

Examples of potential tensions include Data Act gatekeeper restrictions versus GDPR portability. Further, companies may face potential conflicts between GDPR requirements for data protection and minimisation, Data Act requirements for data sharing and portability, or Digital Markets Act obligations for gatekeeper interoperability and sector-specific data rules.

Proposed solutions

First, regulatory barriers to data flows should be removed. In general, just like in case of most other bottlenecks, harmonising and simplifying rules would help. DIGITALEUROPE has recommended running a comprehensive "stock-taking" of the full data regulatory package, harmonising enforcement approaches (starting with GDPR), and a willingness to repeal or amend ineffective laws (DIGITALEUROPE 2023). The Commission see the Data Union Strategy as one solution to "improve and facilitate secure private and public data sharing, simplify the regulatory regime and its application, and accelerate the development of new systems or applications" (European Commission 2025A). The Digital Omnibus proposal aims, among other objectives, to target this barrier.

Second, prohibiting unjustified data localisation requirements has been proposed. Third, building European data spaces and harmonising interoperability would help enable cross-border data reuse and unlock value. Supporting market-driven standardisation and voluntary data-sharing frameworks to solve interoperability issues would be of benefit. Cross-industry data sharing for AI has been proposed to be promoted with coordinated sandbox regimes and safeguards for shared model-training data. For the

European Health Data Space specifically, harmonising health data access processes and clarifying opt-out for secondary use of patient data has been proposed.

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, CCIA 2025, DIGITALEUROPE 2023 and 2024, Draghi report, ECIPE 2024, ERT 2024, European Commission 2025A, 2025B and 2025C, European Parliament 2025 and Letta report.

4.8 Slow and Complex Permitting, Certification, and Approvals

Description of the bottleneck

Complex and lengthy licensing processes in the Member States make Europe less attractive for investment. Permitting, certification, and approval processes for products, services and professional qualifications remain slow, complex, and inconsistent. This results for example in delays for cross-border projects and higher costs for businesses in general. Companies face uncertainty regarding timelines and outcomes. Innovation is held back as new technologies and products cannot reach market quickly. This situation affects especially those sectors that are reliant on effective supply chains and sectors requiring regulatory approvals. While this is a bigger challenge in manufacturing and other parts of the Single Market, it affects the Digital Single Market indirectly due to delays in the supply chain.

The EU standardisation framework is described as sometimes lacking speed and agility (especially for new green or digital value chains). The need for faster delivery of standards is highlighted as important for competitiveness. As an example of this bottleneck, the time to establish a new industrial standard has increased, attributed in part to outdated methods and under-use of digital technologies. This failure to meet market and legislative needs in a timely way weighs on competitiveness.

The limited interoperability of public services compounds these challenges. Whilst some Member States have digitalised permitting and approval processes, others maintain paper-based systems. Lack of interoperability means cross-border projects must navigate multiple disconnected systems, each with different requirements, formats and procedures. Furthermore, under-resourced and/or under-skilled administrations in Member States cannot process applications efficiently or provide adequate guidance to applicants.

Additionally, new digital laws may lead to more mandatory approval and certification obligations. For example, the AIA introduces new compliance requirements that risk being cumbersome and slow. Companies developing or

deploying AI systems face certification and approval processes that may take considerable time and resources. Without streamlined procedures, AI compliance could become a barrier to innovation rather than a framework enabling responsible development.

As demonstrated above, this bottleneck is connected to other bottlenecks described in earlier sections, for example to the challenges of excessive administrative and fragmented or overlapping rules.

Proposed solutions

Faster delivery of standards, including through modernised standardisation processes and digital tools, is viewed as essential to tackle this bottleneck. Establishing maximum processing times with "deemed approved" provisions if authorities fail to respond, would create a sense of urgency. Benchmarking duration against competitor countries would drive improvement in this area.

Administrative procedures and approvals should be also digitalised and streamlined across Member States to increase efficiency. Creating "one-stop shops" for permits and approvals, as proposed for clean energy projects, could be extended to other sectors. Using regulatory sandboxes and experimentation clauses to enable innovative cross-border projects would also enable the testing of new approaches.

For digital public services, accelerating interoperability through common standards, formats and platforms would facilitate cross-border digital procedures.

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, DIGITALEUROPE 2023 and 2024, Draghi report, European Commission 2025A, 2025B and 2026, European Parliament 2025 and Letta report.

4.9 Limited Access to Financing

Description of the bottleneck

Access to finance (long-term loans and equity) is a pre-condition for companies to invest, grow, and support jobs and prosperity. Yet European companies face significant challenges accessing the capital needed to grow. Start-ups, scale-ups and innovative firms seeking risk capital are particularly affected, along with industry requiring large investments for green and digital transitions.

As a result of limited access to financing, companies may decide to seek funding abroad or relocate to access better financing. This in turn leads to

slower innovation in the EU and loss of global market share, especially in emerging technologies.

There are several aspects that hinder access to finance in the EU. Reports highlight the fragmentation of capital markets, slow funding circles, and outdated tax and IP frameworks as reasons for this bottleneck.

The EU's fragmented internal market is identified as a likely reason why venture capital funding is significantly inferior to U.S. and Chinese levels. The lack of pan-European venture capital and growth equity means that in reality promising start-ups must either seek funding from U.S. or other foreign investors or remain small.

Fragmentation of financial markets contributes to EU household savings flowing abroad. Although EU household savings are high, they are not efficiently channelled into productive investments. Business investment financing also remains overly reliant on bank lending.

> According to the Letta report, the EU households safe 33 trillion euros, mainly in currency and deposits. This wealth is not being invested effectively in the EU. Instead, the Europeans invest approximately EUR 300 billion in foreign markets annually, mainly in the United States.

As European capital markets remain fragmented along national lines, there has been only limited progress on Capital Markets Union. Investors face barriers to cross-border investment and companies face barriers to cross-border fundraising. Cross-border investment in the EU is burdened for example by divergences in national laws (e.g., securities, company, tax, insolvency) and administrative ineffectiveness. This divergence means European companies cannot tap a truly continental capital pool comparable to the U.S. or China. Especially smaller European companies struggle to attract investor attention in fragmented markets where investors focus on their home jurisdictions.

In addition to the problem of fragmentation, access to finance is limited by slow funding cycles in the EU. European funding processes often move slowly compared to those of global competitors. Venture capital decision-making, public funding programmes and bank lending all take longer than in more dynamic ecosystems. This disadvantages, in particular, European companies in fast-moving sectors where speed to market is critical. Slow access to funds increases time-to-market for innovators.

Finally, outdated tax and IP frameworks deter scale-ups. Tax frameworks often fail to support scaling companies. Whilst some Member States have introduced favourable research and development (R&D) tax credits and patent box regimes, these remain uneven across the European Union. Cross-border

aspects create complexity, with different treatment of losses, depreciation and intellectual property (IP) income across Member States.

Intellectual property frameworks, even though harmonised in some respects (patents, trademarks), still involve national filing and enforcement in many cases. The Unitary Patent and Unified Patent Court constitute progress but are not yet fully operational across all Member States. Administrative burden and legal uncertainty related to intellectual property increases especially SMEs' challenges to access finance.

Proposed solutions

There are several solutions suggested to tackle the issue of limited access to financing. On a fundamental level, reports recommend reinforcing and implementing the Capital Markets Union (CMU) and supporting complementary sources of finance beyond bank lending. Another priority with a similar ambition level is the completion of the Banking Union to allow liquidity and capital to flow freely without national ring-fencing. In addition, reports propose the implementation of a Savings and Investments Union through deeper financial services integration to retain and attract capital. A TechEU investment programme has also been introduced to help companies access financing.

On an institutional level, it is proposed to make European Securities and Markets Authority (ESMA) the single EU securities markets regulator. This would lead to further harmonization. Stronger EU-level supervisory powers could support deeper capital market integration.

To ensure companies can access financing, raising awareness among companies, especially SMEs, and investors about the possibilities of capital markets is needed. Additionally, listings of companies should be made easier by harmonizing and improving processes and legislation. For example, a single entry point to public capital markets (a unified IPO gateway) for SMEs under ESMA supervision was recommended in the Letta report to facilitate cross-border listings (Letta 2024).

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, CEPS 2024, DIGITALEUROPE 2023 and 2024, Draghi report, EGOV 2024, ERT 2024, European Commission 2025A, 2025B, 2025C and 2026, European Parliament 2025 and Letta report.

4.10 Lack of Support and Coordination in R&I

This final bottleneck has two major aspects. On one hand, innovation efforts are national in nature, and on the other hand, there is only limited cooperation between European academia and business.

4.10.1 Siloed National Innovation Efforts

Description of the bottleneck

Europe lacks cohesive ecosystems to capture the new wave of innovation and struggles to convert research potential into globally competitive industries. This creates reliance on external technologies and is a bottleneck for the European economic growth. Under-utilised EU data, expertise and start-ups risk benefiting better-positioned global actors, weakening strategic autonomy and economic security in Europe.

One reason for this struggle is that Member States pursue parallel national innovation strategies with insufficient coordination. National innovation programmes often support similar research areas without coordination. This means that scarce resources are spread thinly rather than concentrated on European champions. Insufficient coordination leads to duplication, fragmentation and failure to achieve necessary scale.

Public investment is also characterized by fragmentation and complexity, with the majority of funding being managed at the national level. EU innovation funding exists, but it is described as spread across too many programmes, adding complexity and rigidity. In this context, the EU’s Strategic Technologies for Europe Platform (STEP) was created to steer funding across multiple EU programmes toward key strategic technologies.

Proposed solutions

The reports propose several remedies for this issue, ranging from more ambitions to smaller changes to coordinate funding and collaboration across countries. On a conceptional level, the introduction of a "fifth freedom" proposed in the Letta report would integrate research, innovation, data, skills and education into the Single Market, supported by an EU action plan. This acknowledges that the four traditional freedoms (goods, services, capital, persons) must be complemented by free movement of knowledge and innovation. (Letta 2024.)

There is also an ambitious initiative to establish a new EU Advanced Research Projects Agency (ARPA). A similar agency, the Defense Advanced Research Projects Agency (DARPA), was established in the United States in the 1950s with the aim of maintaining the United States' technological leadership in defence. DARPA has since been replicated across sectors and countries and serves as a model for innovation funding (Draghi 2024). A joint EU-ARPA could

improve competitiveness in the medium-term. Currently, a lack of coordination in the area of innovation means Member States compete rather than collaborate, undermining Europe's collective research capacity.

On a more modest scale, the Commission proposes a Competitiveness Coordination Tool as a solution to the fragmentation of industrial and research policies between the EU and Member States. This would help to align policies and investments at EU and national levels around common priorities and projects. Further, a European Research Area Act is proposed to reinforce alignment between EU and Member State funding priorities and foster circulation of knowledge and talent. (European Commission 2025A.)

One proposal is to establish European innovation missions focused on strategic priorities with coordinated funding and governance. Those missions would concentrate resources and promote collaboration across countries, e.g. enabling pan- European doctoral programmes.

4.10.2 Limited Collaboration Between Academia and Business

Description of the bottleneck

Companies and universities face difficulties deploying and commercialising research results. Commercialisation lags despite significant academic research capacity in Europe. Universities produce excellent research but struggle to translate findings into commercial products and services.

Multiple factors contribute to weak business–academia collaboration. First, there are insufficient incentives for academics to engage with industry. Second, complex IP frameworks can make technology transfer difficult. Third, cultural barriers between academic and commercial environments may hinder collaboration. Fourth, there is a lack of funding (both private capital and public support) for the "valley of death" between research and commercialisation. Finally, national approaches to university-industry collaboration are fragmented. These challenges tie this bottleneck to the other bottlenecks described in earlier sections.

European research excellence fails to translate into European industrial leadership in particular in relevant sectors for digitalisation. Companies in AI, quantum computing, biotechnology and other frontier sectors often commercialise European research outside Europe, where funding, talent and supportive ecosystems exist.

Infrastructure gaps compound coordination challenges. Whilst the EU has invested in research infrastructure, access remains fragmented. Completing a shared network of computational resources and supercomputers accessible

across Europe would provide critical infrastructure, yet researchers often lack easy cross-border access to facilities.

Proposed solutions

There were only few concrete suggestions to tackle this aspect of the lack of collaboration between academia and business in the reports. Creating clearer pathways from academic research to commercial application is proposed to be done for example with streamlined IP transfer and proof-of-concept funding.

Documents describing or referring to this bottleneck

This bottleneck is described in: BusinessEurope 2023, DIGITALEUROPE 2023, Draghi report, EGOV 2024, European Commission 2025A and 2025C, European Parliament 2025 and Letta report.

5. CONCLUSION

Whilst each bottleneck has distinct characteristics, they are deeply interconnected. Regulatory fragmentation drives compliance burdens; enforcement weaknesses undermine harmonisation; infrastructure gaps limit data flows; financing barriers constrain innovation; and talent shortages reduce competitiveness.

Addressing these bottlenecks requires comprehensive, coordinated action across multiple policy domains, strong political commitment, and sustained implementation efforts. The extensive evidence base provided by these sources demonstrates the urgent need for prioritised reform to unlock the Digital Single Market's full economic and strategic potential.

While various solutions are proposed to tackle the bottlenecks, some solutions may in fact collide with other solutions. For example, deregulation has been proposed as a solution to an ever-increasing administrative burden. At the same time there are areas where addressing some bottleneck would increase the amount of EU regulation. One example concerns the challenges related to insufficient digital infrastructure and data sharing. Without new rules relating to digital infrastructure, it is hard to imagine how the needed change will happen, at least in the near future. At the same time new rules increase the administrative burden.

In some other cases, it depends on how a bottleneck is addressed. The lack of clear and timely guidance could be addressed in different ways. First, it could be addressed through a plethora of guidance from both the Member States and the Commission. This would cause additional administrative burden, because organisations would have to identify if they are in scope of a potential guidance document and then determine whether it contradicts other guidance or the law.

For SMEs this is particularly burdensome. Another way to address the lack of clear and timely guidance is to revoke outdated guidance and focus on joint guidance between different regulators, for example in the area of data protection and AI.

It remains to be seen how the bottlenecks develop and how the EU can tackle them. What is certain is that action is needed to deepen the Digital Single Market.

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Table of Abbreviations

AI	Artificial Intelligence
AIA	Artificial Intelligence Act (Regulation (EU) 2024/1689)
ARPA	Advanced Research Projects Agency
CCIA	Computer & Communications Industry Association
CEPS	Centre for European Policy Studies
CJEU	Court of Justice of the European Union
CMU	Capital Markets Union
CRA	Cyber Resilience Act (Regulation (EU) 2024/2847)
DMA	Digital Markets Act (Regulation (EU) 2022/1925)
DORA	Digital Operational Resilience Act (Regulation (EU) 2022/2554)
DSA	Digital Services Act (Regulation (EU) 2022/2065)
ECIPE	European Centre for International Political Economy
EECC	European Electronic Communications Code (Directive (EU) 2018/1972)
EESSI	Electronic Exchange of Social Security Information
EGOV	Economic Governance and EMU Scrutiny Unit
EMA	European Medicines Agency
EMF	Electromagnetic Field
ERT	European Round Table for Industry
ESMA	European Securities and Markets Authority
ESSPASS	European Social Security Pass
EU	European Union
EU-ARPA	EU Advanced Research Projects Agency
EUR	Euro
GDPR	General Data Protection Regulation (Regulation (EU) 2016/679)
GIA	Gigabit Infrastructure Act (Regulation (EU) 2024/1309)

ICT	Information and Communication Technology
IMI	Internal Market Information System
IP	Intellectual Property
IPO	Initial Public Offering
MEP	Member of the European Parliament
NIS2	Network and Information Security Directive 2 (Directive (EU) 2022/2555)
PEACE	Pact enhancing European Administrations Cooperation and Expertise
PSD2	Payment Services Directive 2 (Directive (EU) 2015/2366)
R&D	Research and Development
R&I	Research and Innovation
SMEs	Small and medium-sized enterprises
SMET	Single Market Enforcement Taskforce
SOLVIT	Effective Problem Solving in the Internal Market -Network
STEM	Science, Technology, Engineering, Mathematics
STEP	Strategic Technologies for Europe Platform
TFEU	Treaty on the Functioning of the European Union (2012/C 326/01)
U.S.	United States of America
VLOP	Very Large Online Platform