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The AI innovation opportunity in France

Maximising AI's contribution to closing France's innovation gap

A new economic report developed by Implement Consulting Group with economist Antonin Bergeaud, and produced in collaboration with Google

October 2025

Preface

France and the rest of Europe face a pressing need to enhance their competitiveness and secure their future prosperity. For over twenty years, the continent has lagged behind major economies due to sluggish productivity growth. The Draghi report emphasises that the key to overcoming this challenge lies in boosting productivity through innovation.

AI offers a pivotal opportunity to accelerate innovation by fostering new businesses, increasing productivity, and speeding up scientific discovery. In the emerging AI era, French and European businesses must embrace a mindset of innovation and leverage cutting-edge technology to remain competitive.

In a report released last year, we found that widespread generative AI over the next decade could contribute EUR 220 billion to French GDP, representing a 9% GDP increase.

This report explores how AI can accelerate innovation in France, further unlocking around EUR 90 billion in French GDP. It offers insights into strategic AI initiatives that can revitalise France's economic landscape and outlines opportunities across three dimensions:

AI value chain
Producing AI

AI in R&D and science
Inventing with AI

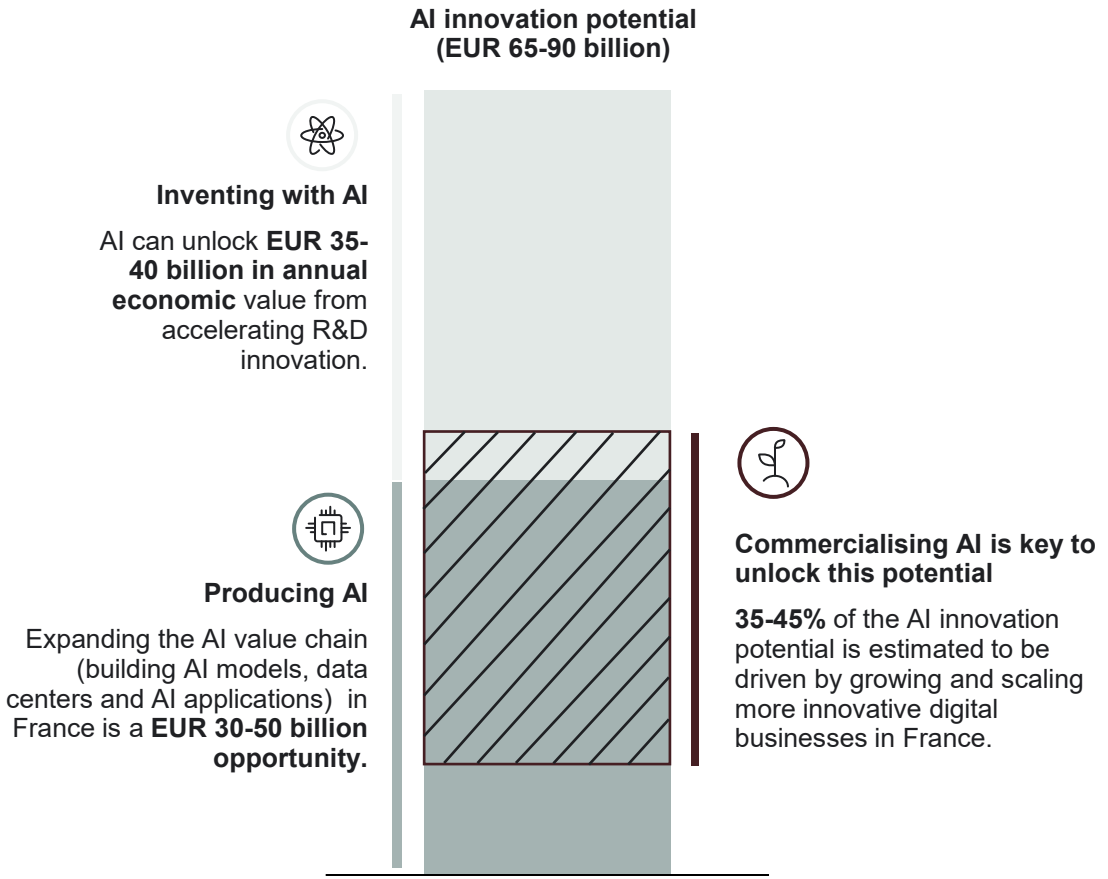
AI-powered innovative digital businesses
Commercialising AI

Accelerating AI innovation can unlock a EUR 90 billion economic boost for France

France can both produce more AI and use AI more for inventions. Producing more AI in France is a **EUR 30-50 billion opportunity** of which the majority (70%) is estimated to be in AI applications and services. Inventing more with AI can unlock another **EUR 35-40 billion** in annual economic value to a combined EUR 65-90 billion. **Commercialising AI at scale will be key to realising** this potential, of which 35-45% is estimated to be driven by innovative digital businesses.

GDP potential in 2034

EUR billion



Note: Innovative digital businesses are defined as young firms with scalable business models and high growth potential that are either digital at their core or heavily enabled by technology.

Key findings

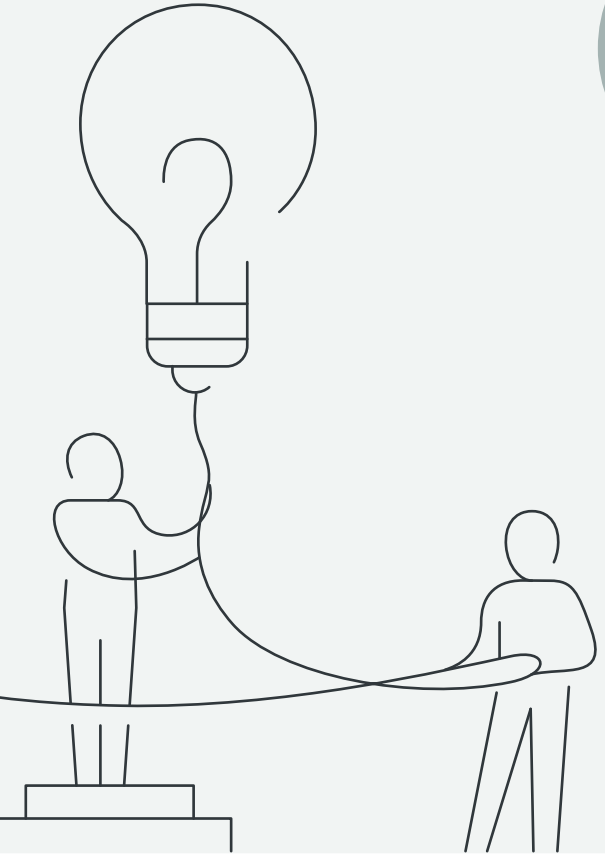
The three innovation opportunities

… and the policies that can help make it happen

For over two decades, Europe has not kept pace with other major economies, due to a persistent gap in productivity growth... The root cause is a lack of innovation. Europe is failing to translate its ideas into new, marketable technologies, and failing to integrate those technologies into its industrial base.

The European Commission
in A Competitiveness Compass for the EU

Boosting France's competitiveness with AI-powered innovation



Innovation

is the ability to apply new knowledge to improve products or services.

France can accelerate innovation with AI both to maintain its manufacturing leadership and to develop new breakthrough technologies.

Productivity

is the ability to produce more economic value with a given amount of labour and capital.

Faster innovation will help raise France's productivity growth.

Competitiveness

is the ability to successfully compete in a global marketplace.

Competitiveness in the AI era will mainly be driven by productivity and less by depressing wages or devaluing currencies.

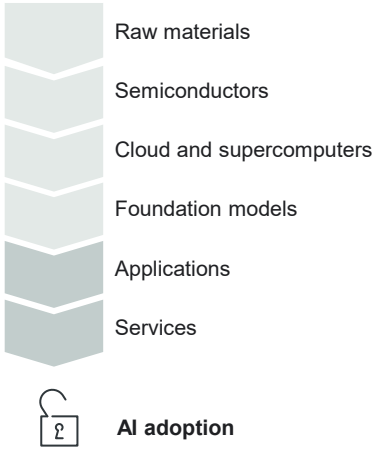
Sources: Implement Economics based on Draghi report, OECD (2018), The Oslo Manual, and WEF.

The AI innovation opportunity has three dimensions

Producing AI

The AI value chain

Expanding the AI value chain is crucial for innovation. The value chain refers to the industrial and commercial activities required to create and deliver AI solutions, from foundational hardware to end-user services.



Inventing with AI

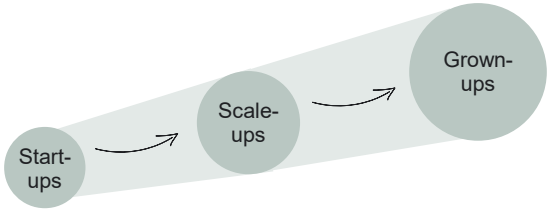
AI in R&D and science

AI enables a new way of inventing, offering France significant opportunities to accelerate scientific discoveries and enhance R&D efficiency, thereby boosting R&D investments across the continent.

Commercialising AI

AI-powered innovative digital businesses

Innovative digital businesses are pivotal in creating AI applications that address business challenges and diffusing AI innovations across the economy. As they scale, they make an outsized contribution to the economy.



We explore these three dimensions in the following chapters

Building more AI models, AI applications, and AI infrastructure in France can add EUR 30-50 billion to France's GDP

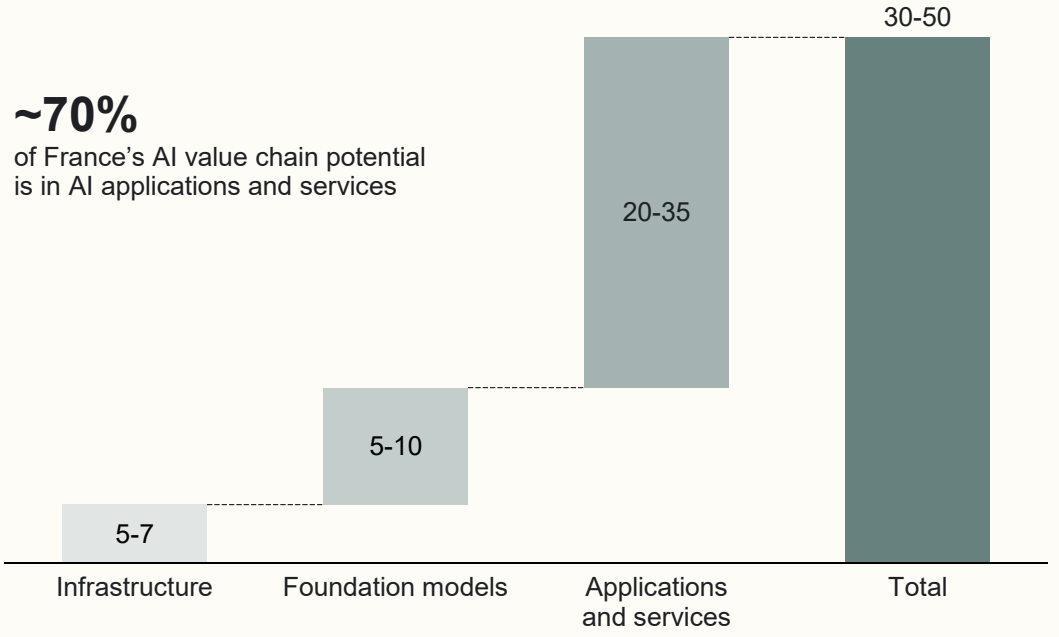
To seize the AI innovation opportunity, French businesses need a strong AI infrastructure and access to use and build on the best AI models. The AI value chain is an economic framework that outlines how value is generated through the activities required to develop and deliver AI solutions. Expanding the value chain represents a EUR 30-50 billion opportunity, primarily within AI applications and services. In this research, we analyse three main parts of the value chain:

- **AI infrastructure: GDP potential of EUR 5-7 billion**
  Europe needs 2-3 times more cloud capacity to meet future AI demand. This is best achieved through open competition among all providers, delivering according to customers' choice.
- **AI models: GDP potential of EUR 5-10 billion**
  European firms like France's Mistral AI and Germany's Aleph Alpha are pioneering in large-scale AI model development and demonstrating success in specialised sector applications, positioning the continent for a stronger presence in this segment. Europe's balanced copyright framework is crucial in incentivising the creation of new foundation models, further fostering growth in this area. However, with only 5% of large-scale models originating from Europe and 3% from France, French innovators should make the most of global models to stay competitive.
- **AI applications and services: GDP potential of EUR 20-35 billion.** AI applications and services offer a significant growth opportunity for France, with global revenues projected to reach EUR 1.4 trillion by 2034. France's industrial expertise and its current 3-4% share of global AI application venture capital funding position it well to capitalise on this growth.

→ Read more in part 2 of the report.

EUR 30-50 billion

Annual contribution to French GDP by 2034 from expanding the AI value chain
EUR billion



~70%
of France's AI value chain potential is in AI applications and services

Accelerating R&D and scientific discovery with AI can add EUR 35-40 billion to France's GDP

AI is not just an invention—it is a new way to invent, offering major economic potential for France through R&D integration

Ideas are getting harder to find. Europe faces a dual challenge: a global slowdown in R&D productivity and 20-25% weaker returns on R&D investments compared to the US.

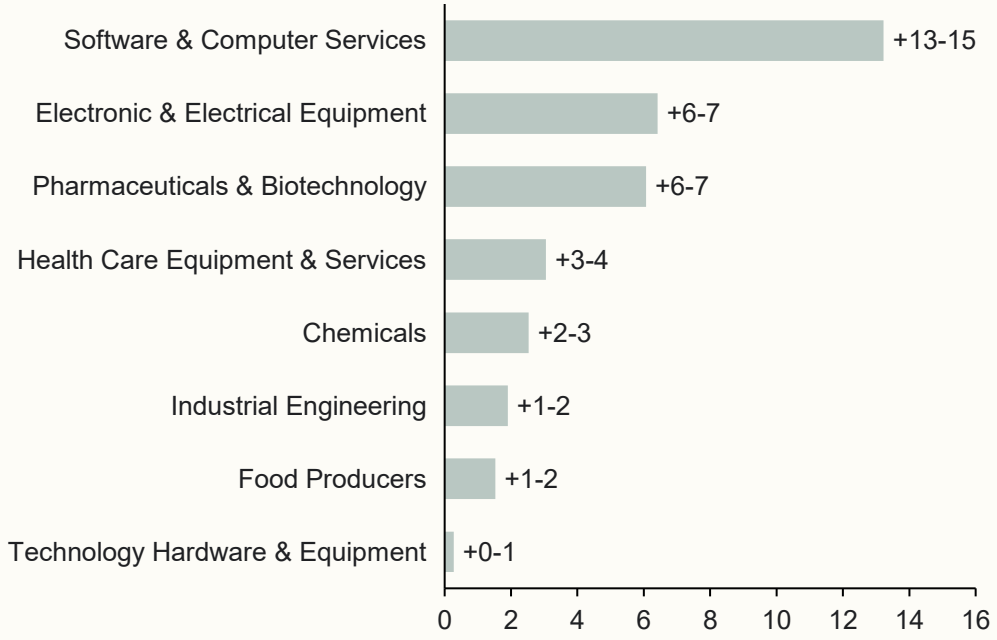
AI can double innovation quality and boost R&D process efficiency by 10-20%, varying by domain. Innovative technologies increase the value-for-money from investments in R&D.

France's R&D intensive industries, such as pharma, can benefit from AI's R&D boost. AI can transform drug discovery, as illustrated by recent inventions improving the diagnosis of rare genetic disorders and aiding in identifying new disease-causing genes.

AI can significantly enhance R&D efficiency, potentially adding EUR 35-40 billion to France's GDP by 2034. The wider social returns could be up to seven times larger than the individual firm-level gains.

EUR 35-40 billion

Annual contribution to France's GDP by 2034 from AI's boost to R&D process
EUR billion



→ Read more in part 3 of the report.

Commercialising AI is key to both the AI innovation potential and the AI adoption potential

Innovative digital businesses are vital for commercialising AI opportunities in France, as they develop the applications and solutions that tackle business challenges and drive AI innovation and adoption across sectors. Successful French start-ups building on existing AI infrastructure, such as Synthesia (AI video), Lovable (AI coding), and Gleamer (AI radiology), demonstrate this opportunity.

European innovative digital businesses that successfully scale make an outsized contribution to the economy, as they are 130% more productive than the average European company**.** Successful AI start-ups outperform competitors by combining technical expertise with sector knowledge, such as in healthcare and manufacturing.

Europe needs more innovative digital businesses to harness AI opportunities, but scaling in Europe is hindered by a EUR 148 billion venture capital deficit compared to the US in 2024, regulatory barriers, and a fragmented single market. As a result, many top European founders relocate to the US for better capital access and market growth.

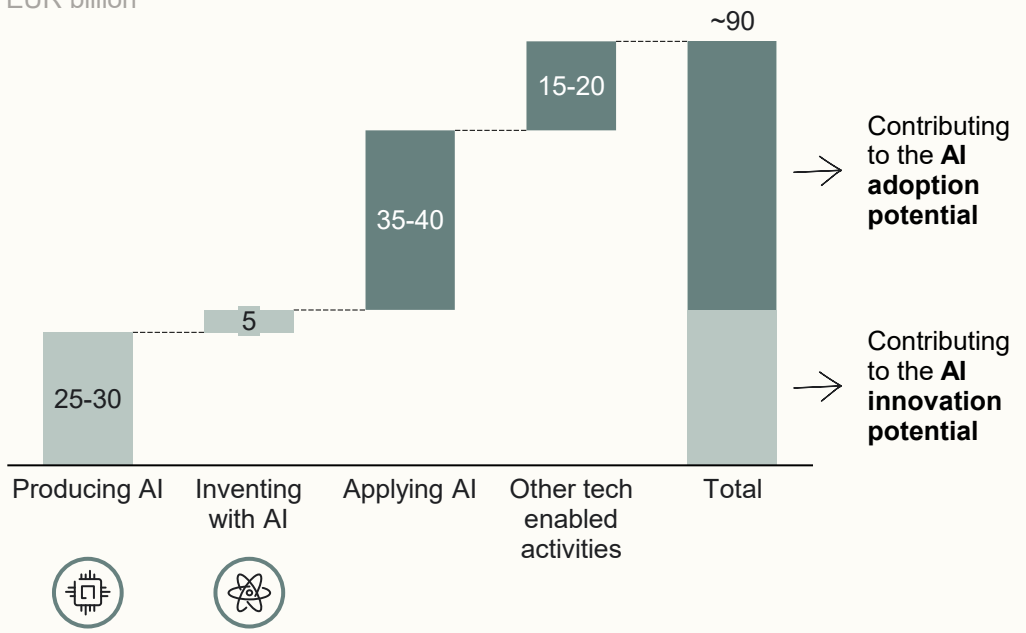
Bringing France's innovative digital businesses on a par with OECD leaders would contribute around EUR 90 billion annually to France's GDP. Simplification of regulations, as the Commission plans, is crucial to invigorating this ecosystem.

Growing and scaling more innovative digital businesses in Europe is estimated to drive 35-45% of the AI innovation potential.

EUR 90 billion

Annual gross contribution to French GDP from growing and scaling more innovative digital businesses

EUR billion



→ Read more in part 4 of the report.

Note: AI adoption involves using AI to enhance productivity across sectors of the French economy, whereas the AI innovation potential encompasses building infrastructure, developing models and applications, and applying AI in science and R&D.

France can harness its AI strengths by leveraging five key enablers

The French government aims to position France as a global AI leader through its National Strategy for AI and the France 2030 investment plan, focusing on building a top-tier research ecosystem, promoting AI leaders, and deploying AI across key sectors with an emphasis on digital sovereignty, ethical AI, and advanced infrastructure. While existing initiatives are promising, more action is needed to accelerate innovation.

France can reverse the outflow of talent, innovative digital businesses, and risk capital by improving framework conditions, investing wisely, and reducing EU fragmentation. These efforts should occur simultaneously to be mutually reinforcing. Additionally, pan-European cooperation is essential to tackle innovation barriers like complex EU regulations, market fragmentation, and insufficient R&D investment. According to the Draghi report, EU regulation in the digital domain has become overly complex and burdensome, especially for young and innovative firms. The IMF estimates that the AI Act, data privacy laws and occupation regulation alone could reduce the productivity gains of AI adoption by over 30%.

Encourage AI investments	Develop infrastructures	Cultivate AI talents	Accelerate the research to industry pipeline	Implement a supportive regulatory framework
Support scientific research start-ups with grants and joint public procurement. **Consolidate fragmented public R&D funds to incentivise risk-taking** and target 'moonshot' AI projects in Europe's strategic sectors. **Stimulate private investment by reducing bureaucracy and strengthening the EU single market.**	**Expand data centres capacity and modernise electricity grids** to ensure a reliable and clean energy supply. **Streamline and harmonise permitting processes for data centres**. Prioritise co-finance and steering of the **super-computer expansion** in the EU (jointly with Germany) and ensure these are run by operators who have the expertise.	**Encourage Public-private partnerships to enhance skills development** and ensure that AI tools meet real-world scientific needs. Expand the Passeport Talent scheme with a **dedicated fast-track** for AI researchers. Creating **education vouchers for SMEs** to upskill in applied AI.	**Foster entrepreneurship among researchers** by introducing a standardised contract template for academic spin-offs to reduce IP negotiations. Establish a **dedicated AI subsidy scheme** disbursed only to projects that demonstrate formal collaboration with at least one French or European university or public lab.	Support **EU regulatory simplification** agenda and make sure it applies for companies of all sizes. Creating harmonised, interoperable regulations, particularly concerning **privacy and cross-border data flows.** Maintain a **workable EU copyright regime**, vital for AI models development. Clarify the meaning of a **sovereign solution** at the EU level and, if different, in France (2021 Cloud of Trust doctrine).

→ Read more in part 5 of the report.

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The AI innovation opportunity for France

PART 1

France’s innovation challenge

France’s and Europe’s competitiveness challenge and the opportunity from AI

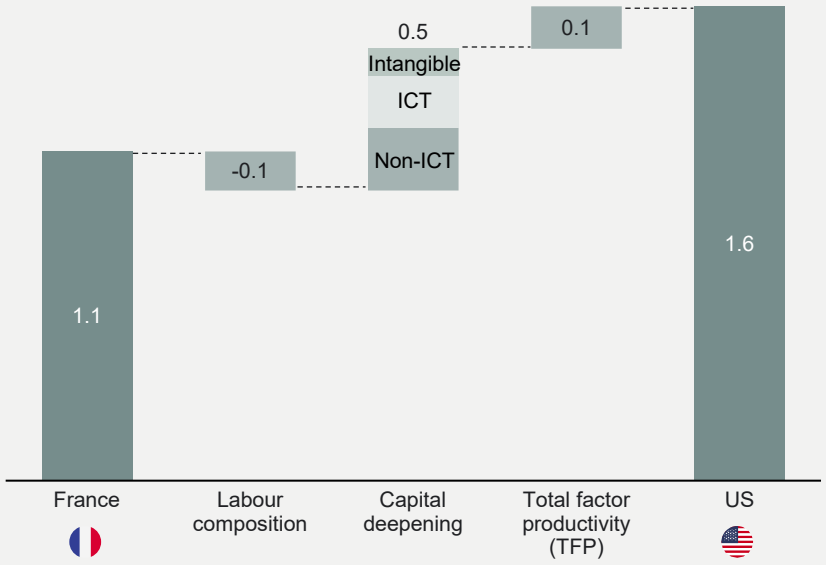
> *Over the past two decades, France and Europe have done too little, too late, with little commitment to technological innovation and belated regulation.*
>
> **The French AI Commission** in AI: Our ambition for France

France's competitiveness challenge is driven by an innovation gap

Lack of productivity growth is weakening French competitiveness…

Over the past two decades, French and European economic growth has persistently been slower than that of the US. The productivity gap between France and the US is mainly explained by sluggish capital deepening and production efficiency growth (TFP).

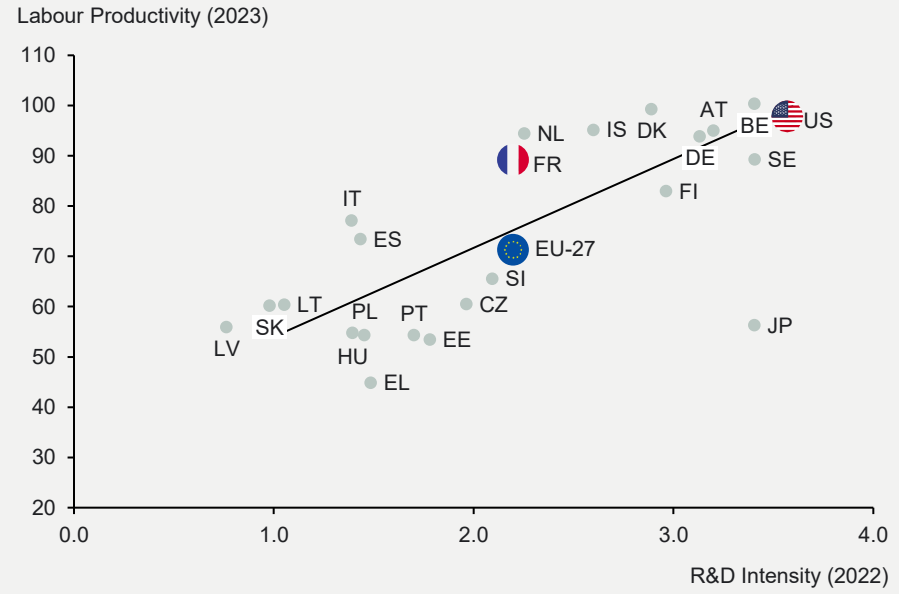
Average annual growth rate in labour productivity, 1995-2019
%



… and the primary reason is lagging innovation

Research and innovation (R&I) drives productivity. France and Europe's ability to innovate continues to trail behind that of the US in part due to delayed adoption of digital technologies.

R&I investment and productivity
%



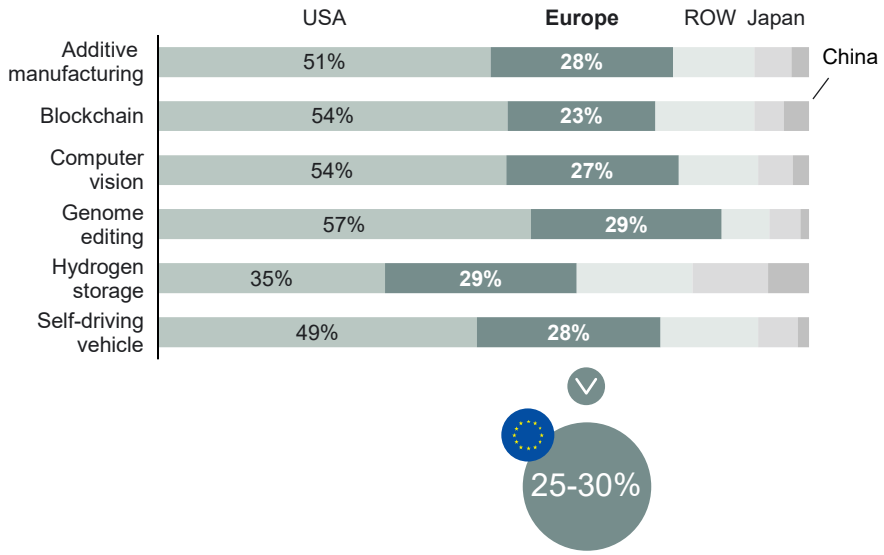
Source: Implement Economics based on Draghi (2024), OECD, World Bank, the Long-Term Productivity Database by Antonin Bergeaud and Gelman (2024).

The innovation gap is not caused by a lack of great ideas in Europe … but by a failure to commercialise ideas and attract investors

A third of ideas in disruptive technologies come from Europe…

Europe's world-leading research institutions are pivotal in scientific breakthroughs across disruptive technologies like computer vision, genome editing and self-driving cars.

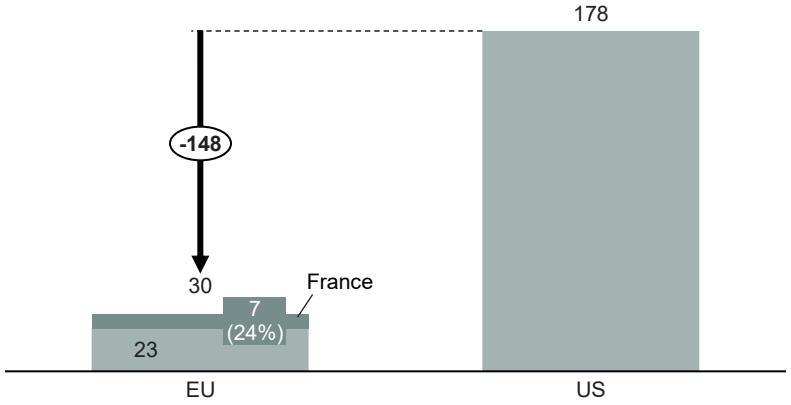
Origin of ideas of patents in disruptive technologies, 2020
%



…but many of these innovations are not successfully commercialised

European universities are insufficiently connected to private businesses and generate less income from research compared to US universities. The EU attracts about EUR 148 billion less in venture capital than the US, which is the main source of financing for innovative digital businesses.

Venture capital investment, 2024
EUR billion



> *Only **one-third** of patented inventions registered by European universities are commercially exploited.*
>
> Mario Draghi in *The future of European competitiveness*

Notes: The left figure is based on Bergeuad (2024). Share of non patent literature citations from patents associated with each of the six technologies in rows to articles published by scientists working in institutions located in the USA, in Japan, in China or in Europe. We considered the current affiliation at the time of the article publication.
Source: Implement Economics based on CEPR (2009), Dealroom, Draghi (2024), the European Patent Office (EPO), Scopus and PatCit (Verluise and de Rassenfosse, 2020) and Bergeaud (2024)

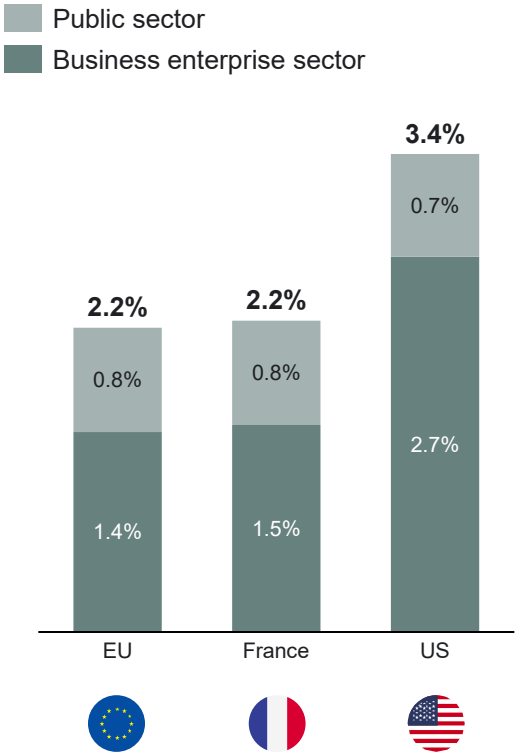
The root causes of the innovation gap is a lack of private R&D spending, low returns on R&D investment, and regulatory complexity in the EU

France currently spends 2.2% of GDP on R&D, a rate similar to the EU's, but much lower than the US and the Commission's target of 3%. In addition, EU countries on average have significantly lower return on its R&D investment. Three key barriers are holding back private investment and depressing the returns on R&D:

- **The complex and restrictive EU regulation.** The IMF estimates that the AI Act, data privacy laws and occupation regulation alone could reduce the productivity gains of AI adoption by over 30%. Another recent study shows that the GDPR's rollout significantly reduced US investor activity in the EU, resulting in fewer deals and investments, especially affecting newer and data-related ventures.
- **A fragmented capital market and weak single market** means that Europe's significant savings surplus is not being leveraged, with around EUR 300 billion of it flowing abroad, mainly to America.
- **R&D investment overly favours "mid-tech" sectors with low productivity,** while high-tech innovation struggles to emerge and scale, unlike the dynamic shifts seen in the US. Hence, there is a misallocation of public R&D funds with fragmented allocation and suboptimal incentives.

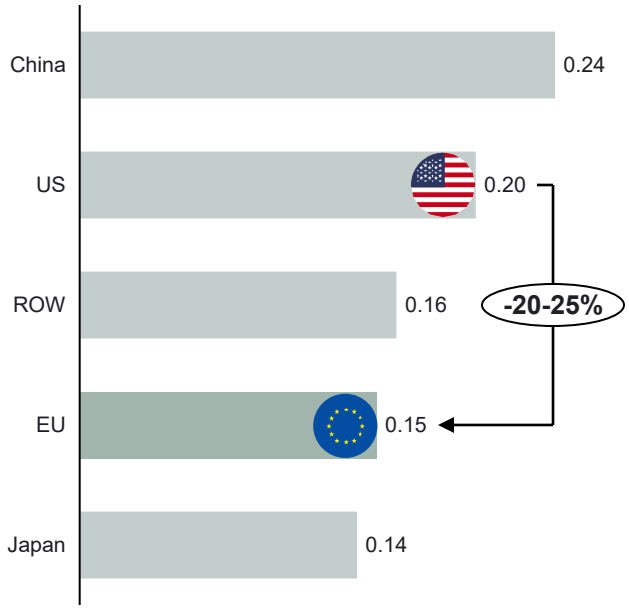
Europe spends less than the US on R&D…

R&D expenditure by source of funding
Billion EUR and share of GDP, 2023



… and get 20-25% lower return on R&D investment

R&D returns to productivity
R&D-to-labour productivity elasticities



Annual impact of a 20-25% sustained lower R&D-to-labour productivity elasticity from EU's R&D expenditure for the period 2008-2022.

Note: R&D-to-labour productivity elasticity indicates how strongly changes in research and development investment are linked to changes in the value of output produced per worker
Source: Implement Economics based on Draghi (2024), Letta (2024), Wagman et al. (2025), Bergeaud(2024) and European Commission, JRC, (2024) and Eurostat.

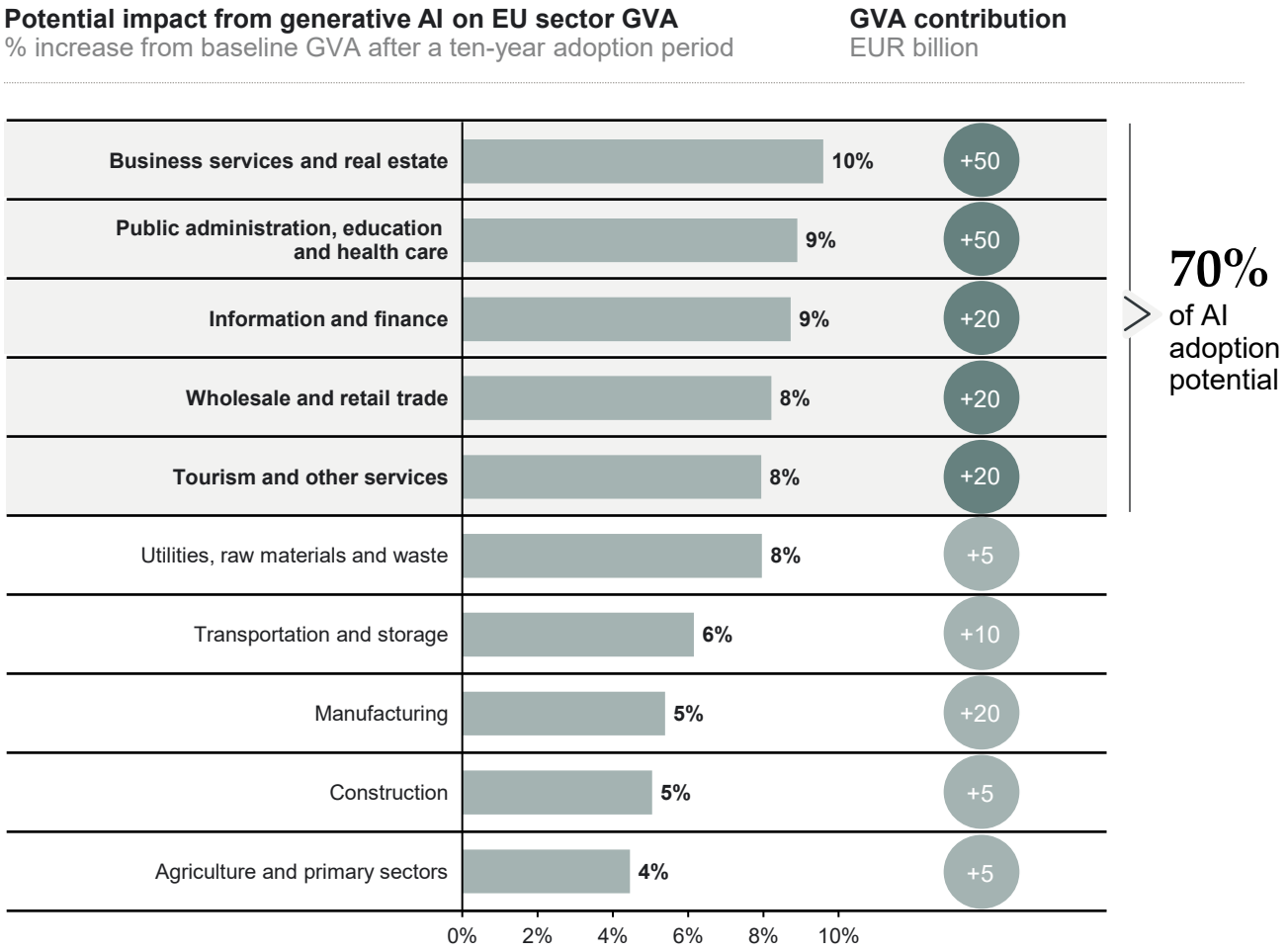
Delivering on AI innovation is central to unlocking the EUR 220 billion GDP potential from AI adoption across key sectors of the economy

AI innovation in key sectors in France can drive a step-change in **productivity up to 10%** in some sectors. If widely adopted, generative AI could boost French GDP by **EUR 220 billion** in ten years. Five key sectors represent **70% of this AI** adoption potential:

- **Business services**
- **Public sector**
- **IT and financial services**
- **Wholesale and retail trade**
- **Tourism and other services**

The public sector potential alone accounts for 20-25% of the total potential, as highlighted in the AI opportunity for public administration in France. Early adoption by the government can accelerate AI uptake across the economy by setting an example within existing regulations.

Accelerating AI innovation in France, the focus of this report, is both a steppingstone and an amplifier for the up to EUR 220 billion opportunity from generative AI adoption. Developing AI models and applications is the steppingstone, while the AI-driven acceleration of research can amplify economic gains in the very long term.



Note: The public sector holds the largest economic potential in an advanced AI adoption scenario. However, it is not the focus of this report, as its potential has been explored in previous research.
For a list of AI strategic sectors identified by the European Commission, see link; for Draghi's version, see link (p. 34).
Sources: Implement Economics based on Eurostat, Briggs & Kodnani (2024), OECD and the EU Commission's Competitiveness Compass.

Lack of access to the most powerful AI tools and innovative applications puts EUR 160 billion in value at stake

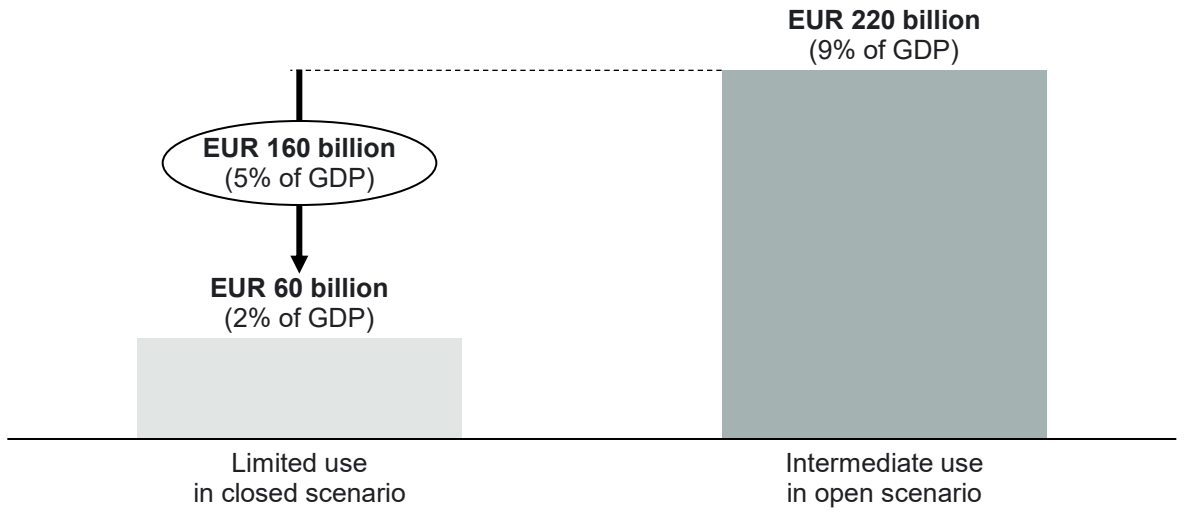
French businesses risk missing out on the most advanced uses of AI for more complex tasks, if they do not have access to the most powerful AI infrastructure, models and applications.

In a *limited use* scenario, where generative AI is assumed to automate tasks up to difficulty level three, as opposed to level four in a *full use* scenario, France's AI potential could drop from 9% to 2% of GDP, putting EUR 160 billion at risk.

This could be the result of a "made in Europe only" policy, requiring large capital reallocation and the time required to replicate existing models, foreign infrastructure and develop homegrown chips manufacturing.

> *Integrating AI into strategic sectors where Europe has traditionally been strong will be critical to maintaining their competitive edge.*
>
> The European Commission

Estimated potentials of generative AI adoption in France
EUR billion increase from baseline GDP after ten-year adoption period



Use of AI for solving tasks up to…

Difficulty level:	3	4

Task examples:

- Keep records of employees' attendance and hours worked.
- Maintain operations data, such as time, production, and cost records.
- Resolve customer complaints or answer customers' questions
- Explain federal and state tax laws to individuals and companies.
- Perform statistical analysis of environmental data.
- Write grant proposals to procure external research funding.

Note: Task difficulty is defined using O*NET's 1–7 scale. In the *limited* scenario, generative AI is assumed to automate or assist with tasks up to level three. The *full use* scenario (aligned with previous modelling) includes tasks up to level four.
Source: Implement Economics based on Eurostat and Briggs and Kodnani (2023).

France leads the EU in AI innovation, but the EU trails globally

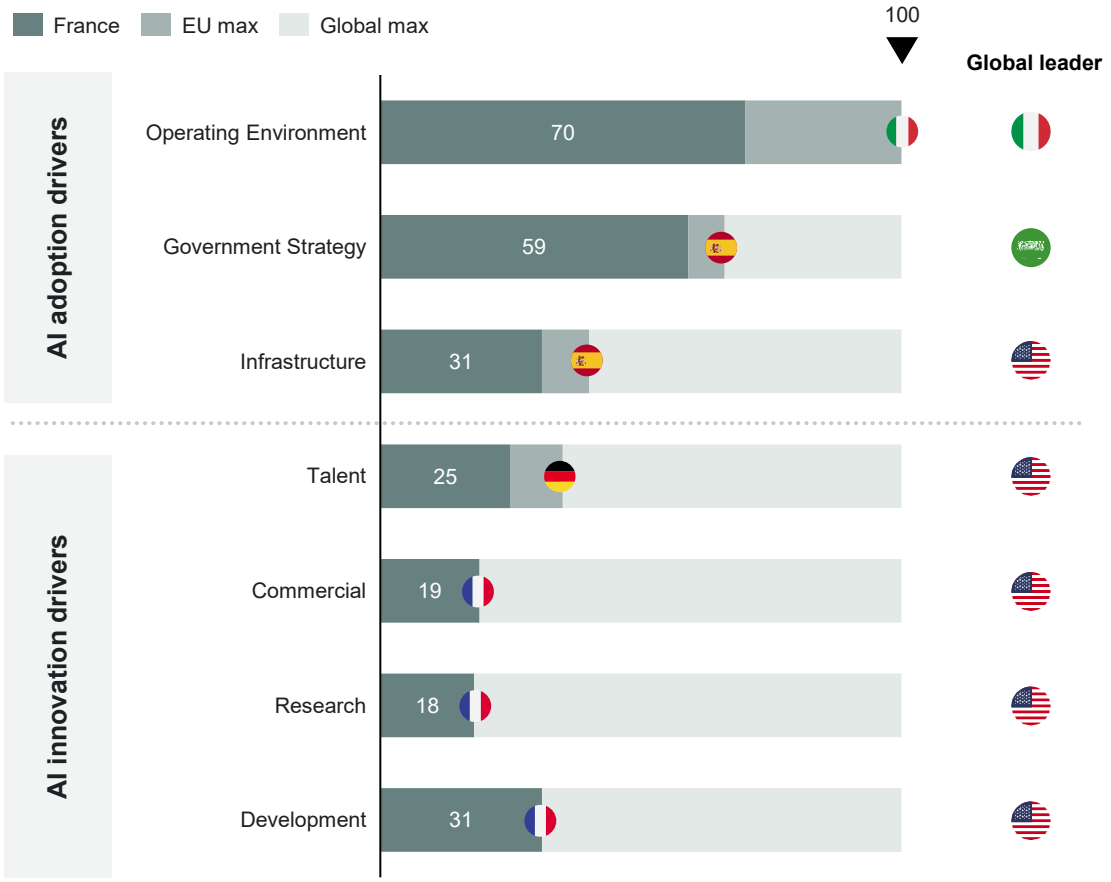
France lags behind EU and global leaders in foundational AI adoption areas like operating environment (e.g. trust, data governance), government strategy, and infrastructure (e.g. supercomputing, download speed).

However, France leads the EU in innovation drivers such as commercial activity and R&D, though Europe as a whole is behind globally, with the United States leading due to its scale in AI capacity.

France's strong innovation performance is reflected in its sixth-place ranking in the 2024 Stanford University's Global AI Power Ranking.

The EU's AI capacity according to the Tortoise Global AI Index, 2024

Global AI Index, score out of 100 (global leader)



Note: The Global AI Index looks at seven sub-pillars for AI capacity: talent (availability of skilled practitioners in AI solutions, including IT and STEM graduates, data scientists, AI professionals etc.), infrastructure (download speed, supercomputing capabilities etc.), operating environment (regulation, cybersecurity etc.), research (AI publications and citations etc.), development (fundamental platforms and algorithms etc.), government strategy (national funding commitments to AI etc.) and commercial ventures (AI start-up activity, investments etc.).
Source: Implement Economics based on Tortoise Media and Elysee (2025).

France ranks 6th globally on newly funded AI companies

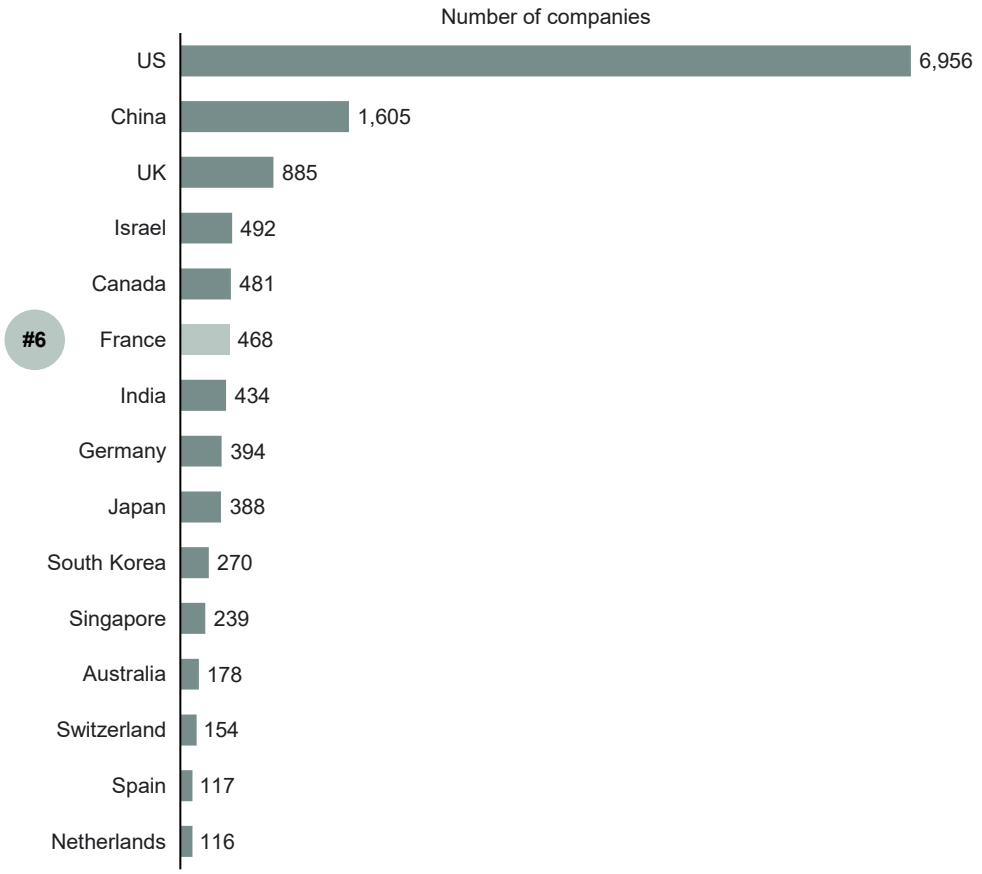
According to Stanford University's Artificial Intelligence Index Report 2025, the US leads with nearly 7,000 AI companies funded from 2013-24.

France ranks sixth globally with 468 newly funded AI companies, including notable firms like Mistral AI, H Company, and Poolside, as highlighted by President Macron.

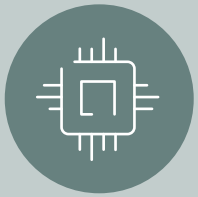
Additionally, France invested USD 190 million in AI-related public contracts between 2013-23.

Number of newly funded AI companies by geographic area, 2013–24 (sum)

Number of companies



Source: Implement Economics based on Artificial Intelligence Index Report 2025.



Producing AI

Inventing with AI

Commercialising AI

PART 2

Producing AI

- France must build on its strengths and seize opportunities along the AI value chain to support AI innovation

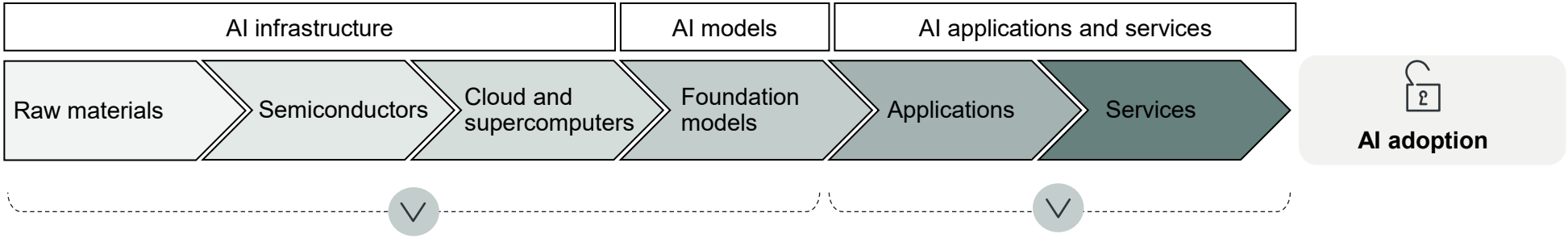
> *Too often, I have heard that we should replicate what others are doing and run after their strengths. I think that instead, we should invest in what we can do best and build on our strengths here in Europe.*
>
> **Ursula von der Leyen** at the AI Action Summit, 2025

France must build on its strengths and seize opportunities along the AI value chain to enable and support AI innovation

The AI value chain

The AI value chain represents the complete lifecycle of AI from infrastructure and models (technical bedrock) to AI applications and services (diffusion channel).

To seize the AI innovation opportunity, French businesses need a strong AI infrastructure, such as data centres, and access to use and build on the best AI models. The entire AI value chain will need to be expanded to capture the AI opportunities. In this part of the report, we assess France's strengths and opportunities in the AI value chain, where France particularly holds an emerging strength in AI models, and applications and services.



AI's technical bedrock

The AI supply chain is globally integrated, and no region or country has the capacity to be self-sufficient or independent. Innovation knows no borders and ground-breaking innovations often result from global research collaboration.

AI's diffusion channel

Broad AI adoption requires building and rooting the technology into the specific context, often best done by local businesses close to the integration problem.

The global AI market is set for massive growth, with the biggest growth opportunity for the EU being in AI applications and services

The global AI market is projected to grow 25% annually and reach around EUR 3.4 trillion by 2034. Some forecasts go even further. The UN estimates AI revenues to reach EUR 4.2 trillion in 2033. Most revenue today comes from non-generative AI systems (85% of the total), while generative AI's share is expected to be lifted to nearly half of the total AI market by 2034.

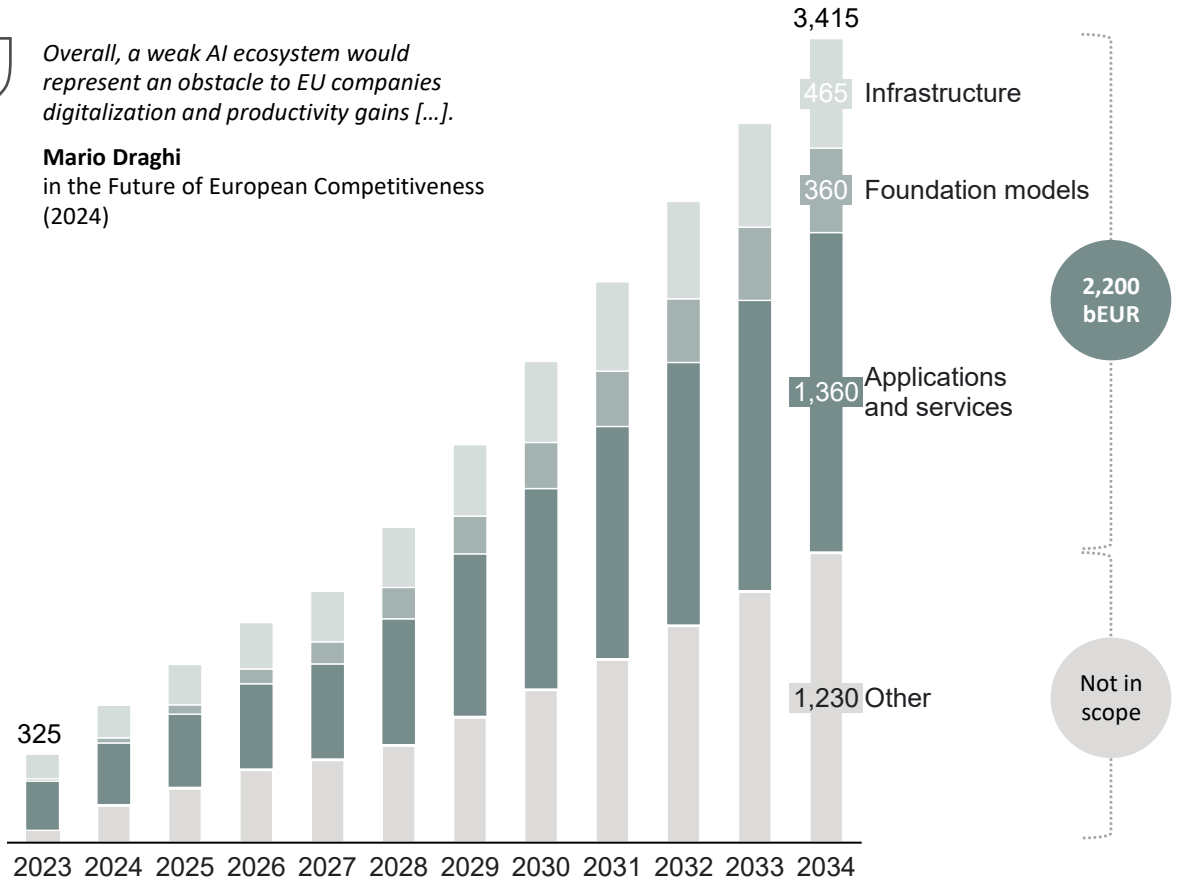
The global AI market related to the AI value chain revolves around three core segments: infrastructure, foundation models, and applications and services. Together, these three segments are projected to generate EUR 2.2 trillion in revenue globally by 2034. Over time, the focus will shift from infrastructure and training to inference and applications as computing becomes more efficient and models become more capable.

These projections point to a broad set of potential openings for Europe to lead in AI solutions. Among these, applications and services represent the largest by far, growing to almost EUR 1.4 trillion, or 60% of the total market.

In the following three sections, we explore France's position and economic opportunities across the AI value chain's three core segments – and how France can ensure its ecosystem fully supports the benefits of AI adoption and innovation.

Forecasted global AI revenue
EUR billion

> *Overall, a weak AI ecosystem would represent an obstacle to EU companies digitalization and productivity gains […].*
>
> **Mario Draghi**
> in the Future of European Competitiveness (2024)



Note: The forecasted global revenue in the AI value chain excludes revenues from devices, digital ads and gaming (around EUR 1,200 billion in 2034). Foundation models relate only to generative AI. Gen AI estimates from Bloomberg are extended from 2032 to 2034 while non-Gen AI estimates are extended from 2030 to 2034.
Source: Implement Economics based on Bloomberg, FTI delta and United Nations.

PART 2

AI infrastructure

France must make a rapid, efficient and sustainable build-out of a powerful AI infrastructure and ensure high data security and control

[…] the EU must find a middle way between promoting its domestic cloud industry and ensuring access to the technologies it needs.

Mario Draghi in the Future of European Competitiveness (2024)

The AI infrastructure value chain is globally integrated and interdependent, requiring global cooperation and partnerships

The WTO emphasises that international trade, partnerships and cooperation are vital for AI development worldwide, as all countries are interdependent in some part of the value chain.

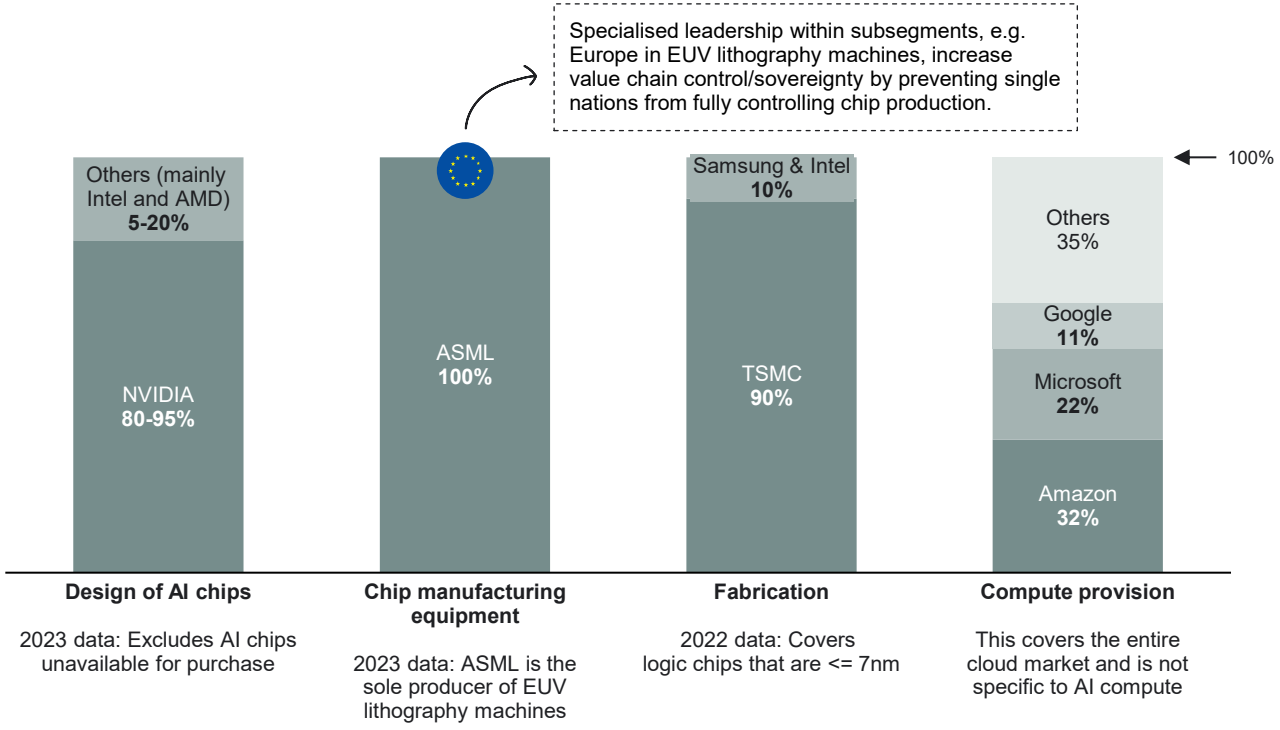
Companies worldwide occupy distinct roles in the advanced chip value chain: NVIDIA, Intel and AMD compete in chip design, ASML (Netherlands) has a unique position in chip manufacturing equipment, and TSMC (Taiwan) handles most fabrication of the most advanced AI chips.

The cloud market is more dispersed but still heavily centred around the three US hyperscalers. Many US-owned companies operate data centres and partner with European firms to provide sovereign cloud infrastructure and solutions. European companies typically construct these facilities and lead the global market in electrical systems for data centres. The recent AI boom has added over EUR 150 billion to the market cap of four of Europe's oldest industrial companies.

Recognising this intricate global dependency, Europe's strategic approach, reflected in the EU Chips Act and Chips Act 2.0 discussions, aims for resilience, not isolation. The EU International Digital Strategy reinforces this perspective by promoting close collaboration with “partners and tech allies to enhance the ability of European tech companies to innovate and grow globally”.

Global share of leading companies in the AI infrastructure subsegment
%

> *The rise of AI is likely to require an increased international trade in goods and services related to that value chain.*
>
> **World Trade Organisation** in *Trading with intelligence* (2024)



Source: Implement Economics based on World Trade Organisation (WTO), Ipnest, Gartner, and Sastry et al. (2024).

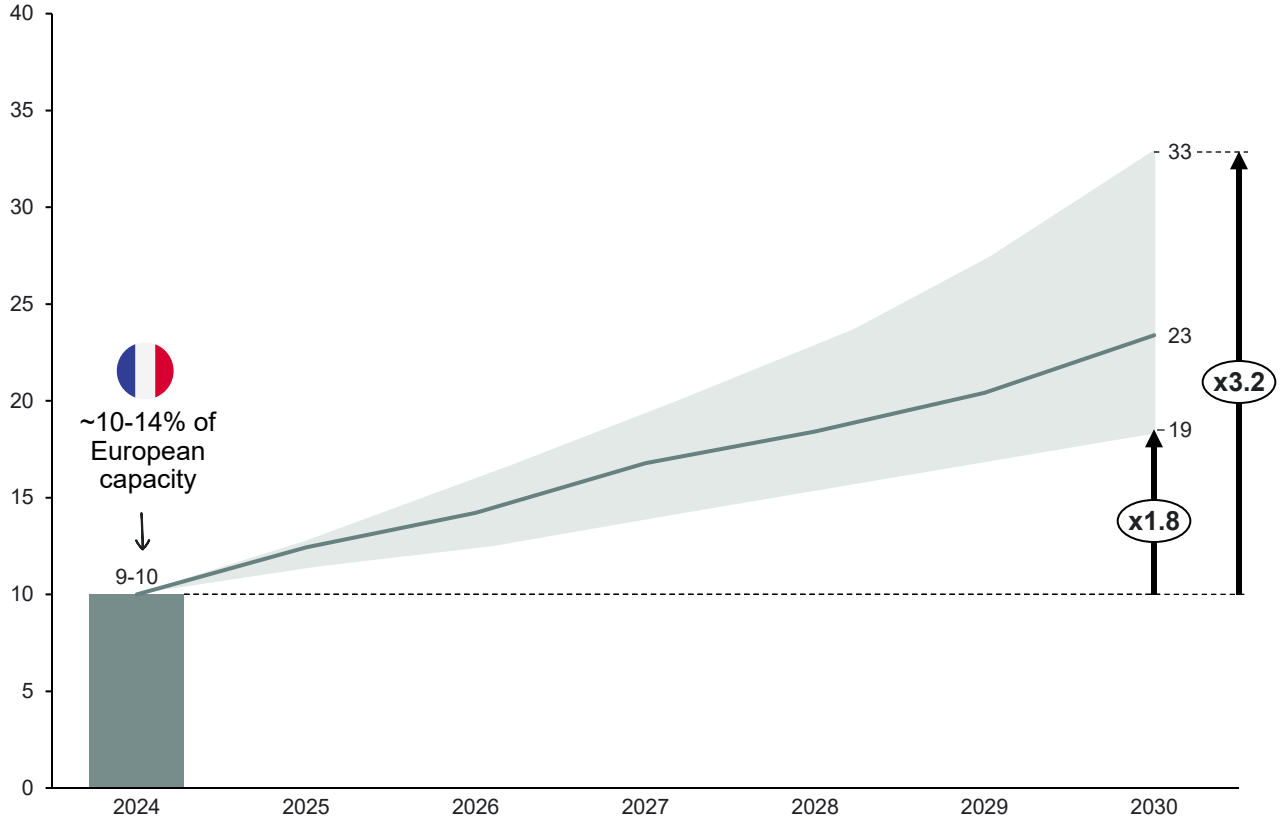
France together with EU needs 2-3 times more cloud capacity to meet future AI demand, and this is best achieved in an open market

France currently hosts 1.1-1.3 GW or 10-14% of Europe's about 10 GW of data centre capacity. 70-80% of French data centre capacity lies in the Paris region, one of the four major European data centre regions (so-called FLAP-regions). Forecasters project European data centre capacity should double or triple towards 2030 to meet future demand. Not all new capacity is expected to be used for AI. By 2030, 25-30% of data centre capacity is expected to be consumed by AI compared to less than 5% today.

To expand capacity, France must leverage the best available and most cost-effective solutions and set clear rules, allowing all market participants to contribute to the capacity expansion and compete on transparent and fair terms.

This aligns with the strategy Make France an AI powerhouse, which includes a EUR 50 billion joint foreign investment to build a 1GW AI facility on French soil.

European data centre capacity
GW



Note: There is uncertainty around the precise amount of installed data centre capacity in France and Europe in 2024. European estimates range between 8.5 and 10 GW.
Source: Implement Economics based on Draghi, the European Commission, Statista, EIA, ICIS, Mordor Intelligence, Goldman Sachs, IDC, Financial Times, and McKinsey.

Growing the AI infrastructure in France could contribute EUR 5-7 billion annually to the economy by 2034

Global revenue in the AI infrastructure segment is projected to increase from EUR 105 billion in 2023 to around EUR 465 billion in 2034.

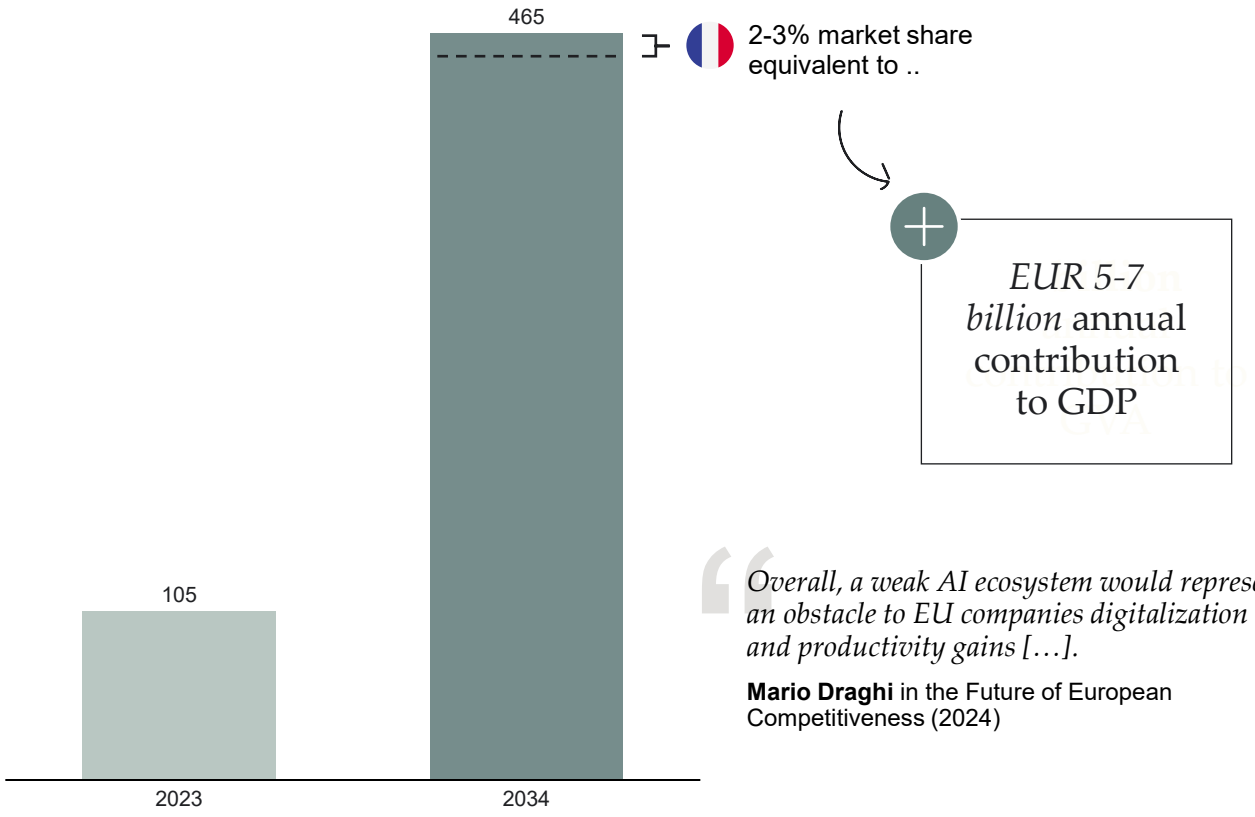
Based on France's expected global market share of 2–3%, a conservative estimate shows that growth in French AI infrastructure could contribute **EUR 5-7 billion** to France's GDP annually by 2034.

This uplift would mainly be driven by investments in domestic data centres, where the capacity is expected to grow between 2-3x towards 2030. More data centres in France will generate economic activity within the region, regardless of whether they are built and operated by EU or non-EU companies.

Data centre capacity is essential to pursuing the AI innovation opportunities and France's needs access to frontier compute technology to drive innovation of the most advanced AI applications.

Note that GDP contributions are obtained from the revenue estimates based on the ratio between revenue and GDP from Eurostat (see full details in the note).

Forecasted global revenue in the AI infrastructure segment
EUR billion



> *Overall, a weak AI ecosystem would represent an obstacle to EU companies digitalization and productivity gains […].*
>
> **Mario Draghi** in the Future of European Competitiveness (2024)

Note: French market shares are estimated according to France's share of global ICT revenue, its share of global data center capacity, its share of the global generative AI market, and its projected share of global data center capacity by 2030. Revenue numbers are converted to GVA using the latest available data (2022) for the ratio of between value added and net turnover for France's *Computer Programming, consultancy and related services sector* from Eurostat. Economic effects are calculated on a Gross Value Added (GVA)-basis and then converted to Gross Domestic Product (GDP) using the French GVA-to-GDP ratio from 2024. GDP is equivalent to GVA by including net product taxes
Source: Implement Economics based on Bloomberg, Draghi (2024), Goldman Sachs, and Eurostat.

PART 2

AI models

- Give better opportunities for French AI models to flourish, and ensure access to the best AI models

French innovators want to have the choice to leverage the best AI models for innovation

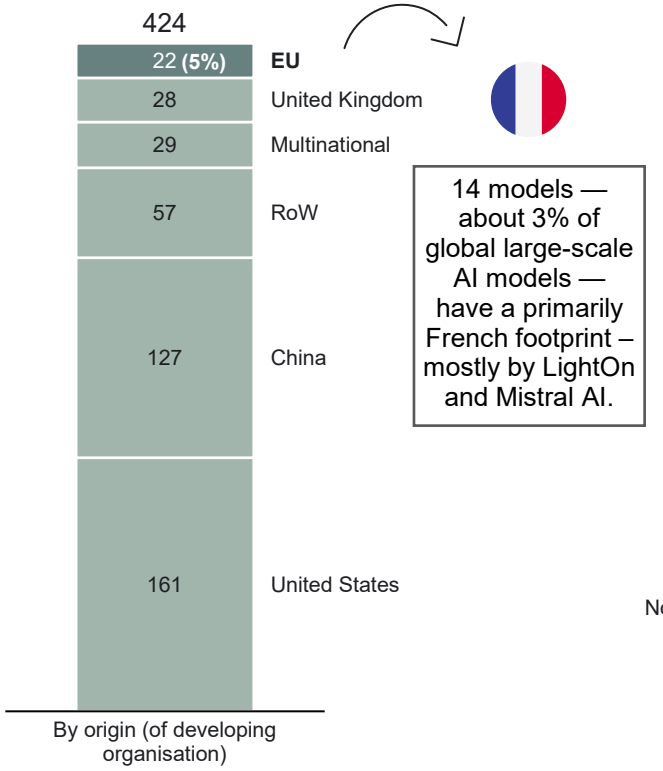
Foundation models are the technological bedrock of the AI innovation opportunity. Foundation models are AI systems trained on massive datasets. Some excel at language tasks, others at vision or code. They are built by various suppliers, such as France's Mistral AI and LightOn, and Germany's Aleph Alpha.

Of the more than 400 large-scale AI models available globally, only 22 models originated from Europe (5% of the global total), with the clear majority of 14 being developed in France. France led the EU in generative AI model venture capital investments in 2024 with a 76% share.

While France is leading within the EU, the relatively small global share highlights that innovators need access to the global pool of AI models for their innovation. In 2024, 68% of foundation models were available either through an API or with open weights, making them accessible for a wide range of uses.

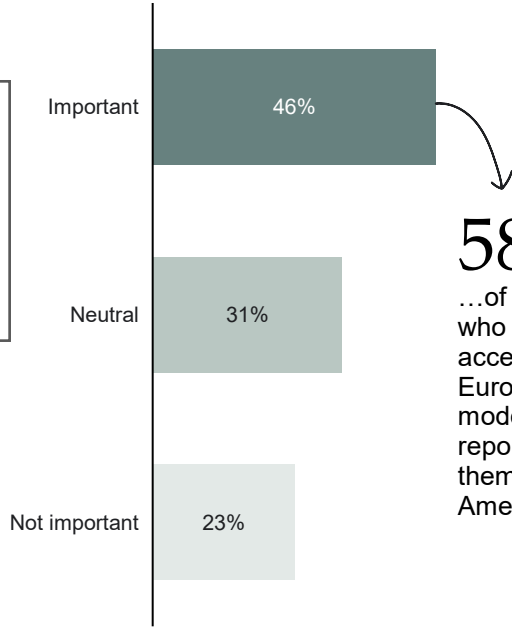
A recent survey shows that access to the global pool of AI models is important for EU innovators. Nearly half of European start-ups and scaleups (46%) say that access to AI models from outside Europe is important to their business.

Large AI models by origin
Number of models



Perceived importance to European businesses of AI built outside of Europe
% of respondents

"To what extent is access to cutting-edge AI technologies built by companies outside of Europe important to your business?"



58%
…of respondents who consider access to non-European AI models important, report sourcing them from North America.

Note: Large-scale AI systems built since 2017 as of 2025Q1.
Source: Implement Economics based on Epoch AI, Dealroom and Notion Capital survey (2024).

New foundation models are being launched in a highly competitive market

The market for AI models is growing, with firms continually developing and refining models to enhance capabilities in text, image, audio, video, and specialised areas such as protein and DNA sequencing.

Model releases are frequent; the Stanford AI Index reported 61 notable models were launched in 2024, and their size continues to increase.

The OECD has assessed the competition risks within AI foundation models using indicators such as barriers to high-quality data access and economies of scale. The OECD finds those risks to be speculative and sees no evidence they are impeding effective competition in foundation models, suggesting the market remains open to newcomers and innovation.

Examples of generative AI models shows that there are many options available for each modality

	Text	Image	Audio or music	3-D	Video	Protein structures / DNA sequences
OpenAI	GPT-4.1	GPT Image 1	Jukebox	Point-E	Sora	
Google/ DeepMind	Gemini 2.5	Imagen	MusicLM	DreamFusion	Imagen Video	AlphaFold2
Meta	LLaMA 2	Make-A-Scene	AudioGen	Builder Bot	Make-A-Video	ESMFold
Microsoft		NUWA-Infinity	VALL-E	NUWA-Infinity	NUWA-Infinity	BioEmu-1
Stability AI	StableLM	Stable Diffusion XL	Dance Diffusion			LibreFold
Amazon	Amazon Titan		Deep Composer			
Apple				GAUDI		
NVIDIA	MT-NLG	Edify		Edify	Edify	MegaMol BART
Cohere	Command R					
Anthropic	Claude 3 Sonnet					
AI21 Labs	Jurassic-X					
Mistral	Mistral Large 2	Pixtral Large				
Aleph Alpha	Luminous	Luminous				

Note: Closed-source models keep their code private, require formal approval processes for access and often an NDA; closed-source models available through APIs maintain private code but allow use via API under licencing agreements; and open-source models publish their code for public use, sharing and modification, sometimes with non-commercial restrictions.
Source: Implement Economics based on Stanford University, OECD, Wired, McKinsey, and the listed companies' official documentation.

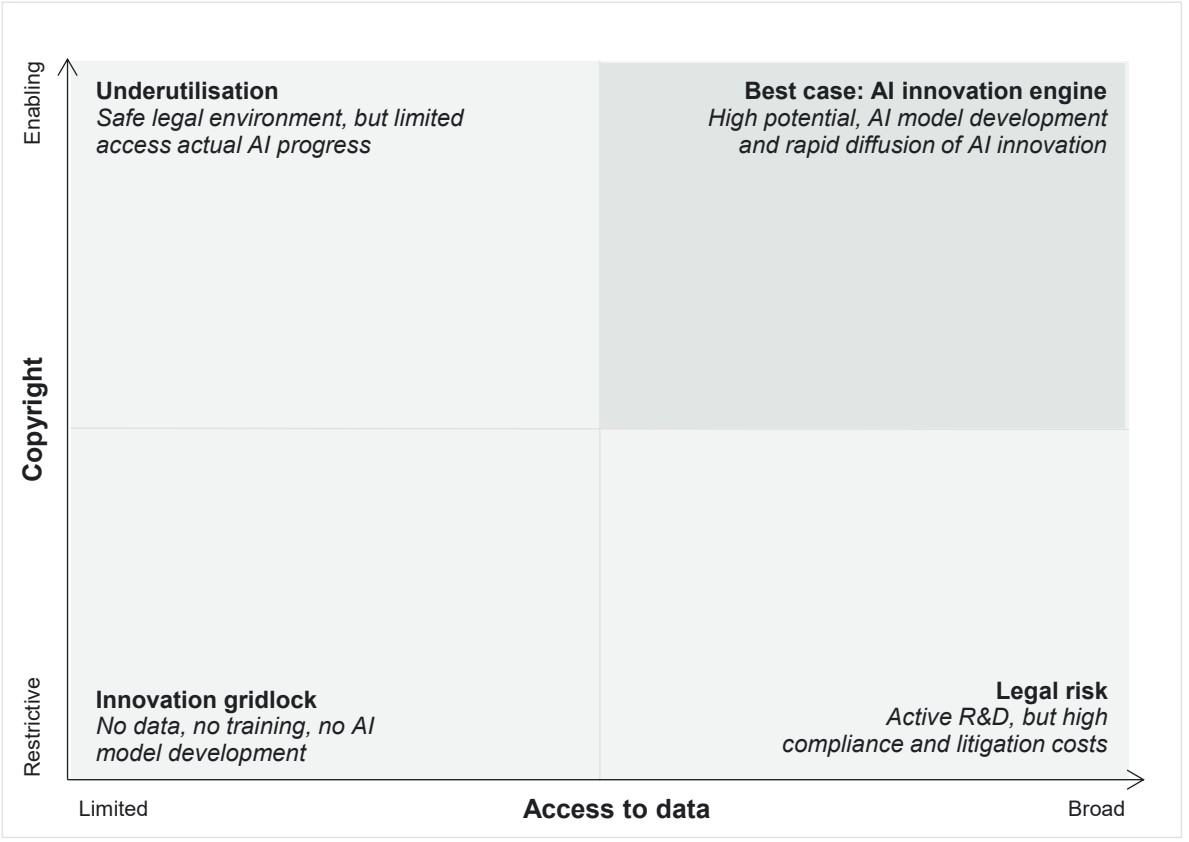
Protect Europe's workable copyright regime to further unlock Europe's AI model potential

The quality and reliability of AI model responses depend on large volumes of data used for training the model.

The EU Copyright Directive was beneficial in providing much-needed legal clarity on data use, paving the way for AI development. However, this clarity is now being challenged by some policymakers. Combined with the fragmentation of copyright laws across the 27+ member states, this creates increasing complexity for AI developers. Furthermore, the additional rules and obligations under the Artificial Intelligence Act (AIA) also risk hindering AI development.

> *[EU investment and innovation] calls for developing simplified rules and enforcing harmonised implementation of the GDPR in the Member States, while removing regulatory overlaps with the AI Act.*
>
> **Mario Draghi** in the Future of European Competitiveness (2024)

To foster an innovation engine for AI model development in France, it must preserve its commercial data and text mining rules and avoid creating new caveats to its use.



Source: Implement Economics based on Article 4 of the EU copyright Directive (EUCD), Bruegel (2024, 2025), and Draghi (2024)

Growing the AI foundation models segment in France could contribute EUR 5-10 billion to GDP annually by 2034

Global revenue in the foundation models segment, which covers generative AI, is projected to rise from EUR 10 billion in 2023 to EUR 360 billion by 2034.

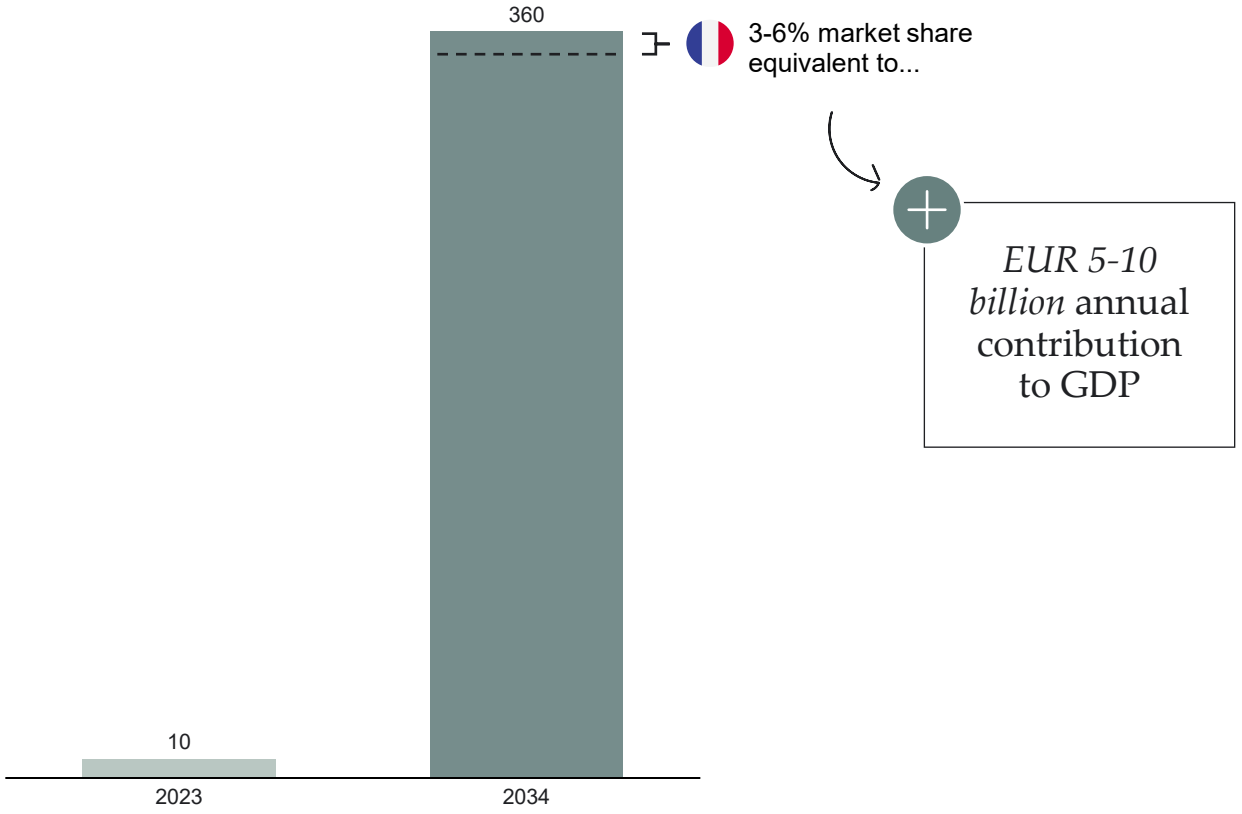
France leads the development of large-scale AI systems, developing over half the models in the EU with global players like Mistral AI, laying the groundwork for a continental specialisation in this segment.

If France secures 3-6% of the market for foundation models—reflecting its current share of global AI model development and venture capital investment in model making—revenues would amount to EUR 11-22 billion by 2034.

A conservative estimate shows the growth of the French AI foundation model segment could contribute **EUR 5-10 billion** to France's GDP annually by 2034.

Just as important as these direct contributions are the broader spillover effects. Strong model clusters attract talent and financing while enabling innovation across many other sectors. Building such clusters in France is therefore core to competitiveness, with Paris already emerging as a hub and London showing it can be done outside the United States.

Forecasted global revenue in the AI foundation models segment
EUR billion



Note: French market shares are estimated according to France's share of total notable AI model development in 2024 and its share of global venture capital investment in AI model making. Revenue numbers are converted to GVA using the latest available data (2022) for the ratio of between value added and net turnover for France's *Computer Programming, consultancy and related services sector* from Eurostat. . Economic effects are calculated on a Gross Value Added (GVA)-basis and then converted to Gross Domestic Product (GDP) using the French GVA-to-GDP ratio from 2024. GDP is equivalent to GVA by including net product taxes
Source: Implement Economics based on Bloomberg Intelligence, Eurostat, Stanford and Dealroom.

PART 2

AI applications and services

France has an opportunity to lead in AI services and applications

AI applications and services turn technology into practical solutions, and France is well-positioned to capture more market growth

AI applications and services, or vertical AI, transform AI technologies into sector-specific solutions that drive productivity through industry-specific or company-specific applications.

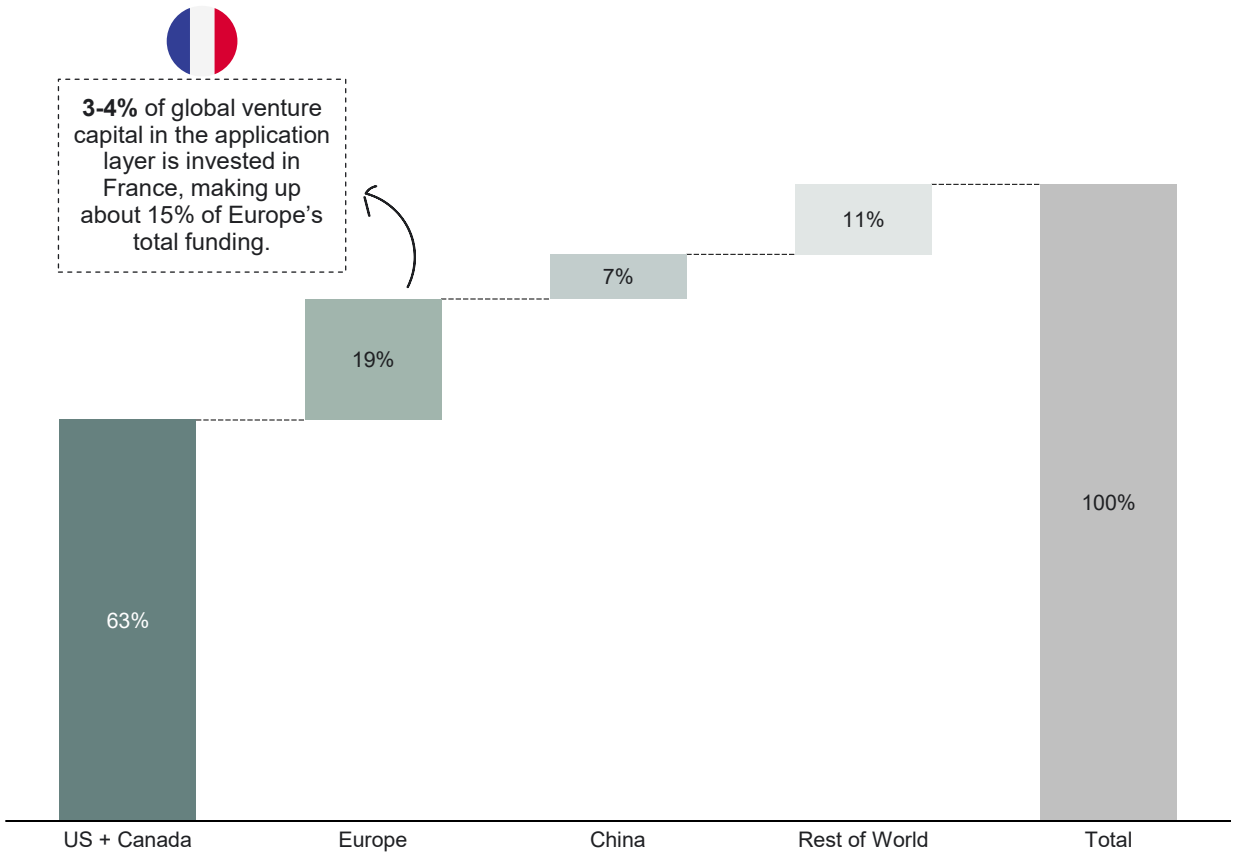
This area is where we estimate France's greatest opportunities within the value chain, and it is also the fastest-growing segment of the market.

France's industrial expertise and domain knowledge, particularly in automotive engineering, pharmaceuticals, and luxury goods, offer significant opportunities for AI application and service development.

Europe attracts 19% of global AI application funding, signalling European strength and momentum in this part of the value chain. France attracts 3-4% of global AI application funding, making up about 15% of Europe's total funding.

Innovative digital businesses with specialised capabilities and close market proximity are key to customising these applications into real-world adoption and innovation. By tailoring solutions to specific needs and processes, they are key to realising France's AI potential.

Global venture capital funding share in AI applications layer by region, 2023-2024
%



Source: Implement Economics based on Dealroom.

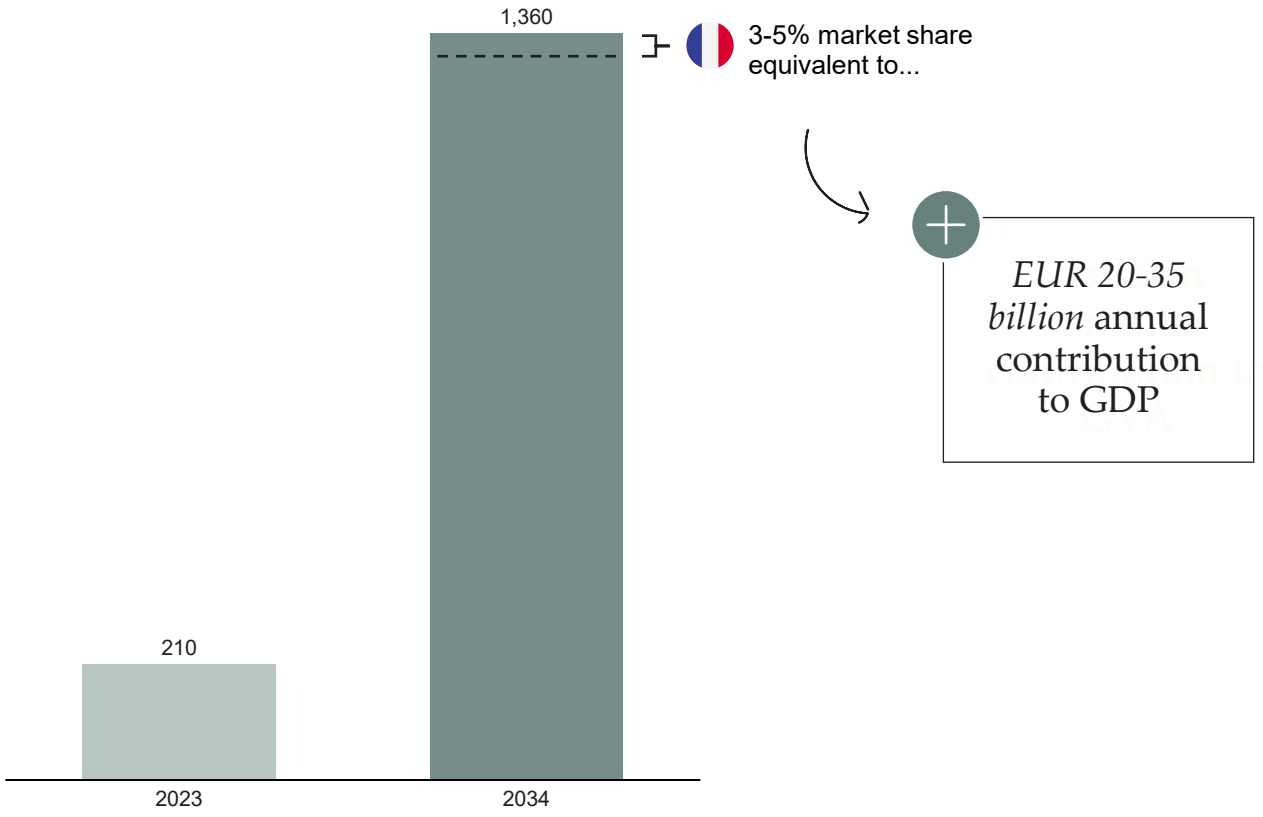
France has a large potential within AI applications, and success can boost GDP by EUR 20-35 billion annually

Global revenue in the AI applications and services segment is projected to reach EUR 1,360 billion by 2034, driven by firms integrating AI into tailored solutions across industries.

The European AI ecosystem and start-ups are already demonstrating success in leading within narrower verticals by building on top of existing AI infrastructure.

A conservative estimate shows that the resulting growth in France's AI applications and services layer could add **EUR 20-35** billion annually to France's GDP each year by 2034.

Forecasted global revenue in the AI applications and services segment
EUR billion



Note: France's market shares are estimated according to the French share of global software revenue, share of global venture capital investment in AI applications, share of global AI services and share of IT services. Revenue numbers are converted to GVA using the latest available data (2022) for the ratio of between value added and net turnover for France's *Computer Programming, consultancy and related services sector* from Eurostat. Economic effects are calculated on a Gross Value Added (GVA)-basis and then converted to Gross Domestic Product (GDP) using the French GVA-to-GDP ratio from 2024. GDP is equivalent to GVA by including net product taxes
Source: Implement Economics based on Bloomberg Intelligence, Eurostat, Dealroom, Statista and the European Commission.

Building on France's strengths in the AI value chain could contribute EUR 30-50 billion to GDP annually

CONCLUSION

Expanding the AI value chain in France could add around EUR 30-50 billion to GDP annually by 2034. This includes EUR 5-7 billion from AI infrastructure, EUR 5-10 billion from foundation models, and EUR 20-35 billion from applications and services, where the greatest potential lies. The modelled GDP potential figure assumes that France has access to all available AI providers and the best solutions in an open and competitive market.

Developing these segments can help close France's AI innovation gap and strengthen its global competitiveness. A stronger AI value chain will not only drive direct economic value but also accelerate AI adoption across sectors, unlocking broader productivity, innovation, and long-term growth.

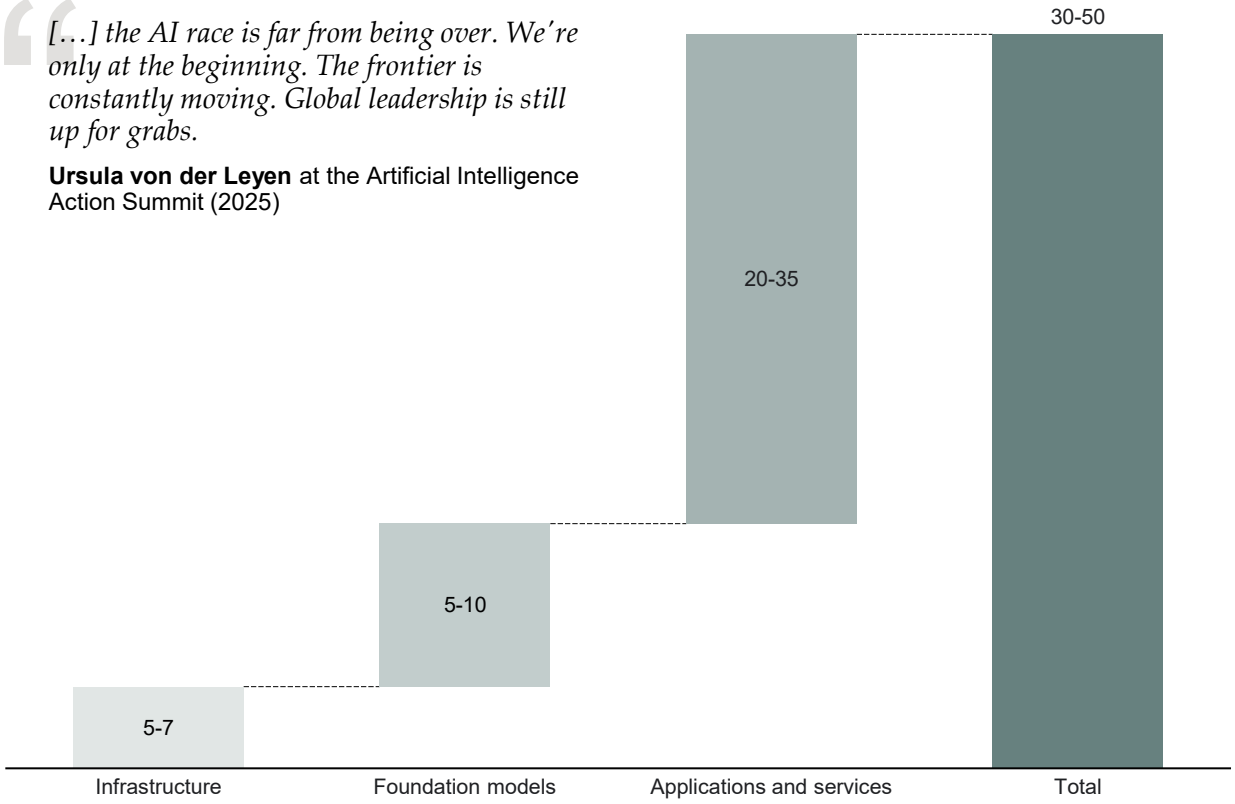
This estimate does not account for the rapidly evolving field of *Agentic AI*, which represents a new paradigm where AI systems operate with minimal human intervention. Their ability to set goals, plan, execute complex tasks, and continuously learn and adapt could increase the economic impact of AI.

The economic potential for expanding the AI value chain is considered a gross impact, as it does not account for the possibility that workers in these expanding industries may have been employed elsewhere.

[…] the AI race is far from being over. We're only at the beginning. The frontier is constantly moving. Global leadership is still up for grabs.

Ursula von der Leyen at the Artificial Intelligence Action Summit (2025)

Contribution to French GDP by 2034 from expanding the AI value chain
EUR billion



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Source: Implement Economics based on Bloomberg, Dealroom, Stanford University, Statista, Draghi (2024), Goldman Sachs, the European Commission, and Eurostat.

Producing AI

Inventing with AI

Commercialising AI

PART 3

Inventing with AI

AI is not just an invention, but a new way to invent — offering major economic potential for France through R&D integration

Scientific breakthroughs enabled by AI could help solve societal challenges and create entirely new industries.

OECD on AI Principles

R&D spending is delivering less innovation than previously as ideas are getting harder to find

Economic growth arises from people creating ideas.

These ideas are typically developed through research and development (R&D) — a process that has driven technological and economic progress for decades.

Even though R&D spending has increased, it is leading to fewer breakthroughs.

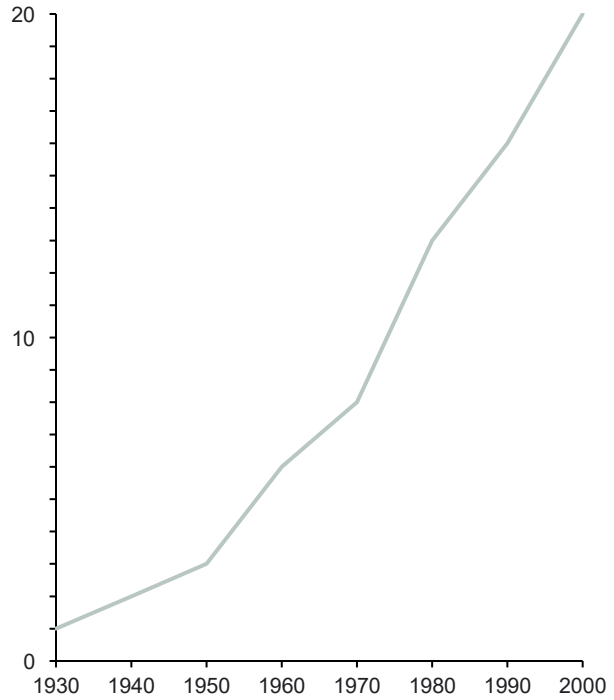
The biopharmaceutical industry provides an example, as drug discovery has become slower and more expensive over time—a phenomenon known as **Eroom's Law.**

While the number of researchers has been rising since 1930, Stanford researchers found that each novel innovation has been harder and more costly to find than in the past. In other words, R&D productivity has declined. OECD studies and Eurostat data confirm this trend in Europe as well.

More broadly, this once-reliable engine of economic growth has been yielding lower returns.

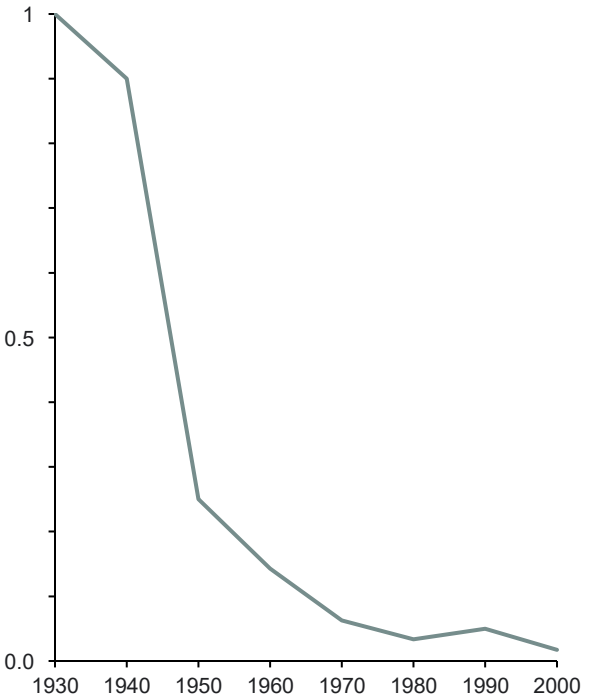
More and more researchers…

Effective number of researchers, US
Index (1930 = 1)



… are producing less and less innovations per dollar spent

Research productivity, US
Index (1930 = 1)



Note: Research productivity is the ratio of idea output, measured as TFP growth, to the effective number of researchers. Research productivity and the number of researchers have been normalised to the value of 1 in 1930.
Source: Implement Economics based on the OECD (2023), the EU Industrial R&D Investment Scoreboard, Bloom et al. (2020), and European Federation of Pharmaceutical Industries and Associations (EFPIA).

Europe's R&D faces a dual challenge: a global slowdown and weaker returns at home

Besides a global slowdown in R&D productivity, the EU faces a particular struggle to translate its R&D investments into tangible productivity and innovation gains.

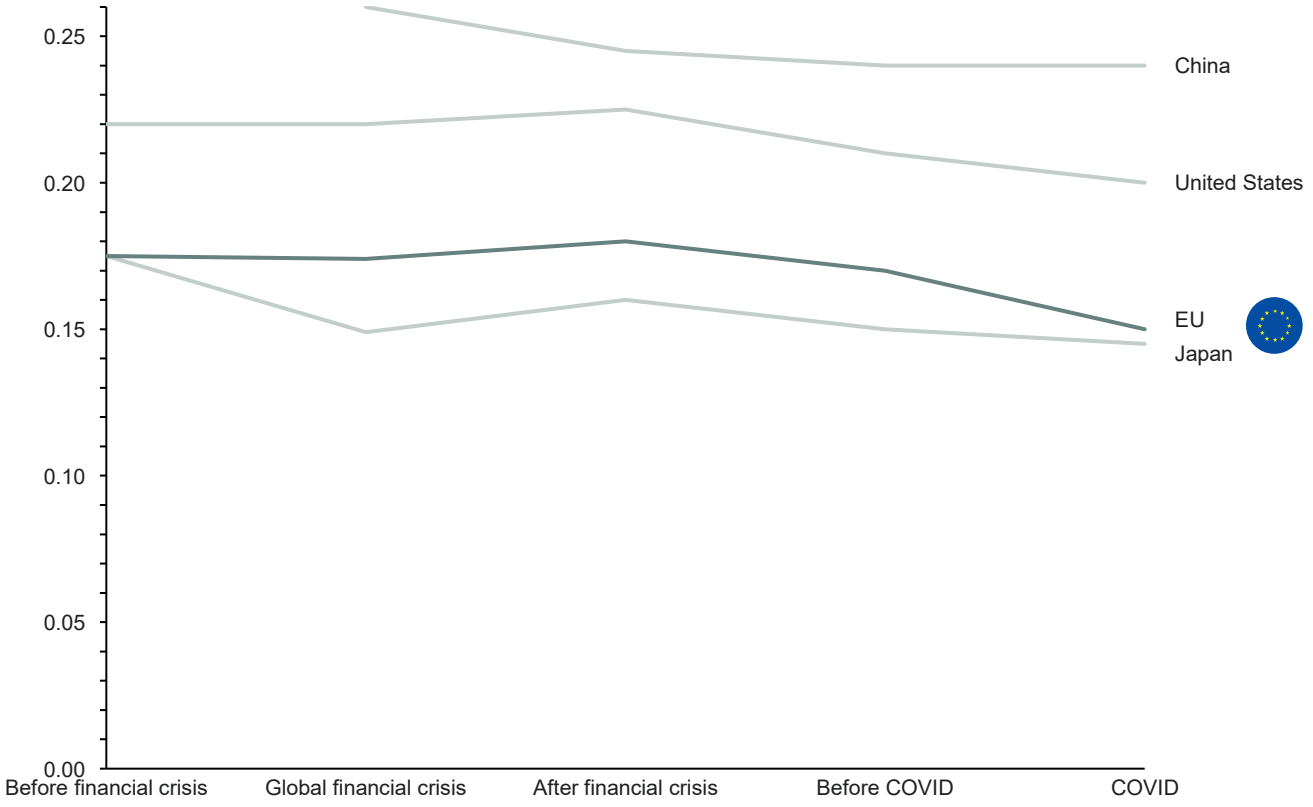
For decades, R&D in China and the US has been significantly more productive than in Europe — achieving higher returns in terms of patents, new products, and productivity improvements. This lower return places Europe at a competitive disadvantage.

As a result, the EU faces a dual challenge:

1. **A global decline in R&D efficiency**, which means that each euro spent on research yields less innovation than before.
2. **A widening productivity gap compared to leading innovation nations such as China and the US**, putting Europe at risk of falling further behind in global competitiveness and technological leadership.

Estimated R&D-to-labour productivity elasticities across regions and time

R&D-to-labour productivity elasticities



Note: The graph can be interpreted as such: If EU firms doubled their investment before COVID, they would have got 16% more labour productivity.
Source: Implement Economics based on the EU Industrial R&D Investment Scoreboard.

AI can reignite R&D productivity in France

Applying AI technologies to the innovation process can lead to scientific breakthroughs and increase innovation productivity. Every stage in the innovation cycle can benefit from AI's capabilities.

The innovation cycle…	Discover	Develop	Test	Implement
How AI can help…				
*More **efficient** R&D…*	• Patent landscape analysis • Analysing and summarising scientific literature	• Predicting and optimising drug candidates	• Simulating experiments • Predictive quality control • Automated anomaly control	• Intelligent manufacturing • Personalised service deployment • Adaptive operational systems
*More **disruptive** R&D…*	• Identifying novel biological or chemical pathways • Suggesting new research hypotheses	• Designing entirely new molecular structures • Creating breakthrough drug modalities	• Revealing unexpected interactions or effects • Suggesting alternative experiment approaches	• Developing self-optimising production systems • Creating entirely new business and delivery models

Note: There are numerous frameworks for innovation cycles across all of R&D and science. The illustration above is inspired by the stage gate model developed by S. Edgett and R. Cooper and the innovation process at Oslo University and Stanford University.
Source: Implement economics based on Stage Gate, Oslo University and Stanford University

AI is accelerating drug discovery—delivering more molecules, faster, and with higher clinical success

The pharmaceutical industry in France is heavily focused on R&D and is a major contributor to the economy, with labour productivity about twice the national average.

A recent study found that Chinese listed companies using AI for drug discovery have greatly increased their drug production.

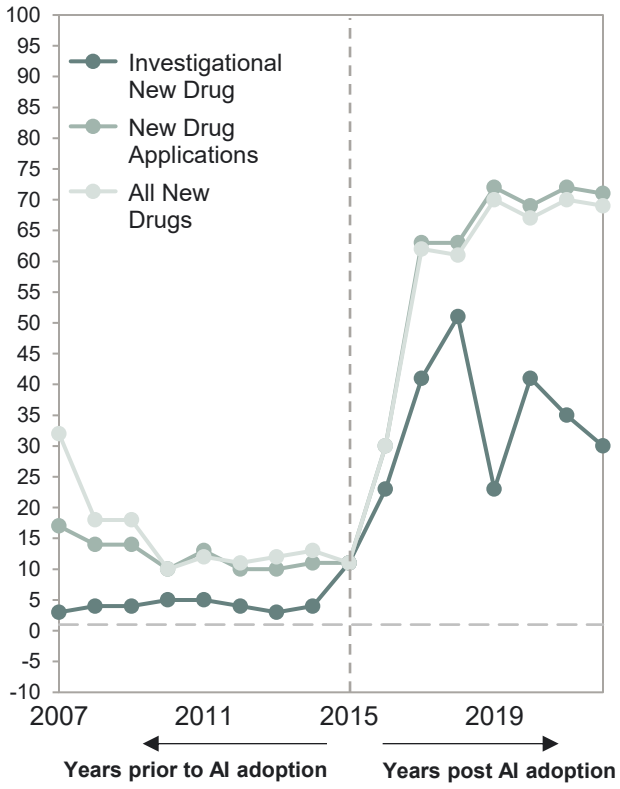
The number of AI-discovered molecules entering clinical trials is rapidly increasing among AI-focused biotech companies worldwide.

> *What took us months and years to do, AlphaFold was able to do in a weekend.*
>
> Professor John McGeehan, Former Director for the Centre for Enzyme Innovation (CEI)

AI adoption increases the share of innovative drugs…

Share of innovative drugs by application type among Chinese firms

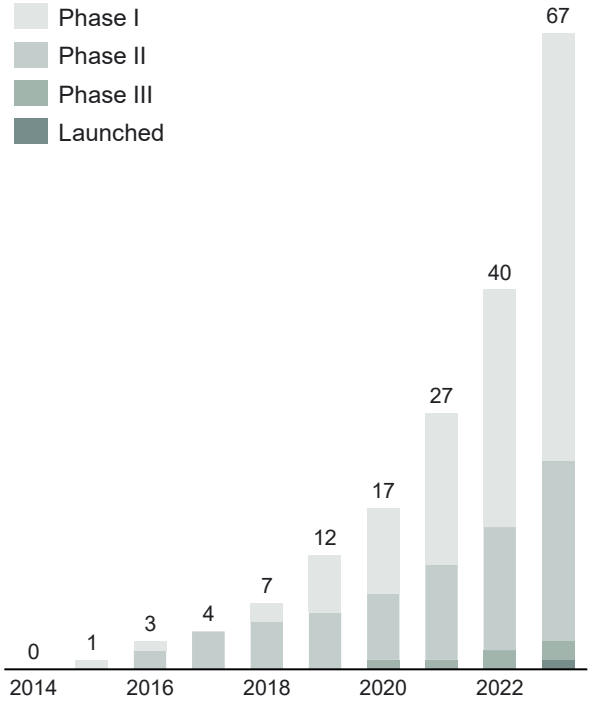
%



…and AI-discovered molecules are increasingly reaching clinical success

AI-discovered molecules by clinical phase in a sample of global biotech companies

No. of AI-discovered molecules in clinical trials



Notes: Labour productivity is measured as apparent labour productivity as defined by Eurostat. Left figure uses Chinese listed firms to investigate the role of AI in drug discovery and the impact of AI adoption on new drug R&D productivity. Right figure study is conducted using publicly available data from a compendium of >100 AI-native Biotech companies. These companies are headquartered in the United States, Europe, China, Japan and Israel among others (see here for supplementary data).
Sources: Implement Economics based on Eurostat, Wu et al. (2025), Google and Jayatunga et al. (2024)

AI can speed up climate research and is expected to enable savings in other sectors 3-5x larger than its own emission by 2035

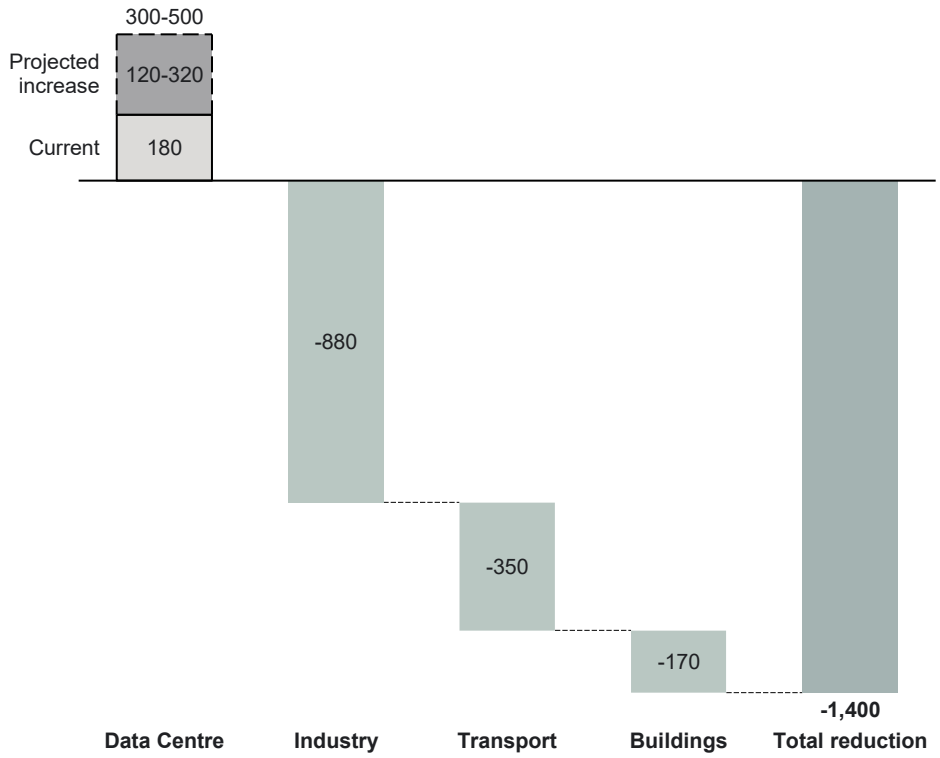
Existing AI applications alone can unlock major efficiency and operational gains that could reduce global CO_2 emissions by 1,400Mt by 2035, according to IEA, which is 3-5x more than the projected total data centre emissions.

Using AI to mitigate climate change could hold significant potential by:

- **Speeding up material discovery** for carbon capture, energy storage, and clean fuels.
- **Optimising climate models** enabling more accurate projections, and localised impact assessments.
- **Assisting in automated generation of scientific hypotheses** and experimentation, reducing time-to-discovery.

AI is a strategic enabler in climate R&D as it reduces the time and cost of innovation and unlocks new materials and models critical for decarbonisation.

Global direct and indirect emission changes in a widespread AI adoption scenario, 2035
Million tons CO^2



Emission reductions enabled by AI are 3-5x larger than projected data centre emissions.

Note: Respondents have a decision-making authority over climate or AI topics at their organisations.
Source: Implement Economics based on Implement Consulting Group, IEA, Google, and Verendel (2022).

Generative AI can boost R&D efficiency by 10-20%, varying by domain and measure

AI has the potential to improve the R&D process by compressing research timelines, revealing previously undetectable patterns in complex European datasets, and empowering Europe's scientists to lead on global grand challenges.

Studies show significant productivity gains from scientific AI, translating into R&D efficiency gains corresponding to 10-15% of overall R&D costs.

72% of 21,000 people in a global Ipsos and Google survey expect AI to have a positive impact on science

Estimated productivity effects from AI in R&D

Study	Estimated effect	Interpretation
Babina et al. (2021)	+18-20%	Increase in sales due to AI adoption through product innovation
Wu et al. (2025)	+13-17%	Increase in innovation output per ¥1B of R&D expenditure
Dell'Acqua et al. (2025)	+13%	Shorter time-to-solution for innovation teams allowed to use AI
McKinsey (2023)	+10-15%	Productivity delivered as percentage of overall R&D costs.

Source: Implement Economics based on Google, Babina et al. (2021), Wu et al. (2025), McKinsey (2023), and Dell'Acqua et al. (2025).

Besides increasing efficiency, AI can double the quality of innovation

AI can significantly boost the quality and disruptive potential of innovations.

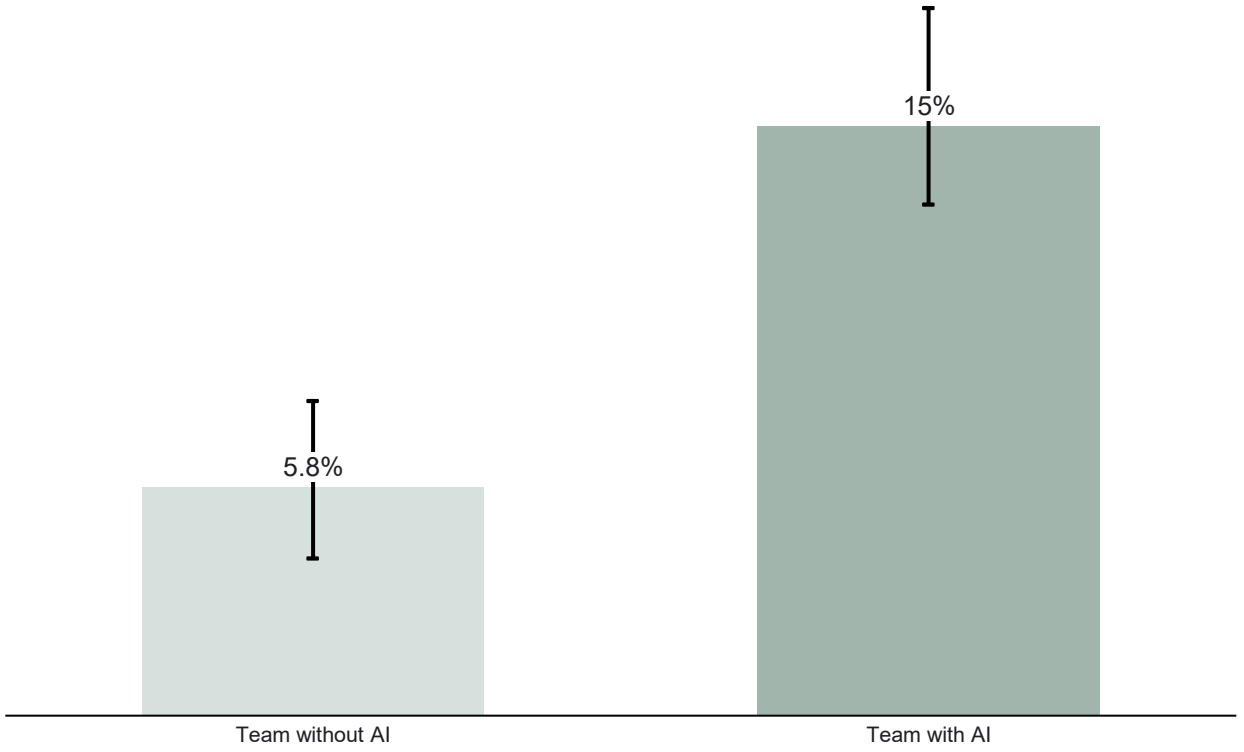
A recent study shows that teams using AI were three times more likely to develop top-decile solutions compared to those without AI (15% vs. 5.8%). This suggests that AI not only improves efficiency but also increases the likelihood of breakthrough, high-impact outcomes.

Another recent study on patent quality shows similar results, finding that patent citing AI publications are about twice as likely to be influential (cited ~2x more) and novel.

The following page assesses the potential economic impact of AI on R&D using published studies — though this likely understates AI's role as a catalyst for a new era of invention.

> *AI breaks down functional silos. Professionals using AI produced balanced solutions, regardless of their professional background.*
>
> Dell'Acqua et al. (2025)

Probability of being rated top 10% quality
%



Note: Treatment group estimates are relative to a single person working without AI (control group). Estimates on time reduction are significant at the 5% level. Individuals *with* AI were 16% faster than the control group. Research were conducted in an experimental setting where innovation teams were allocated assistance by AI technologies using randomisation. The set-up allows for causal interpretations of estimated effects.
Source: Implement Economics based on Dell'Acqua et al. (2025) and Bergeaud (2025, *not yet published*).

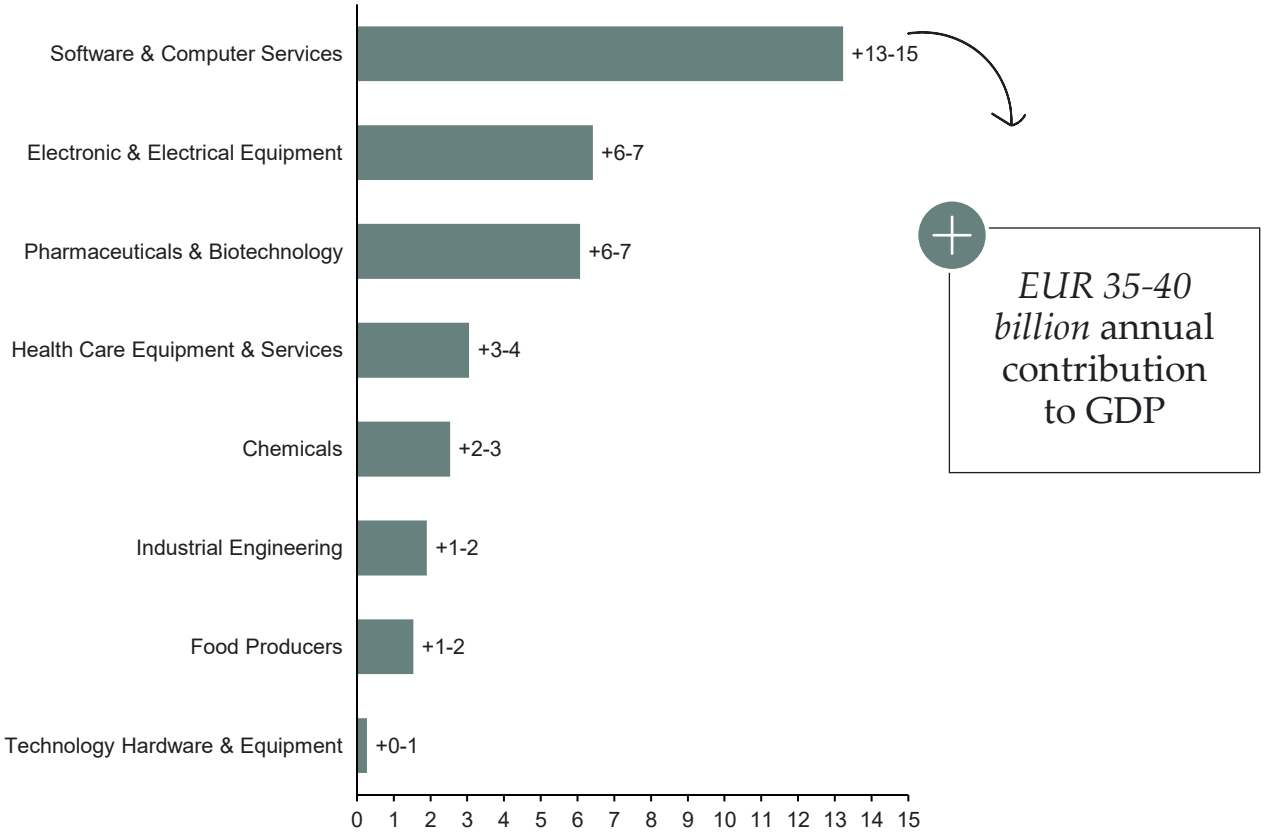
AI can significantly increase the efficiency of R&D processes potentially adding EUR 35-40 billion to French GDP

If AI can improve the efficiency of knowledge-based R&D investments by 10–15% — as several studies suggest, particularly in sectors with intensive research processes such as pharmaceuticals, chemicals, and advanced manufacturing — France could achieve substantial economic gains. We estimate that widespread AI adoption in R&D across these sectors could boost French GDP by up to **EUR 35-40 billion annually** by 2034**.**

Importantly, this estimate only captures private gains at the firm-level and does not account for the substantial positive spillover effects on the broader economy, which are exceptionally large for early-stage technologies due to imitation and recombination benefits.

> *[…] since product development involves lengthy experimentation with uncertain benefits, the ability of AI algorithms to quickly learn from large datasets can […] make the process of learning about promising projects more efficient.*
>
> Babina et al. (2024)

Contribution to France's GDP by 2034 from AI's boost to R&D process
EUR billion



Note: Firm-level productivity gains are estimated based on the top 800 innovators in the European economy using company profits and labour remuneration using sectoral averages from Eurostat. Productivity gains are then applied to relevant sector aggregates to reflect the entire French economy. Firm-level effects does not take into account spillover effects from R&D investments – thus the aggregate effects from AI in R&D are likely significantly larger. *Relevant sectors are drawn from McKinsey (2023) and Babina et al. (2021). GVA contributions are estimated using micro-level firm data from the EU's top 800 innovators. R&D efficiency gains are based on annual R&D spending and firm-level GVA, with value added effects calculated using R&D-to-productivity elasticities that vary by sectoral tech intensity44 Economic effects are calculated on a Gross Value Added (GVA)-basis, and then converted to Gross Domestic Product (GDP) using the EU27 GVA-to-GDP ratio from 2024. GDP is equivalent to GVA by including product taxes and excluding subsidies.
Sources: Implement Economics based on McKinsey, Eurostat, Kumbhakar et al. (2011), the EU industrial R&D investment scoreboard, and the EU innovation scoreboard.

The wider social return from these R&D productivity enhancements is many multiples of the innovation investment

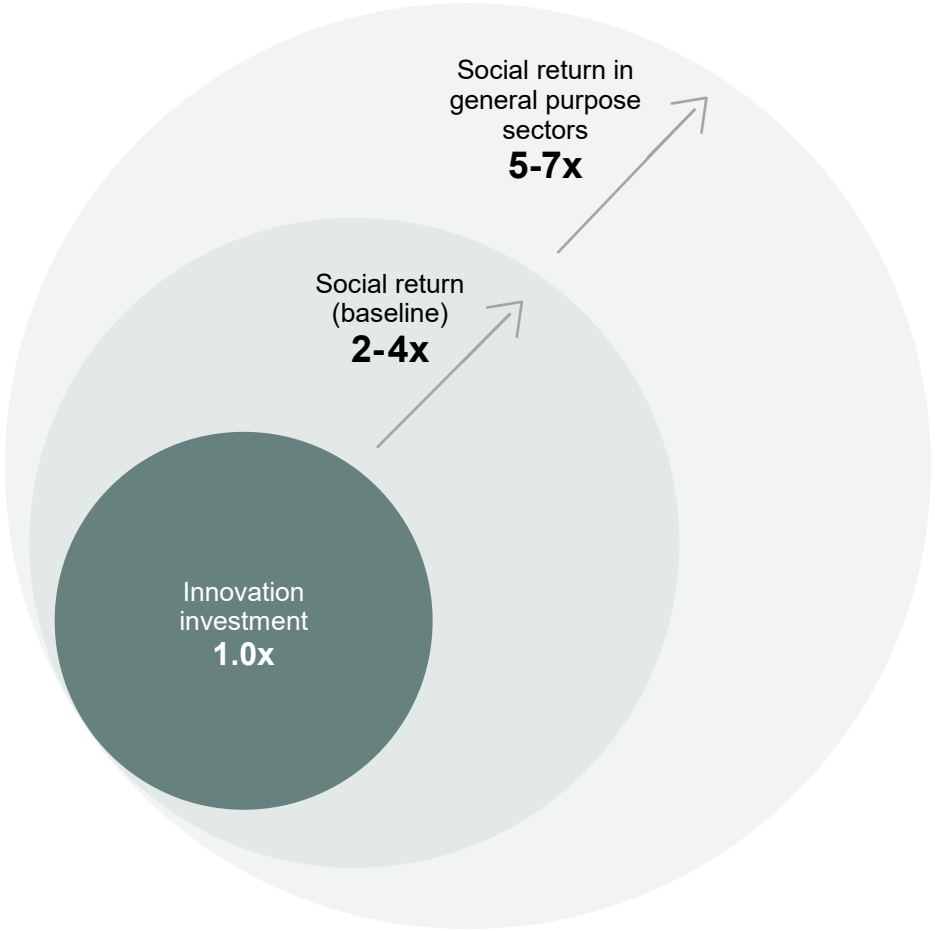
Private firms can only capture part of the financial returns from R&D investments, as innovation generates **large spillover effects** to other firms, sectors, and society at large.

Empirical studies consistently estimate that the social return from R&D is at least double the innovation investment, and may reach five to seven times in sectors characterised by general-purpose technologies.

This suggests that the broader economic impact **of AI-induced R&D efficiency could be two to seven times larger than the direct firm-level gains identified in this report**.

> *Even under conservative assumptions, it is difficult to find an average return below $4 per $1 spent.*
>
> Jones & Summers (2020)

Estimated social return on innovation investment



Note: Empirical studies estimate social returns on R&D investments to range from around x2 at the lower bound to up to x32 at the upper bound, depending on the social discount rate applied. Discount rates vary across countries, from 3.5% in the U.K. to 7% in the U.S., with the latter implying a return of 13.3 per unit of R&D investment. Returns are especially high for general-purpose technologies, which generate cross-sector spillovers. Against this backdrop, a return of x7 can be considered a conservative estimate.
Source: Implement Economics based on Jones & Summers (2020), and other studies that find similar results, including Bloom, Schankerman & Van Reenen (2013), Hall, Mairesse & Mohnen (2010), Bresnahan et al. (1995), Brynjolfsson et al. (2019), and IMF (2021).

Producing AI

Inventing with AI

Commercialising AI

PART 4

Commercialising AI

France needs to grow innovative digital businesses to drive the innovation and diffusion of AI

> *[…] productivity growth is the result of a combination of two forces: disruptive innovation brought about by new, dynamic start-ups challenging incumbents; and efficiency gains in mature traditional industries applying these innovations.*
>
> **The EU Commission** in A Competitiveness Compass for the EU

AI is becoming a core building block of modern start-up business models

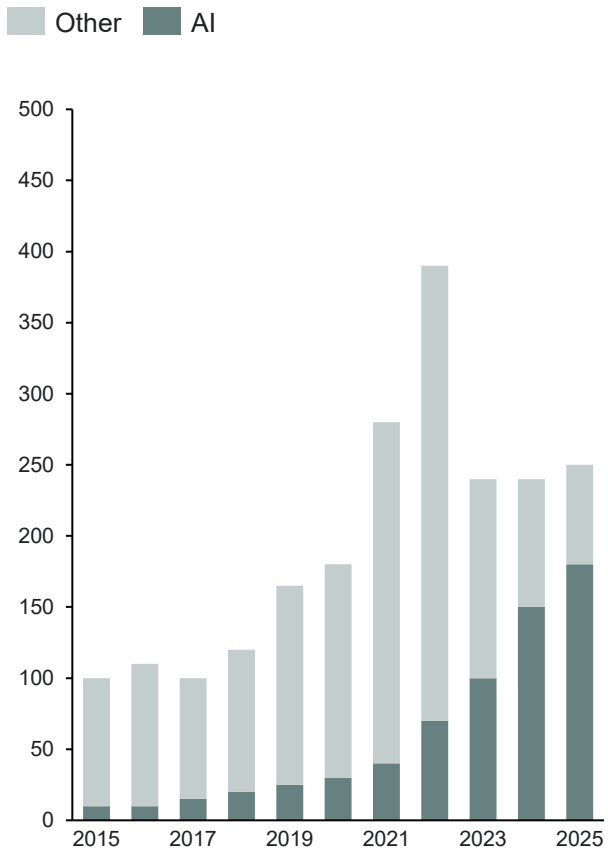
Startups are increasingly founded on AI technologies, reflecting both the growing entrepreneurial confidence in AI and its expanding role in driving innovation. Data from Y Combinator, a leading global start-up accelerator, shows a rapid rise in AI-based start-ups in recent years.

This global trend is visible in Europe, where **79% of innovative digital businesses (IDBs) are already using generative AI, going beyond adoption to adapt and develop it for business needs.** IDBs are defined as young firms with scalable business models and high growth potential that are either digital at their core or heavily enabled by technology. Classified as start-ups (2–50 employees), scaleups (51–500), or grownups (500+), they act as early adopters, active experimenters, and key contributors to the AI ecosystem.

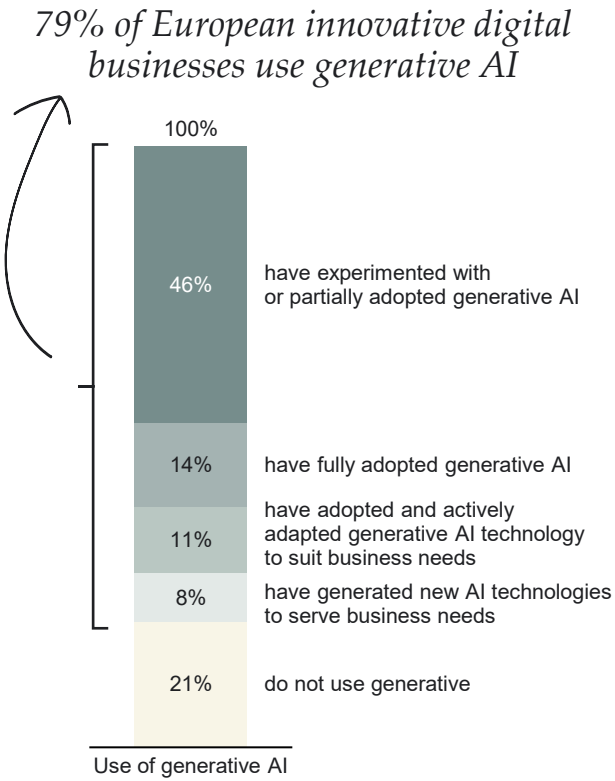
Successful AI start-ups outperform competitors by combining technical AI expertise with deep sector knowledge (e.g., healthcare, manufacturing) as found in a recent AI report co-funded by the EU.

As such, France's IDBs play a critical role in advancing AI development and diffusion.

Startups in Y Combinator by field globally
Count



Use of generative AI in European IDB's
% of respondents



Note: Y Combinator is an accelerator programme providing a public list of all YC-backed companies. Y Combinator data includes all start-ups accepted into its accelerator programme, encompassing both U.S. and international companies, with approximately 70% based in the U.S. No. of start-ups are reviewed as per winter in the year noted on the x-axis. Notion Capital survey data includes respondents from France, UK, Germany, Denmark, Poland, Spain, Netherlands, Sweden, Finland, Norway, Belgium, Ireland, Lithuania, and Estonia, N=866.
Source: Implement Economics based on Notion Capital, Y Combinator, JPMorgan and Eloundou et al. (2024).

Innovative digital businesses play a central role in developing applications that tackle business challenges

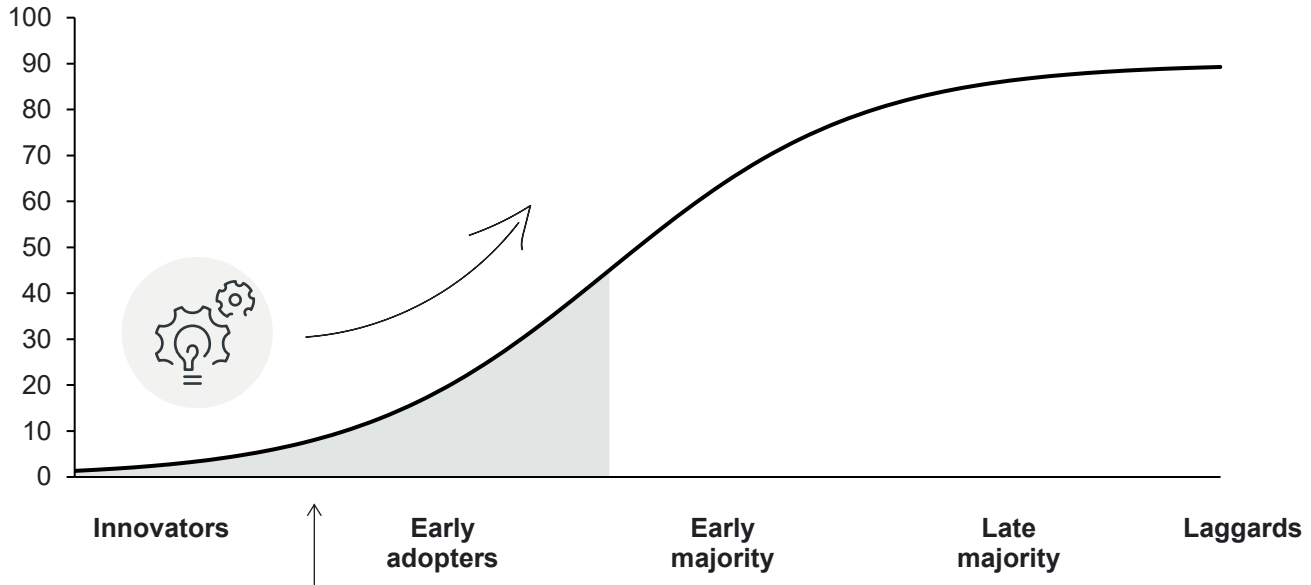
To unlock the full potential of AI, France needs application layer solutions that meet real needs across both the public and private sectors.

While companies of all sizes and types can tap into this rapidly growing opportunity, innovative digital businesses are particularly important because they can:

- Develop new AI tools and applications
- Enable businesses across all sectors to adapt and benefit from AI
- Demonstrate AI's value by being early adopters and innovators
- Inspire smart AI usage in other businesses
- Create competitive pressure on slower adopters

These firms amplify the opportunity by sparking broader uptake of AI applications throughout the economy.

Diffusion of AI technologies in France
%



Pigment

…improves the way businesses plan, make decisions, and drive growth with AI.

H Company

…is a Paris-based start-up building next-generation AI models for general purpose applications.

ShareID

…is a French start-up providing identity verification and fraud detection using AI.

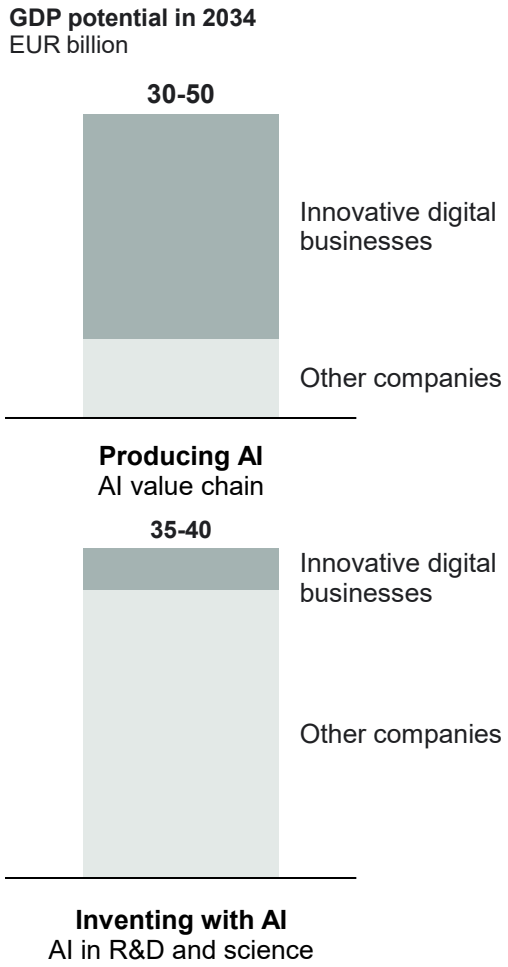
Source: Implement Economics based on Notion Capital survey (2024).

Commercialising AI is expected to drive 35–45% of the innovation potential

Innovative digital businesses are central to realising France's AI innovation potential, particularly within AI production. Their contribution varies across the two AI innovation potentials:

- **Producing AI:** Innovative digital businesses are expected to play a very important role in expanding the AI value chain in France, especially within AI applications and services, where Europe has strong innovation and attracts funding. We assess that 65–75% of the value chain expansion can be driven by innovative digital businesses.
- **Inventing with AI:** Innovative digital businesses will also contribute to the potential of inventing more with AI in Europe. In Europe, 80% of R&D spending occurs in large corporations. Yet, innovative digital businesses play a pivotal role in transforming research. They develop AI-native discovery methods and tools that boost R&D productivity across the economy, including in established sectors. We assess that 10–15% of the AI invention potential will be captured by innovative digital businesses.

Combined, we estimate that innovative digital businesses will be key to the AI innovation potential in France, and their commercialisation of AI will drive **35–45%** of the AI innovation potential.



The AI value chain expansion consists of three segments

- **AI infrastructure:** IDBs play a relatively small role in this capital-intensive layer, which is led by established hyperscalers and semiconductor giants. IDBs contribute with novel hardware and optimisation software.
- **Foundation models:** IDBs such as Mistral AI are key players, and French IDBs are expected to play a large role in this segment, e.g., with open-source and/or specialised AI models.
- **AI applications and services:** IDBs are expected to dominate in this segment. They are expected to create the vast majority of new AI-powered applications and industry-specific solutions for the French economy.

Note: The estimation of the distribution of innovative digital businesses across different parts of the potential is based on market share data, survey results, and industry studies. The future composition of innovative digital businesses in these domains is naturally subject to uncertainty.
Source: Implement Economics based on Synergy, the European Economic and Social Committee, State of European Tech Survey, Nasdaq (2023), Vellum (2025), Windsor (2024) using Dealroom data, and Orbis data, European Commission, and European Innovation Scoreboard 2023.

Successful innovative digital businesses are not only key for accelerating AI diffusion, they are also around 130% more productive than European firms on average

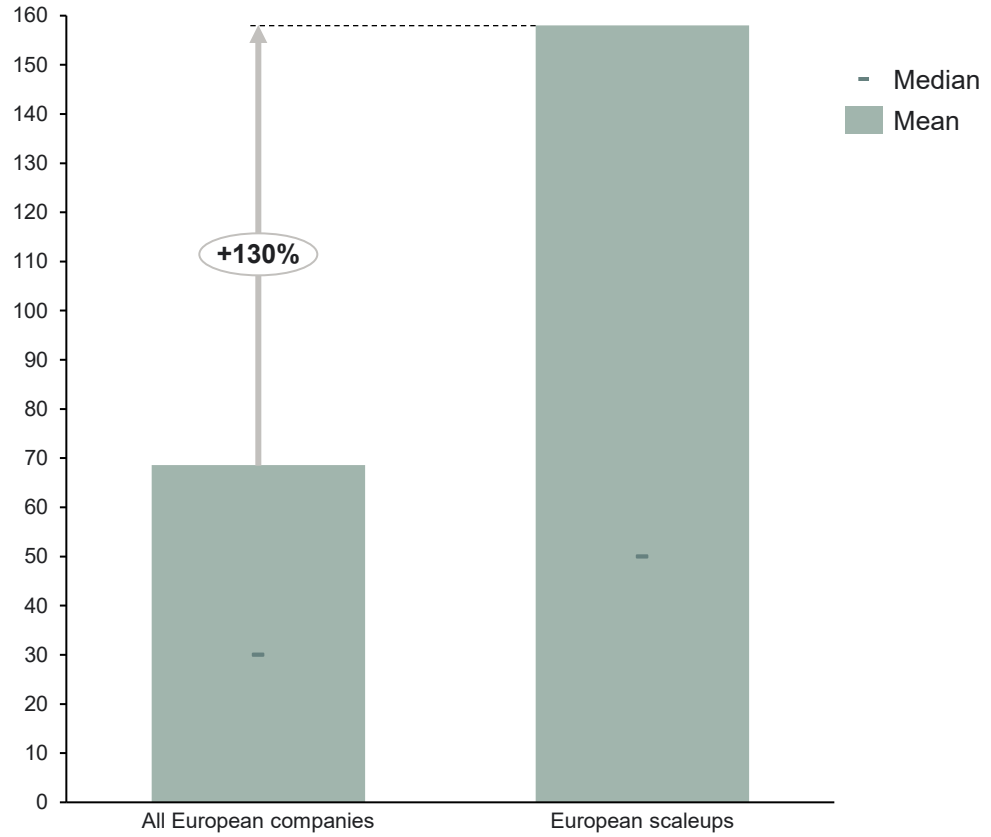
European innovative digital businesses are not only key to innovation and diffusion of AI in the broader economy; they also add significant direct economic value through higher productivity.

Innovative digital businesses that successfully scale have an outsized contribution to the economy by being significantly more productive than average European firms.

A recent study by the European Investment Bank (EIB) finds that scaleups are around 130% more productive than European companies on average. The EIB defines scaleups as high-growth firms that have reached a valuation between USD 500 million and USD 10 billion, and the study is based on a large sample and a long observation period, which makes the results robust.

> *European start-ups and scaleups are strategic drivers of the EU's competitiveness. […] accelerating innovation, creativity and sustainable growth.*
>
> **The European Commission** in the EU Startup and Scaleup Strategy

Labour productivity in the EU: Scaleups vs. other companies
Value added per employee, thousand EUR



Notes: The EIB study relies on deal-level data from PitchBook and follows cohorts of European companies that reached scale-up status between 2013 and 2023. The economic potential shown on page 68 of this report uses Dealroom data and defines scaling success based on company size by employment count. Both PitchBook and Dealroom data identify the same group of high-growth firms.
Source: Implement Economics based on EIB and The AI innovation opportunity in Sweden, Denmark, Finland, Norway, Lithuania, Belgium, the Netherlands, and Ireland.

France needs more innovative digital businesses to be on a par with the best

Innovative digital businesses are AI accelerators, turning AI models into real-world solutions.

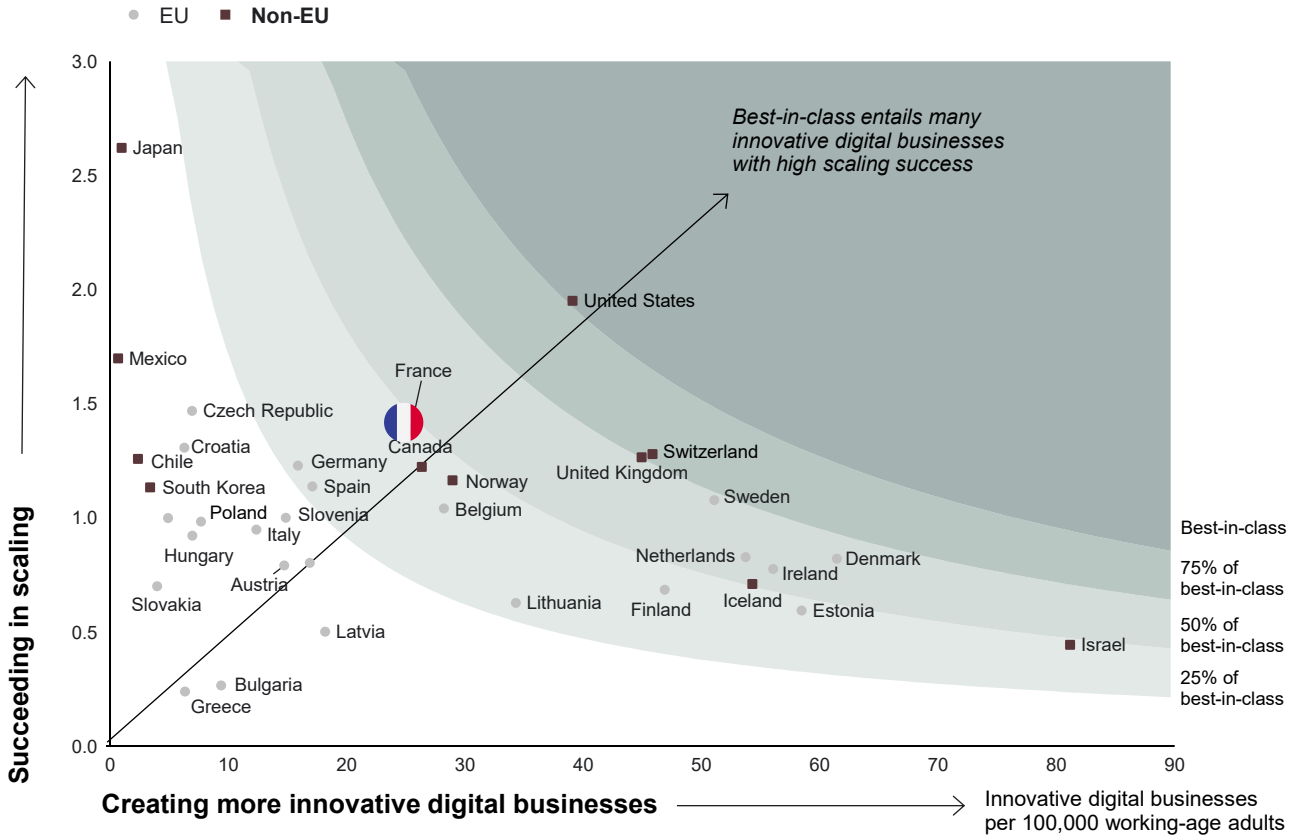
Although France leads the EU in the share that scale into grownups, it has fewer such businesses compared to leading OECD countries, risking slower deployment and a weaker collective AI potential.

Bridging this gap can unlock a large part of the growth potential in AI applications and services for France.

> The core problem in Europe is that new companies with new technologies are not rising in our economy.
>
> **Mario Draghi** in The Future of European Competitiveness

France is leading the scaling of innovative digital businesses into grownups but is lagging slightly behind OECD leaders in concentration of innovative digital firms

Share of grownups[1]
% of total number of innovative digital businesses



Note: 1) Grownups are defined as established innovative digital businesses that have successfully scaled and employ more than 500 people.
Source: Implement Economics based on Dealroom (2024), Eurostat, McKinsey and EIB.

Growing and scaling more innovative digital businesses is crucial for AI innovation in France and could boost GDP by EUR 90 billion

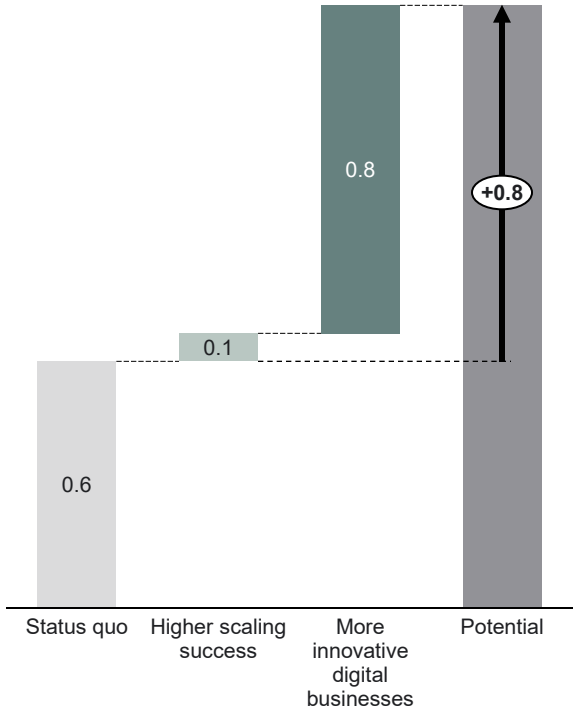
Scaling and growing innovative digital businesses is crucial in France's competitiveness, and an important enabler for capturing the broader growth opportunity in AI applications and services. Their success plays a critical role for realising the AI innovation opportunity in France.

Improving France's stock and success of innovative digital businesses to be proportional to the average rate of the top three leading OECD could contribute around EUR 90 billion annually (gross). The impacts stem from:

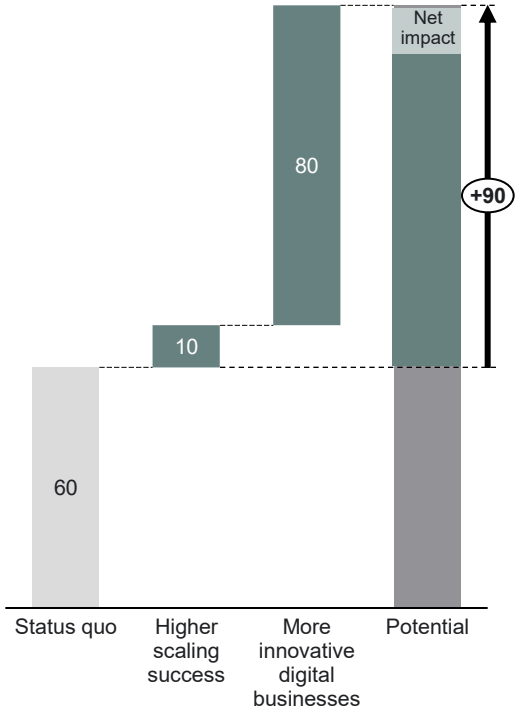
- **Higher scaling success of innovative digital businesses.** Matching the scaling success of the top three OECD countries could create 65,000 high-value jobs and add EUR 10 billion annually.
- **More innovative digital businesses.** Reaching the rate of the top three OECD countries in terms of entrepreneurial activity could create 800,000 high-value jobs and contribute EUR 80 billion per year.

Considering that workers in new jobs may have been employed in jobs with average French productivity, the net impact on the French economy is EUR 10-12 billion.

Jobs in innovative digital businesses in France
Million



Annual value added by innovative digital businesses in France
EUR billion



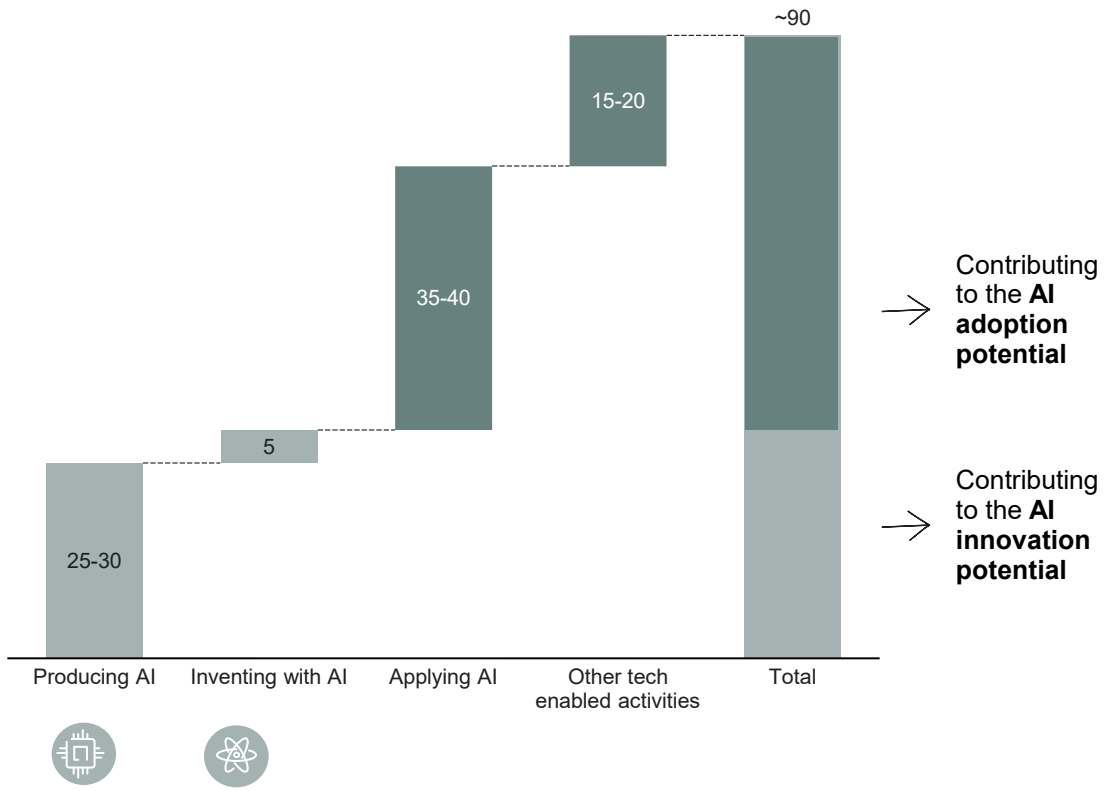
Note: 'Higher scaling success' is defined as France's performance corresponding to the average of the top three OECD countries (UK, Switzerland and the US). Likewise, the scenario of "More innovative digital businesses" is defined by the average performance of the top three OECD countries (Ireland, Denmark and Estonia). This report's calculations do not presuppose a given timeline to achieve the potential.
Source: Implement Economics based on Windsor (2024) using Dealroom data and the Orbis database.

Commercialising AI is key to both the AI innovation potential and the AI adoption potential

Innovative digital businesses are central to France's AI innovation potential, particularly in AI production. Their contribution varies by segment:

- **Producing AI:** Innovative digital businesses are expected to play a very important role in expanding the AI value chain in Europe, especially within AI applications and services.
- **Inventing with AI:** Innovative digital businesses also contribute to the AI invention potential, and a small share of this potential is expected to be captured by innovative digital businesses.
- **Applying AI:** The most significant role of innovative digital businesses is in applying AI to grow their businesses. These businesses are also central to spreading AI across sectors and can demonstrate the value of AI as early adopters and innovators, thereby inspiring smart AI usage in other businesses.
- **Other tech-enabled activities:** While around 80% of Europe's IDBs are using AI to drive their business, there are also other types of tech-enabled businesses, which is part of the overall potential of EUR 500 billion from creating and scaling IDBs at the pace of leading OECD countries.

Annual gross contribution to French GDP from growing and scaling more innovative digital businesses
EUR billion



Note: AI adoption involves using AI to enhance productivity across sectors of the French economy, whereas the AI innovation potential encompasses building infrastructure, developing models and applications, and applying AI in science and R&D. The estimation of the distribution of innovative digital businesses across different parts of the potential is based on market share data, survey results, and industry studies. The future composition of innovative digital businesses in these domains is naturally subject to uncertainty.
Source: Implement Economics based on synergy, European Economic and Social Committee, State of European Tech Survey, Nasdaq (2023), Vellum (2025), Windsor (2024) using Dealroom data, and Orbis data, European Commission, and European Innovation Scoreboard 2023.

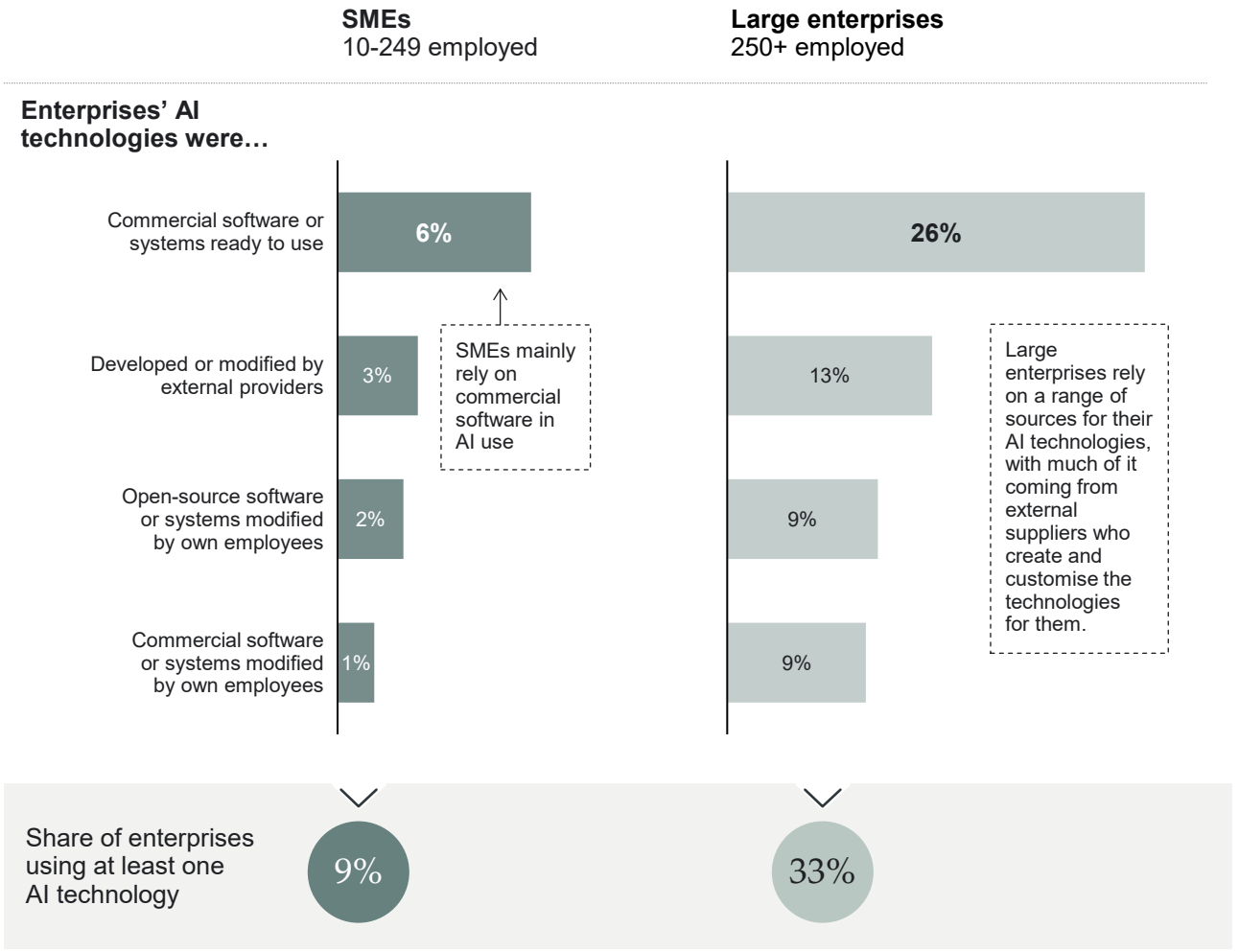
French SMEs are especially dependent on AI technologies that are commercially developed and ready to use

99% of French businesses are small and medium-sized enterprises (SMEs), providing jobs to over 11 million people.

While innovative digital businesses present a large economic opportunity and channel for diffusing AI, all SMEs stand to benefit from the adoption of AI. However, AI use among SMEs is at 9%, significantly lagging behind the 33% adoption rate of large enterprises.

This disparity indicates that SMEs have different needs when adopting AI services. SMEs depend more on ready-to-use commercial technologies.

Therefore, widespread AI adoption in France's many SMEs relies on an open, well-regulated market, where they can choose the AI service that best fits their needs.



Note: *Note that the concept of AI use and AI adoption differ. The survey is based on the indicator "Enterprises use at least one of the AI technologies" and thus superficial use would also show up in the survey results. The estimates should be interpreted with this in mind.
Source: Implement Economics based on Eurostat and DESI.

5. The way forward

Suggestions to boost France's AI innovation potential

> Over the past two decades, France and Europe have done too little, too late, with little commitment to technological innovation and belated regulation.
>
> **French Artificial Intelligence Commission** in Our AI: Our ambition for France

France is accelerating its AI leadership with the National Strategy for AI

The French government is executing its National Strategy for AI (*Stratégie Nationale pour l'IA*) to position France as a global leader in artificial intelligence. Initially launched in 2018 and now accelerated under the *France 2030* investment plan, the strategy aims to build a world-class research ecosystem, foster the emergence of AI champions, and deploy AI across key economic sectors.

Phase 1: Building the foundation (2018-2021)
This phase focused on creating a strong research and talent base

- Launch of National AI Strategy
- Creation of 3IA Institutes
- Talent Development Programmes
- Initial Public Investment
- Confiance.ai Program
- Global Partnership on AI (GPAI)

Phase 2: Acceleration and industrialisation (2022-2025+)
This phase, integrated into the 'France 2030' plan, focuses on application, scale-up, and sovereignty

- Integration into France 2030
- Launch of AI Cluster
- IA-Booster Program
- Launch of Generative AI Committee
- Sovereign AI infrastructure
- Regional AI Clusters
- Sector-Specific AI Deployment
- Support for AI Startups & Scaleups
- Growing Ecosystem

Source: Implement based on the France's National strategy for AI.

France is laying a strong foundation for AI innovation — that we have to build on

The **French government** is already advancing strong initiatives, focused on innovation and attractiveness to unlock the AI potential. We could further amplify these efforts.

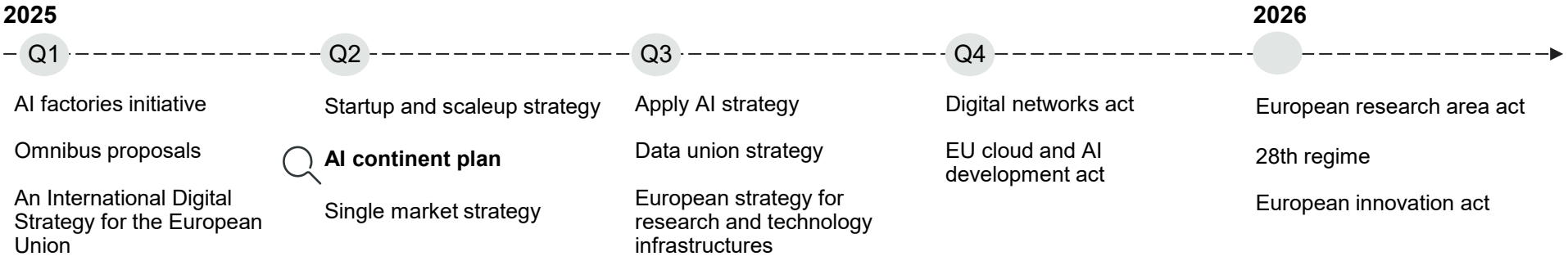
Encourage AI investments	Develop infrastructures	Cultivate AI talents	Accelerate the research to industry pipeline	Implement a supportive regulatory framework
Support scientific research start-ups with grants and joint public procurement. Require that contracts over EUR 5 million include an AI innovation component**.** **Consolidate fragmented public R&D funds to incentivise risk-taking** and target 'moonshot' AI projects in Europe's strategic sectors. **Stimulate private investment by reducing bureaucracy and strengthening the EU single market.** Introduce 30% **tax credits for SMEs** adopting AI solutions, similar to the R&D tax credit. Establish a France **AI Growth Fund** of EUR 1 billion to co-invest with venture capital in AI scale-ups.	**Expand data centres capacity and modernise electricity grids** to ensure a reliable and clean energy supply. Position France at the forefront of a joint European effort to scale shared data centres, pooling resources across countries to strengthen the continent's digital sovereignty and benefit from large scale effects **Streamline and harmonise permitting processes for data centres**, digitising applications, and clarifying regulatory requirements to overcome current delays. Prioritise co-finance and steering of the **super-computer expansion** in the EU (jointly with Germany) and ensure these are run by operators who have the expertise.	Fund **50-100 new AI professorships** by 2027. Expand the Passeport Talent scheme with a **dedicated fast-track** for AI researchers. Create **education vouchers for SMEs** to upskill in applied AI. **Encourage Public-private partnerships to enhance skills development** and ensure that AI tools meet real-world scientific needs.	**Foster entrepreneurship among researchers** by introducing a standardised contract template for academic spin-offs to reduce IP negotiations and lower legal costs for researchers transitioning into entrepreneurship. Establish a **dedicated AI subsidy scheme** disbursed only to projects that demonstrate formal collaboration with at least one French or European university or public lab.	Support **EU regulatory simplification** agenda and make sure it applies for companies of all sizes. **Reorient precautionary tech regulation** towards pro-innovation initiatives. Creating harmonised, interoperable regulations, particularly concerning **privacy and cross-border data flows. I**nitiatives like the Data Union Strategy can unlock immense value. Maintain a **workable EU copyright regime**, vital for AI models development. Clarify the meaning of a **sovereign solution** at the EU level and, if different, in France (2021 Cloud of Trust doctrine). Create an AI incident reporting system managed by INESIA to collect and **analyse failures or misuse cases**. Launch **regulatory sandboxes** in health, transport, and defence sectors by 2026 to test ethical AI deployment.

Source: Implement Economics based on documents in links above.

6. Appendix

The European Commission is working to close the innovation gap with the Competitiveness Compass

The European Commission is working intensely to boost competitiveness and innovation. In January 2025, the Commission presented a new competitiveness model based on innovation-led productivity. This strategic focus on innovation is vital for Europe to strengthen its economic security and uphold its autonomy. The Compass aims to nurture Europe's strengths, harness its resources, and eliminate barriers to growth.



Five horizontal enablers of the Competitiveness Compass

Cutting red tape	Removing barriers to the Single Market	Enabling more efficient financing	Promoting skills and quality jobs	Ensuring better coordination

In the next two pages, we will explore how the Competitiveness Compass initiatives can help boost innovation and examine key elements of the AI Continent plan. While the Commission is on the right track, we will suggest a few recommendations to enhance existing initiatives.

Source: Implement based on the European Commission.

The Competitiveness Compass paves the way for enhancing European innovation

The **Competitiveness Compass** presents strong initiatives that aim to restore Europe's dynamism and boost economic growth with five horizontal enablers:

	Regulatory simplification	**Removing barriers to the Single Market**	**Enabling more efficient financing**	**Promoting skills and quality jobs**	**Ensuring better coordination**
Commission initiatives…	The Startup and scaleup strategy proposes simpler rules, including a European 28th regime, to reduce administrative burdens and costs for new businesses. The Omnibus proposal aims to bundle and simplify EU rules and compliance in sustainable finance reporting, especially for SMEs. The coming European Innovation act will promote regulatory sandboxes.	The Single market strategy identifies and tackles the most harmful barriers to intra-EU trade and investment like limited recognition of professional qualifications and fragmented rules on packaging.	The Savings and investment union strategy aims to effectively channel savings into investments, offer citizens better access to capital markets and businesses easier access to capital. The Startup and Scaleup Strategy aims for better funding, a larger EU venture capital market, and greater involvement from institutional investors, supported by initiatives like the Scaleup Europe Fund.	The Union of Skills aims to provide education and training by launching the "Skills Guarantee" pilot, strengthening EU Skills Academies, and attracting global talent with initiatives like "Choose Europe" and the EU Talent Pool. The "Blue Carpet" programme aims to attract and retain top talent by improving access to skilled individuals.	The competitiveness coordination tool aims to align EU and national implementation of shared policy objectives, supported by the competitiveness fund, which consolidates multiple existing financial instruments.
Recommendations enhancing current efforts…	To enhance regulatory simplification (e.g. consistent reporting and content legislation), EU policy should **reorient precautionary tech regulation to actively promote innovation**, as current regulations on AI and data privacy may reduce the productivity gains of AI adoption by over 30%. **Assess economic impacts of proposed tech regulations**, ensuring that they foster rather than stifle innovation, taking into consideration the impact on a broad set of stakeholders in a holistic way.	The Commission should ensure a growth environment for start-ups, including access to the best AI solutions, as well as keep supporting large businesses once they reach scale. Thus, the Commission should **avoid regulatory asymmetry, ensure consistent regulation** for all business sizes, and encourage initiatives like the **28th regime** to support the growth of new innovative businesses.	The Commission's current initiatives to **cut red tape** will help attract capital to AI applications and services, the biggest growth opportunity in the AI value chain for Europe, potentially boosting French GDP by EUR 20-35 billion. Europe's significant saving surplus is not being fully leveraged, with around EUR 300 billion of it flowing abroad, mainly to America. The Commission should **enable Europeans to invest in the technologies and companies shaping Europe's future,** as recognized by the Savings and Investment Union Strategy**.**	Incentivise researchers to engage in **technology transfer** and venture creation by incorporating entrepreneurial achievements into academic progression and leveraging support from programmes like Horizon Europe and the EIC accelerator.	Launch **joint public procurement** to scale up demand, leveraging the public sector's 20-25% share in the generative AI adoption potential. Public R&D funds in Europe are fragmented, lacking incentives for risk-taking and commercialisation. Instead of broad R&D tax credits, **funds should target "moonshot" or mission-oriented** projects to advance in critical technologies like AI, biotechnology, and clean energy as outlined in the European economic security strategy.

Source: Implement Economics based on the European Commission.

The AI Continent Plan aims to capitalise on Europe's strengths to establish it as a global leader in AI

The European Commission's **AI Continent Action Plan** highlights that harnessing the AI opportunity requires development, adoption, and sustainable infrastructure, focusing on five key domains:

	Computing Infrastructure	High-quality data	Strategic AI innovation and adoption	Strong AI talent base	Facilitate compliance with the AI Act
Commission initiatives…	Scale up the EU's AI computing infrastructure with AI Factories and Gigafactories to provide massive power for model training and foster collaboration. This includes mobilising EUR 20 billion via the InvestAI Facility and at least tripling EU data centre capacity with the Cloud and AI Development Act	Enhance access to high-quality data for AI innovators through a new Data Union Strategy, improving interoperability and availability across sectors. Data Labs, integrated with AI Factories, will pool and share data, linking to Common European Data Spaces and simplifying compliance	Stimulate AI algorithm development and accelerate adoption across EU strategic sectors and public services via the upcoming Apply AI Strategy. European Digital Innovation Hubs will become "Experience Centres for AI" to support adoption, complemented by an AI in Science Strategy and GenAI4EU investments in advanced AI models.	Strengthen Europe's AI talent base by reinforcing skills, improving AI literacy, and addressing shortages through excellence in education, training, and research. It will enlarge the AI specialist pool, incentivize talent retention, and attract global talent via the AI Skills Academy, which will offer education, apprenticeships, and fellowship schemes.	Foster a positive regulatory environment by facilitating AI Act compliance, particularly for smaller innovators. This includes launching the AI Act Service Desk and establishing regulatory sandboxes to streamline procedures and ensure a predictable single market for AI.
Recommendations enhancing current efforts…	The globally integrated AI infrastructure value chain means no region can be self-sufficient. Europe needs 2-3 times more cloud capacity for future AI demand. To expand efficiently, Europe should, in line with the International Digital Strategy, **partner with cost-effective, innovative, and trusted private providers, including non-European ones, under clear and fair rules.** **Invest in grids to ensure they are resilient, interconnected, and decentralised**, in line with the European Grid Package.	Unlocking France's AI potential in development, adoption, and innovation requires access to vast and high-quality data. This entails **preserving the EU's copyright system and avoid adding new obligations or caveats that will block or hinder AI development**. **Open public and private sector data** is essential to realise the EUR 35 billion potential from increasing the efficiency of R&D processes in France with AI in sectors like pharma, software development and advanced manufacturing**.**	**Access to powerful AI models and infrastructure is paramount**; lacking these could shrink France's AI adoption potential from 9% to 2% of GDP, risking around EUR 160 billion. The Apply AI initiative should **broaden its current focus on 'industrial use cases'** to encompass five key sectors: business services, IT and finance, wholesale and retail trade, the public sector and tourism. These sectors collectively represent 70% of the potential for AI adoption.	Successful AI start-ups excel by integrating technical AI expertise with in-depth sector knowledge, underscoring the value of **interdisciplinary collaboration**—also a focus of the Union of Skills strategy. Leverage **public-private partnerships** to develop AI skills and meet real-world scientific needs, such as the Google DeepMind and EMBL-EBI collaboration offering a course on using AlphaFold2 for structural biologists.	Implementation of new regulation like the AI Act **must avoid creating excessive uncertainties** or burdens that could deter investment, like the GDPR has been shown to do. Timely **Codes of Practice** are essential for companies to navigate the industry with confidence. Additional regulation on AI should have a **clear cost and benefit analysis**.

Source: Implement Economics based on the European Commission.

About this report

This report is developed in collaboration between Dr. Antonin Bergeaud from HEC in Paris and Implement Economics, the Economics Practice of Implement Consulting Group. The research is developed in partnership with Google to explore the opportunities for France to accelerate innovation, productivity, and competitiveness with AI.

In addition to Dr. Antonin Bergeaud, the authors of the report are Bodil Emilie Hovmand, Sissel M. Andersen, Anders Thor Lundberg, Alexander Jagd Oure, and Martin H. Thelle. Martin H. Thelle is a senior partner in Implement's Economics Practice, while the other authors are economists in the same practice, all based in Copenhagen.

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