ODYSSEY

# Europe’s AI strategic autonomy

Foundations, challenges, and paths to success

*by Axel Tombereau, Managing Partner*

## What is strategic autonomy?

In Europe, strategic autonomy is a political concept born in 2013[1] before expanding beyond the defense framework to other areas such as energy, economy, and technologies. Europe’s Joint Research Center (JRC) defines strategic autonomy as “*the capacity of a country or region to pursue strategically important activities free of foreign interference*.[2]” It aims to be "*both a backbone and an immune system against external attacks*“,[3] without excluding vital interdependencies.

Over the past half-decade, the superimposition of geopolitical, macro-economic, climate and health crises has triggered a series of calls[4] for European strategic autonomy, accelerating the concept's spread. However, open strategic autonomy in Europe is not the product of events alone but resulted from a drive by policymakers to improve its economic competitiveness, with foundations rooted in specific strategic programs[5] in force before 2019.

## Europe's AI strategy reaches a tipping point

Since Jan 2025, the European Union has shifted from AI awareness to concrete action plans, accelerating its agenda towards AI strategic autonomy. The EU AI Act has lately been completed with the Invest AI initiative and AI Continent Action Plan.

The new European strategic framework for AI addresses five key challenges: building computing infrastructures, accessing quality data, accelerating AI adoption, strengthening the talent pool and AI skills, and fostering regulatory simplification.

Europe unlocks an unprecedented €200 billion investment to close its infrastructure gap and grow its regional AI ecosystem. €20 billion will serve to build 13 AI Factories and up to 5 Gigafactories.

Europe's opportunity window for AI strategic empowerment is still open and narrowing. Europe is lagging in terms of adoption.

## Featured Insights

Europe's core strengths are fundamental research and development, world-class advancements in AI-synergetic domains such as cybersecurity, quantum computing, and renewable energy production capacities.

Across the AI value chain, Europe faces specific challenges in managing the semiconductors supply chain, consolidating its cloud market, scaling up AI champions, and reducing electricity prices.

Its 5 key success factors are securing execution, strengthening control over the electronics production chain, designing a cohesive technology strategy beyond AI, framing a compelling energy strategy, and forming viable alliances.

A smart trickle-down strategy could see Europe's investments pour into four critical ecosystem spots: AI infrastructure, AI innovators, mostly deep tech startups, AI SAPS,* and strategic adjacent industries or vertical markets.

A narrow range of alternative options might remain open for Europe's AI empowerment, such as specialization in AI SAPS, vertical hyperspecialization, quantum leapfrog, or circumscribed efforts on AI for defense.

Strategic autonomy shall not be an ultimate goal but rather an intermediate milestone to accelerate value creation, boost competitiveness and build further foresight capabilities. The long-term value-creation potential of AI remains unknown.

*: SAPS is an acronym created by Odyssey for Software, Applications, Platforms and Services.

## 1. The global race for AI supremacy calls for a new European model

The US and China are vying for global leadership in frontier technologies such as AI, semiconductors, cybersecurity, and quantum computing.

A technological leadership takes the form of technical advance, thanks to the lead temporarily acquired in research and development in one or more fields (speed), or economic domination, thanks to a high volume of capital injected or economic weight represented by a given technological industry (power). These two forms of domination are often correlated.

These mega-powers struggle for "moonshots", breakthrough innovations that enable technical and, hopefully, economic strides. Technological advancement towards artificial general intelligence (AGI) is a declared objective of the Stargate[6] program, which devotes $500 billion over five years to developing new AI infrastructures in the United States.

In their wake, many of the world's powers are engaged in a frantic AI race for their multifaceted competitiveness. This technological escalation is vertiginous, as is its capital intensity, which may discourage some challengers on a shoestring budget, bogged down in a war of attrition. Most frontier technologies, with AI at the forefront, are dual technologies, with both civilian and military applications. A tenacious ambiguity about the fundamental objectives pursued is intrinsically attached to the AI race of nations. Strengthening their defense capabilities against a backdrop of geopolitical tensions of varying intensity is undoubtedly part of their plan. Each country has its own drive in the AI race, swinging between defense and economic competitiveness. Europe officially asserts its dual objective of economic growth and preservation of fundamental democratic rights.

It would be overly simplistic to reduce the current state of the world to a hawkish rivalry between the hyperpowers of the US and China for technological supremacy, however hegemonic they may be in their respective zones of influence. The role of AI can not be overstated, as it "*has become a focal point in the global decoupling between the US and China*[7]". This duality nevertheless accentuates the polarization of different regions, forcing other powers to deploy ingenious strategies to adapt to this situation.

Frequent strategies[8] vis-à-vis mega powers include (1) adhesion or vassalization in exchange for protection, (2) satellisation, by-stand or distanciation to dodge collateral damages, (3) hedging or apparent neutrality, (4) hyperspecialization in coveted technologies or business domains, worth of non-aggression from external powers. Most nations resort to alliance or avoidance strategies because few are ready to exercise new leadership due to a lack of power, interest, or ambition.

Some foreign powers may stand out on the international scene thanks to their geostrategic singularity. India asserts itself as a future pivotal state with growing technological power on the global chessboard. The United Arab Emirates is learning to work simultaneously with the United States and China to establish itself as a technology hub where oil windfall funds AI and blockchain developments.

In the grand scheme of things, Europe seems predestined to embody an alternative way, albeit its new model must be invented.

Europe might consider three tectonic shifts to design its new model. First, the rejection by a specific part of the world of a form of Western multilateralism that had natively infiltrated the central bodies of international governance shall not be overlooked. Second, pragmatic strategies based on transactional efficiency are taking over from dogmatic postures. Archaic technological policies based on radical authoritarianism, such as "compliance or sanctions," run the risk of instantaneous failure. Third, overcoming the duality between China and the US, or more broadly between the Western and BRICS+ countries, is not on today's agenda. Surpassing this dialectical crisis would nevertheless be a likely prerequisite for a more stable new world order to emerge. This contingent of symptoms points to a surging world leadership crisis.

In this context, the quest for AI leadership shall not be a palliative to global governance shortcomings. Although it may accelerate the transformation of political power, AI would instead join the cohort of available means to serve new political projects to be defined. Given its deep technological, military, economic, and political impacts, AI becomes a relevant gauge of nations' power.

The race is speeding up with the advent of the agentic AI era, strengthening the urgent need for an appropriate European response. Strategic autonomy is the clear path the European Union follows to meet its unprecedented geotechnological challenges.

The current world of poly-crises faces growing unpredictability due to daily events of global amplitude that rattle the residual certainties reminiscent of the old world order. The rising conflict between India and Pakistan (geopolitical risk) comes just one month after the United States introduced universal and reciprocal tariffs[9] (macro-economic risk). Whether correlated or not, such cascades of events reinforce this vital need for autonomy.

## Insert: What is *open* strategic autonomy?

As far as strategic autonomy is concerned, a lever that is often overlooked, albeit a major one, lies in the definition of the degree of openness of autonomy, which must be adjustable according to the context.

The European Union (EU) claims an open strategic autonomy (OSA). For the JRC, "*the addition of 'open' stresses that the European Union aims for multilateral cooperation wherever possible and appropriate*." Adding coopetition and partnerships to strategic autonomy is the recognition that Europe, like any other country or region, can not achieve complete independence or self-sufficiency in today's interconnected world.

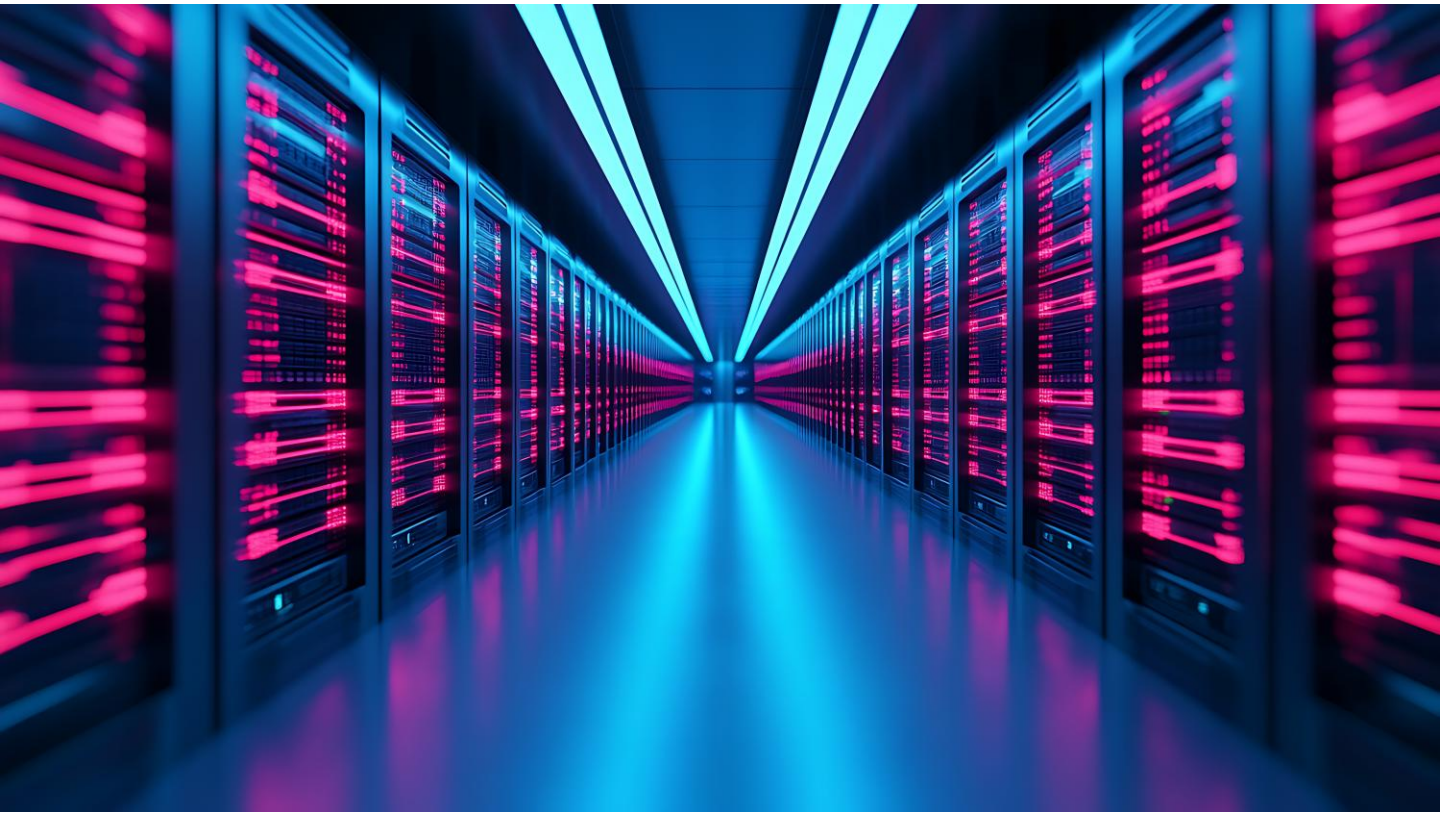
In 2024, the JRC proposed a two-dimensional index to quantify EU-27 autonomy in industrial ecosystems and strategic technologies. Its OSA Index is based on (1) innovation autonomy (long-term knowledge creation) and (2) economic autonomy (present value creation and production capacities). The conclusions of the first index survey show obvious European vulnerabilities regarding AI, data, and digital security due to high dependencies on strategic partners in these domains.

The European Union acknowledges these vulnerabilities while arguing that its strategic autonomy is only substantially impaired when existing exchange relations with a trade partner become risky or incur limited reliability. Open strategic autonomy implies that extensive external reliance on partners is not a problem as long as the relationships are based on continued trust. Only "*the combination of external reliance, concentration (focus on few partners), and risk causes manifest vulnerability.*"

Consequently, designing a pattern for international relations and transactions with trusted partners may prove more effective in strengthening Europe's strategic autonomy than pursuing the chimera of reshoring to eliminate dependencies gradually.

This approach paves the way for a new era of European strategic pragmatism, provided that the foreseeable oscillations between protectionist temptations and the fallacy of increased dependence on external powers be dampened.

Source: European Commission, Joint Research Centre on « Assessing Open Strategic Autonomy », H.Kroll (2024)

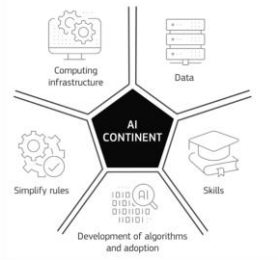


## 2. How Europe is gearing up its AI strategy

The European Union framework consisted mainly of the EU AI Act[10] (2024) before two remarkable additions since the beginning of this year. The InvestAI initiative[11] and the AI Continent Action Plan[12] gear up Europe's strategy by injecting unprecedented capital into the AI economy, addressing the infrastructure issue, and bringing a fresh perspective on the path to competitiveness and autonomy.

By mentioning that "*the race for global leadership in AI is far from over*,[13]" the Commission intends to position Europe as a serious contender notwithstanding its fear of missing out on the AI momentum. With its enhanced AI awareness, Europe asserts a political will to increase control of its technological destiny, consistently with its Strategic Compass and Competitive Compass.[14]

The AI Continent Action Plan starts with clear-sighted assessments of the situation without complacency, acknowledging that Europe is lagging in the AI race in terms of adoption and productivity. Only 13% of EU companies[15] adopted AI by the end of 2024, which marks a -30 to -70 % discrepancy[16] with the US. There is still an opportunity window to meet this AI competitiveness challenge, as AI technology deployments are still in their early stages despite ongoing progress to the agentic AI phase.




The AI Continent action plan sets five key objectives:

- **Building computing infrastructures**
- **Accessing quality data**
- **Accelerating the adoption of AI**
- **Strengthening the talent pool and AI skills**
- **Fostering regulatory simplification**

### Investing €200 billion to partly close the funding gap

Europe undertakes unprecedented investment efforts to close AI innovation and funding gaps. The InvestAI program announced in February 2025 will guide €200 billion to AI infrastructure, including computing power and networks. This plan directly answers the report's conclusions on the Future of European competitiveness,[17] according to which the EU's weak productivity growth was mostly due to insufficient investments in digital technologies.

### Orchestrating an ambitious AI ecosystem

Europe plans to structure a European single market by orchestrating a comprehensive ecosystem of stakeholders throughout the AI lifecycle, from model training to real-world applications. The program includes the strategic positioning of appropriate support instruments. European Digital Innovation Hubs will be adapted to spur AI adoption in organizations. The AI Office will monitor developments and implementation.

### Leveraging core values and strengths

The EU claims a distinctive approach to AI, based on (1) a unified market with a single regulatory framework for trusted AI, (2) top-level scientific research supported by a pool of qualified professionals, (3) a dynamic ecosystem of startups, (4) strong industrial expertise and (5) leading computing power combined with conditionally accessible data spaces. Europe promotes indeed an AI based on trust and centered on people.

### Enabling high-speed execution

More than 90% of announced Commission actions must meet deadlines within the next 18 months. The launch of official calls on AI Gigafactories, the AI Skills Academy, the setup of Data Labs, and the adoption of the Apply AI strategy are expected to occur in 2025. Dialogues will be organized with industry and public sector to identify AI-related deliverables and KPIs in Q3 2025.

### 2.1. Building large-scale AI data and computing infrastructures

The €200 billion InvestAI investment scheme ranks probably among the top 5 most deep-pocketed AI plans backed by governmental or regional authorities in the world (with China, the US, and the UAE)[18], which confirms the leveling up of Europe's new ambitions. As a reminder, the funds announced for AI in 2025 are more than twice as much as the flagship Horizon Europe research and innovation funding program for the 2021-2027 cycle, which amounts to €95.5 billion. For now, the European Union provides little details about the funds' allocation of its AI strategy as many workstreams are finetuning the roadmap.

The AI Continent plan nevertheless hints that reinforcing AI infrastructure will be the backbone of the European AI project. High-performance infrastructures are the foundational cornerstone of the AI value pyramid, which is necessary to support AI's growing adoption and accelerate developments. By addressing the infrastructure issue head-on, the European Union intends not only to strengthen a weak spot in its value chain but also to invest in an essential determinant of future economic competitiveness. New infrastructures will play a fundamental role in supporting AI models through their complete lifecycle, simplified into five stages: training, finetuning, testing, inference, and deployment.

The InvestAI program plans to allot €20 billion in hybrid financing[19] to create 13 AI Factories[20] and up to 5 AI gigafactories to be deployed across Europe. Enthusiasts consider this plan a chance to reshape the infrastructure landscape in Europe rather than an opportunistic revamping of the EuroHPC[21] network of supercomputers. AI Factories designate the new generation of computing infrastructures and data farms, adapted to AI requirements in capacity, modularity, and functionality. The above-mentioned funding resources will triple the European Union's computing capacity dedicated to AI. The AI Factories initiative shall favor the abundant creation of advanced AI applications in ten strategic sectors, such as health & life sciences, technology and digital, or environment and sustainability.[22] Moreover, Europe invests with the support of the EIB in building up to 5 energy-efficient AI Gigafactories at an average cost potentially exceeding €2 billion per unit. The official call for factory construction is scheduled for the last quarter of 2025.

On the one hand, Europe grants unprecedented funding to consolidate its infrastructure and reduce its dependence on non-European infrastructures and hosting providers. Addressing the tremendous infrastructure challenge is a stimulating signal the European Union sends to financial markets and for long expected after pent-up demands from European companies.

On the other hand, it remains unclear whether the European Commission has factored in the total costs needed for the expensive updates and maintenance of the AI Gigafactories. Their competitiveness will heavily depend on the renewal cycle of their 100,000[23] state-of-the-art AI processors per unit to mitigate premature obsolescence risk. The latest generation of chips will be outdated in less than 12 months as AI chip developments outpace Moore's law. For the record, Nvidia's AI chips currently cost a mere $30,000[24] per unit, although competitors try to drive prices down. The setup expenses pile up with the run costs of the AI models to process user requests, which grow in volume with adoption regardless of the marginal efficiency gains.

### 2.2. Enabling access to high-quality data for AI

Access to reliable, organized data is described as indispensable by the European Union[25] to unlock the full potential of AI. Paradoxically enough, at a time when world data production verges on 150 zettabytes per year, there is a shortage in the supply of robust, high-quality data to train and validate AI models. A new Data Union Strategy will be released in Fall 2025 to promote the interoperability and availability of data by industry. Measures to guarantee data confidentiality, integrity, and security will be defined to reinforce a culture of trust and cooperation. In addition, Data Labs will be set up to aggregate data from AI factories in specific sectors, such as healthcare or energy, and make them available, under certain conditions, to AI developers across Europe. To ease data circulation, the European Union is developing *Simpl*, a cloud software to manage data spaces within the EU.

### 2.3. Accelerating the adoption of AI in strategic sectors

The AI Apply Strategy aims to accelerate adoption, insisting on the priority given to AI solutions made in Europe without quantifying its objectives at this stage. European Digital Innovation Hubs (EDIHs) will be the key driver to advance AI deployment and to facilitate companies' access to the data and computational resources of AI Factories. Present in 85% of European regions, they will become Experience Centers for AI by end 2025 to "*ensure the adoption of sector-specific AI solutions while continuing to provide flanking services such as funding advice, networking and training*".[26] The European Commission intends to ensure a continuous process to support applied research and innovation efforts right through the critical phase to market launch thanks to the AI Innovation and the GenAI4EU initiative. The current European toolkit addresses significant issues that pertain to innovation, research, and go-to-market from the supply side. Supplementary measures to accelerate adoption from the demand side by organizations, companies, public institutions, and individuals might be proposed soon. Creating more AI training-as-a-service opportunities would be welcomed.

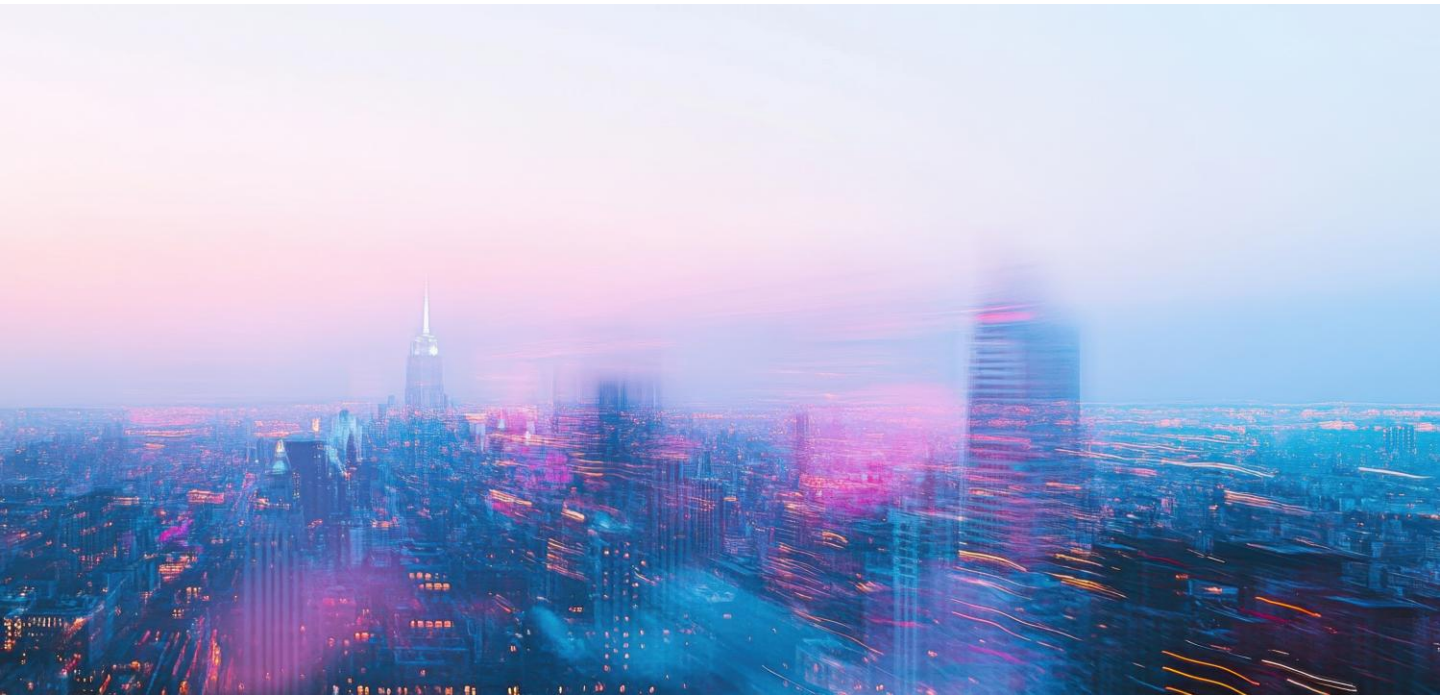
### 2.4. Strengthening the talent pool and AI skills

Developing AI talent and skills is vital for the European Union, which must respond to the rapid pace of technological transformation and strengthen its economic competitiveness. The European strategy[27] focuses on training, retaining, and attracting talent to mitigate the scarcity of skilled resources. An architecture of European educational and research programs has been designed to increase the number of qualified professionals, focusing on research staff through AI fellowship schemes and the AI Skills Academy. In the job market, EDIHs will be called upon to upgrade employees' skills in strategic industries. Talent Partnerships will be leveraged to encourage employee mobility. While these numerous programs attest to a fundamental awareness of the challenges in training and employment, the European strategy may still feel incomplete in providing a sufficiently calibrated response. New initiatives, including tax incentives, are hoped to boost the European AI business job market without further constraints.

### 2.5. Fostering regulatory simplification

The European Commission envisions creating a "*positive and competitive environment for AI companies to thrive and for the European ecosystem to innovate*[28]." The AI Act defines the framework to be rolled out over the next two years for operating in the European AI market. The AI Act Service Desk will come into force in July 2025 to establish a central information desk for companies and research labs about their compliance obligations. The Data Union Strategy mentioned above will also explore ways of reducing "*unnecessary bureaucracy*[29]." A "One-In, Two-Out"[30] mechanism might be implemented to alleviate stakeholders from the regulatory burden partly.

The paradigm shift initiated by the European Union in favor of regulatory simplification is an encouraging signal for the industries concerned and small businesses. Reducing regulatory uncertainty and compliance costs are on the agenda of ongoing workstreams. The European regulatory framework might eventually reinforce its role as a protective shield for its economic agents against the potential abuses of international competition.



## 3. Overcoming the execution challenge

Europe's in-progress AI strategy encompasses egregious financial stimuli, an almost holistic approach, and a capacity to address the most prominent challenges. The overarching principles of this framework may prove adequate to enhance Europe's strategic autonomy and should reassure economic stakeholders, from startups to large corporations.

The European Union engages in the preparation phase of its AI strategy, which precedes the upcoming execution phase with potential strategic reframing or adjustments, and, ultimately, the evaluation phase to measure its success. The execution phase will be decisive for the European Union's future place on the international AI stage.

Five key success factors seem of prime interest: securing operational implementation, designing a cohesive technological strategy beyond AI, strengthening control over the electronics production chain, framing a compelling energy strategy, and forming viable alliances.

### 3.1. Securing operational implementation

The main risks involved in the current strategic empowerment process pertain to its implementation. Europe's relative pragmatism will have to be reflected throughout the continuity of its strategic objectives' fulfillment, which means overcoming ideological and bureaucratic impediments. A successful implementation would also require avoiding the tempting pitfall of stacking up too many layers of frameworks, programs, and initiatives.

Implementation success factors include (1) Europe's ability to translate a political strategy into action on the ground, (2) an effective orchestration of the whole AI ecosystem, (3) the proactive management of the bottlenecks and shortcomings, and (4) the buy-in of instrumental stakeholders.

Europe's operating model relies on vertical execution under scrutiny from public institutions, such as the new AI Office. For the record, the United States has decided to delegate operational responsibility of the Stargate program to OpenAI,[31] a private player and expert in the field. This *modus operandi* is possible because Stargate is a joint venture between private companies, although it is facing rising concerns about an overcapacity risk.

The European Union is exposed to execution caveats due to AI specificities. LLMs and sophisticated computing power are undoubtedly the core foundations of any ambitious AI strategy. Large European telco operators seem hardly involved in this infrastructure program, which questions their AI future. In addition, a multi-layered strategy could include compelling measures to boost AI-powered software, applications, platforms, and services (SAPS). The European strategy does not highlight yet the future economic role of this supra-strata of the AI pyramid. The development of SAPS in most strategic verticals may enrich and differentiate the European AI ecosystem. The role of small language models (SLMs) in spot-on vertical applications shall not be underestimated. At the launch of the agentic AI era, these potential loopholes, if confirmed, might cause significant damage.

Mobilizing stupendous public funding, stemming indirectly from European taxpayers, to fuel AI investments raises execution-related questions about its sustainability and the looming risk of profligate spending, whilst the eurozone's general government gross debt to GDP ratio is nearing 90%.[32] The funding multi-year deployment timetable balances the urgency of catching up with global competition against the long timeframe required for efficient strategic planning. In the AI race, each country has its appreciation of time. Engaged in an expeditious program, the US expects solid results within the next twelve months. China has a twenty-year AI investment program spread across four five-year cycles. Europe disclosed a few objectives for the next half-decade but still needs to clarify its timeline.

The execution phase will reveal how these massive AI investments will irrigate the real economy. A smart trickle-down strategy could make capital flows pour into four critical areas : (1) state-of-the-art AI infrastructure, (2) AI innovators, mostly startups, (3) the upper-layer of AI software publishers, applications, platforms, and service providers, and (4) cross-cutting sectors, adjacent industries, and key vertical markets that could benefit from future advances in AI. These economic players play a vital role in accelerating adoption, increasing competitiveness, and fueling the AI cooperative ecosystem with innovation. Strategic autonomy can form a virtuous ecosystem that feeds itself from within and is financially viable, notwithstanding its interdependencies with external partners.

With regard to AI startups, harnessing innovation is a tricky challenge for Europe, especially in a domain like AI. In China, the Little Giants[33] program provides for the emergence of 10,000 cutting-edge technology startups backed by government subsidies and support. Although Europe already claims 6,800[34] AI startups, a similar program adapted to its specificities and strategy could strengthen its technological competitiveness. One of the challenges of financing innovation, however, is to maintain the best possible balance between guiding innovation through an attractive array of incentive mechanisms and preserving complete entrepreneurial freedom.

### 3.2. Designing a cohesive technological strategy beyond AI

A meta-program defining the upcoming European strategy for all frontier technologies cannot be ruled out, as the European Commission's limitation to a patchwork of technology-specific canvases is an unlikely scenario. A holistic European technology strategy may enable stakeholders to build fertile bridges between strategic domains. For example, AI promises future synergies with cybersecurity and quantum computing, which the European Union would be inspired to facilitate even more.

Setting up the conditions for consolidating players operating in the European market of cloud and neo-cloud markets could reinforce its infrastructure.

Only a few players could qualify to become regional champions (OVHCloud, UpCloud) while US hyperscalers (Amazon, Microsoft, Google) continue to dominate both the global and European markets. Computing power, regulation, and domestic market fragmentation are some hurdles local industry players face in their growth.

## Joining Europe's forces in AI and quantum technology could lead to the creation of a world-class competitive cluster.

The transformation of the cloud market, which must shift to AI, can create additional technical and financial obstacles. If persistent, the absence of concrete propositions to foster the advent of European hyperscalers would be a major omission in Europe's AI strategy, as would the absence of tangible results from the EuroHPC program in that field.

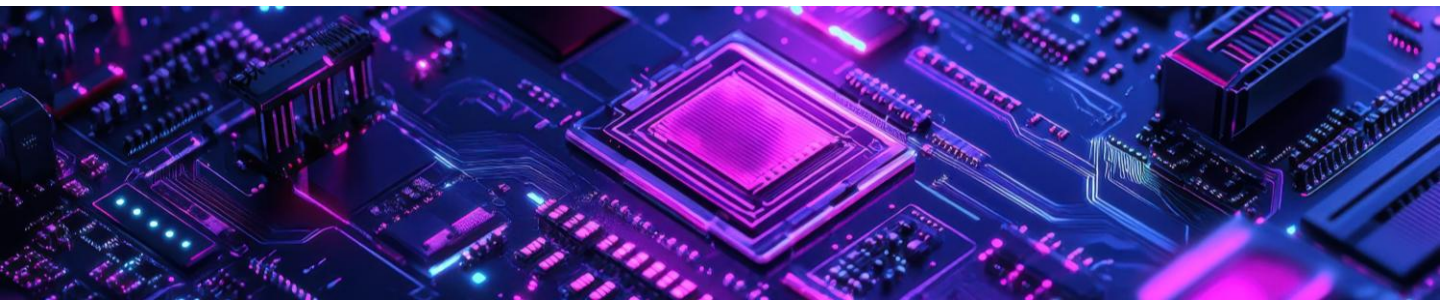
Cybersecurity, particularly data security, must keep pace with Europe's commitment to create a reliable and trusted AI ecosystem.

Regional data storage and management should be a strategic stronghold for Europe. After two decades of high dependency on US infrastructure for security, the new foundations of Europe's AI strategic autonomy spur to curb reliance on US cloud providers.

However, reaching a critical European size is a significant challenge for companies operating in the security market, not least because of their end customers' often legitimate national preferences. For this reason, professionals are calling for the creation of a European fund dedicated to cybersecurity, which would provide extra financing for innovation and the scaling-up of growing security providers. European players must first have sufficient technical, operational, and financial scale to ensure the security of the considerable volumes of critical data for example hosted in AI Factories. The cybersecurity size and funding gaps may require an appropriate response from the European Union to avoid adverse impacts on other AI strategic initiatives. The Cybersecurity Act (CSA)[35] is now coupled with the Cyber Resilience Act (CRA)[36] to better protect organizations from external threats.

The new Quantum Flagship[37] roadmap confirms Europe's strong ambition to build its autonomous quantum ecosystem for scientific and industrial applications.

The various public investments[38] in quantum infrastructures and chips show evidence of Europe's sustained interest in this industry since 2018. European innovation is mainly driven by French pioneers such as Alice & Bob, Pasqal, and Quandela.



Their worldwide technical competitiveness will have to be converted into adequate sales and revenue once the market reaches a certain commercial maturity, which is not the case yet despite promising partnerships. Europe's strategic empowerment in the quantum field suffers from the relative weakness of private relays such as venture capital investors for funding rounds above €100 million, technological infrastructure partners capable of integrating quantum power, and finally, communities of end-users.

Joining Europe's forces in AI and quantum technology could create a world-class competitive cluster thanks to differentiated hybrid expertise, which could be a plausible extension of current European programs. In light of the AI strategy, strengthening Europe's support for telecommunication (5G/6G) and next-gen satellite technologies is also worth considering.

### 3.3. Strengthening control over the electronics production chain

Access to the world's highest-performance semiconductors has become a global geostrategic issue. The European Chips Act[39] defined the fundamental principles of a sector strategy with an initial budget of €43 billion, then extended to €80 billion. The European Union set at 20% market share by 2030, compared with around 10% this year, an objective which has lately been declared unachievable.[40] New realistic targets must be defined soon since the European Union faces significant issues, such as a shortage of rare raw materials. The key challenge for Europe is to better understand and manage the electronics supply chain, including raw materials, semiconductor design and manufacturing, and infrastructure equipment.

Raw materials include 70+ rare minerals (such as dysprosium, gallium, germanium) used in manufacturing AI chips. China holds over 80% of known terrestrial resources and supplies 75% to 90% of European needs.[41] Europe is stuck in an uncomfortable position, depending on China, while other rare minerals in Ukraine are now in agreement with the US. In the semiconductor equipment segment, Europe has a competitive economic fabric led by the Dutch ASML, number 2 worldwide, and composed of rising companies such as the French SiPearl. However, the major quandaries in the sector remain attracting investment and overhauling supply and production chains. Furthermore, setting up a new factory in Europe is costlier than in other regions due to higher energy prices, labor costs, and strict regulations.[42]

In semiconductor design and manufacturing, Europe is facing overwhelming competition from TSMC, the Taiwanese behemoth that reportedly controls over 50% of the global market.[43] The Gulf of Taiwan is currently a global nexus of intense geopolitical tensions, a Gordian knot of the semiconductor industry, and, more generally, international trade. At the upper stage, AI processors that are vital for computing power are designed and manufactured by Nvidia, holding a near 90% market share, and to a far lesser extent by AMD and Intel. This market dominance leaves little room for other scenarios than trusted dependency.

### 3.4. Framing a compelling energy strategy

Most North American and Chinese technology giants are drafting vertical strategies aimed upstream to exert direct control over the energy production sites needed to power and operate their data centers and AI factories, whose greed for resources is growing rapidly.

As a reminder, data centers' electricity consumption amounted to 2% to 4% of the world's electricity production in 2024[44]. In 2030, data centers' electric consumption may exceed 180 TWH in Europe, which is only one-third of the US forecast.[45]

The US technology titans possess the financial dry powder to become vertically integrated, enabling them to lock in the entire value chain from energy production operations to end-user AI applications, which Nvidia calls energy-to-intelligence. Certain private players enjoy an economic clout comparable to that of powerful nations and, therefore, want to strengthen their strategic and energy autonomy. Their comprehensive strategy consists of purchasing and building energy production sites, investing in renewable energy startups, and lobbying in the power industry. This claim for higher autonomy is a real strategic shock that impacts the global competitive landscape. AI computing and processing power is increasing and require energy efficiency improvements. In March 2025, US technological powerhouses (Amazon, Google, Meta, and others) pledged to triple global nuclear capacity by 2050[46]. This cogent shift towards renewable energy shakes the whole US power industry.

At some point, Europe could decide whether to support its emerging technological champions in strengthening their strategic autonomy through similar upstream integration. Above all, the European Union must secure and sustain energy production in line with its needs, thanks to a growing share of renewable energies, which may contribute to 45% of energy production by 2030[47]. Some European production sites and climate tech startups are coveted targets of ravenous foreign competitors. The European Union may enforce a continuum between technological autonomy and energy strategies.

### 3.5. Forming viable alliances

Acknowledging the existence of technological dependencies is a prerequisite for assessing the degree of European autonomy and developing it further. A solid empowerment approach means that dependencies destined to endure must be chosen rather than suffered. With AI, Europe faces the unique opportunity to redefine its strategic alliances. Major strategic cooperations should be assessed in terms of technological balances and of the perspective of Europe's exhaustive geostrategic stakes with the partner, be it a State, a public administration, or a company. It would thus be risky to pursue a default commitment to any relationship of submissive dependence on the pretext of its historical continuity without prior reflection on the conditions for terminating said dependence, the counterparts to negotiate, or the options for alternative alliances.

These alliances, which are consubstantial with international trade, are all the more complex since many AI-native companies are stateless or multinational in character, sometimes as soon as inception. For example, although Mistral AI is presented as a French champion, today, the startup is primarily financed by American investors[48] (Lightspeed Ventures, Nvidia…). Considering the definition of open strategic autonomy, this situation is acceptable and beneficial to Europe, provided it does not create new vulnerabilities. Europe may still rely on the US venture capital market to unlock attractive funding and exit opportunities for AI innovators. However, this must be done in a conscious alliance with a trusted partner.

## 4. Alternative strategic options for Europe's AI empowerment

The European Union embraces a transformational AI program that aims to strengthen its strategic autonomy by addressing the paramount issue of AI infrastructure. This central strategic case takes on concrete form progressively, although many of its components remain to unfold. During the execution process, if Europe's strategic guidance needs reframing, a narrow spectrum of alternative strategic options might still be available in future years. For example, four options requiring (hyper)specialization are briefly depicted below.

EU Strategy

### Struggle for AI leadership

- Scenario: Offensive (frontal)
- Strategic autonomy: High
- Competitiveness: All-around

Closing the infrastructure funding gap requires high capital intensity. Such an approach is a risky strategic bet but may also yield the highest payoff. By undertaking a quasi-holistic strategy powered by new AI infrastructures, Europe's differentiation remains a question mark.

Alternative strategic options

### Specialized AI services

- Scenario: Offensive (flank)
- Strategic autonomy: Low
- Competitiveness: SAPS

The development of AI SAPS involves smartly using resources focused on strategic services (AI agents for customer service…). Infrastructure dependencies on non-EU countries raise concerns in this quest for horizontal strategic autonomy.

### Vertical hyperspecialization

- Scenario: Defensive
- Strategic autonomy: Moderate
- Competitiveness: Verticals

Europe ring-fences its AI strategy to highly strategic verticals, such as health, environment, or banking and finance. The objective is an end-to-end strategic autonomy, from infrastructure to services, in the selected verticals.

### Prevailing security

- Scenario: Retrenchment
- Strategic autonomy: Military
- Competitiveness: Defense

A more defensive scenario for Europe involves circumscribing its AI strategy to military applications in a context of rising geopolitical tensions. AI financial outcomes become a second-order goal. Chosen dependencies on allies are acceptable to a certain extent.

### Quantum leapfrog

- Scenario: Avoidance
- Strategic autonomy: Unknown
- Competitiveness: Quantum

Advancements in quantum technologies require leveraging synergies with AI. Strategic execution may prove tricky due to uncertain economic benefits and chip supply chain bottlenecks. Strategic autonomy is low until quantum infrastructure is eventually handed over.

## 5. Beyond strategic autonomy: value creation, competitiveness, and foresight

By consolidating its framework in 2024 and 2025, the European Union will address its most salient technological and economic issues head-on and formulate a structured strategic vision that embraces the whole AI value chain. Some heavy challenges and blind spots exist in Europe's AI strategy, which might be partly cleared in the coming months. This situation is partially due to missing information on the emerging AI context and outlook regarding ownership, quality, usage, and value creation.

The European Union's decision to massively invest in AI is a high-stakes strategic bet. There is indeed a lack of evidence that the risk of underinvesting is higher than the risk of overinvesting since AI economics are at a crossroads. Europe is committed to delivering outstanding results and increasing its AI open strategic autonomy so that its choice pays off. Strategic autonomy is meaningful if it eventually creates value, enhances competitiveness, and serves a compelling strategic vision.

Firstly, enacting its capital-intensive policy, Europe will unlikely become more than a peripheral AI power in the global exchequer if its strategy does not encompass a continuous program of recurring investments sustaining technological competitiveness across the AI value chain. Most competing countries engage in a long-term plan with annual investments in computing power and AI processors' updates on top of one-shot infrastructure efforts at the start. Europe can leverage the opportunity to foster private investments from corporations, private equity, and venture capital professionals to increase its AI funding resources. Private capital could help irrigate the AI ecosystem, including infrastructures, SAPS, robotics, and other strategic industrial applications. Fiscal incentives to private investments in European AI, softening regulatory measures for AI investments, and easing the Solvency II framework for pensions have lately been evoked.

Secondly, Europe must capture its fair share of AI value to derisk its investment policy. Forecasts of an annual productivity growth rate of up to 3% due to AI adoption would add $575 billion to the European economy by 2030.[48] However, the long-term value-creation potential of AI is unknown, leaving the economic component of Europe's AI equation uncharted. Ramping up AI spending may adversely increase overall pressure to achieve higher growth without evidence that it could generate a conspicuous return on investment.

AI business applications, such as the ongoing deployment of agentic AI through horizontal and vertical use cases, are still in their early stages. AI adoption is still at 90% in the development and pilot stages. Jumping to the next stage and seeing tangible results will take time. Despite its record-high traction speed, OpenAI faces an economic dilemma in generating sufficient revenue. Over the past nine months, financial markets raised clear concerns about AI business models and their profitability. It is no coincidence that Europe has not yet set financially measurable objectives for its AI strategy, however necessary they are. An aggregate index of GDP's growth rate, net productivity gains, and net job creation relative to total investments could be the first proxy to evaluate AI performance.

Capturing AI value in global competition requires differentiating moats and high-end expertise in strategic domains, which could happen at the technology frontier (infrastructure and fundamental research) or below (SAPS businesses). The first levers to create value are reducing go-to-market hurdles for innovators and stimulating demand.

Thirdly, the European technological model of tomorrow remains to be built. The full expression of its potential differentiation may blossom from the current reinforcement period of its foundations. The singularity of Europe's value proposition in the global AI market will likely stem from its future hyperspecialization in strategic verticals and its edge in cybersecurity and quantum. Specialization could be *offensive* in markets where Europe has a good chance of leadership, such as life sciences, environment, and aerospace, and *defensive* in markets to protect from extensive foreign dependency, such as construction or food.

Strategic differentiation is a major driver of technological leadership and economic competitiveness, maybe less of geopolitical security. The central European AI conundrum is to decide which of these three imperatives prevails in the long run. Converting the strategic autonomy project into a frank success requires an airtight alignment with the European Union's geostrategic objectives.

Open strategic autonomy may precede strategic foresight for Europe. Developing a forward-looking vision is a core competency for surviving and thriving in an unpredictable world. Coupled with a tactical pragmatism nurtured by industrial and technological cooperation, it could help Europe stand out from competitors. Europe’s future preparedness implies consolidating its assets, dealing with batches of allies and opponents, and restoring trust with key partners. In these circumstances, Europe should move beyond the stage of autonomy to embody an attractive alternative path and take on a new form of leadership.

AI Transparency Policy

All content published is authored by Odyssey. Artificial intelligence tools are employed to refine the writing, including correcting grammatical errors, enhancing stylistic clarity, and improving linguistic precision. These tools are used exclusively to polish language and structure, while the intellectual content is originated entirely from Odyssey.

ODYSSEY

## Sources


1 : European Council (19-20/12/2013): "*Europe must have a more integrated, sustainable, innovative and competitive defense technological and industrial base (EDTIB) to ensure the development and support of its defense capabilities, which could also enable it to increase its strategic autonomy and its ability to act with partners*."
2: European Commission, Joint Research Centre on « Assessing Open Strategic Autonomy », H.Kroll (2024)
3: Dupré Benoît, « European sovereignty, strategic autonomy, Europe as a power: what reality for the European Union and what future? », Fondation Robert Schuman, European issues n°620, 25th Jan 2022 (page 2)
4: The first call was Emmanuel Macron's address at La Sorbonne on « Sovereign, united and democratic Europe » (26/09/17)
5: See the mention of « *an appropriate level of strategic autonomy* » in EU Global Strategy (2016)
6: See OpenAI's announcement of the Stargate project
7: Strategic thematic research « Latest on AI » from Deutsche Bank, 30 July 2024 (page 4)
8: Dupré Benoît, « European sovereignty, strategic autonomy, Europe as a power: what reality for the European Union and what future? », Fondation Robert Schuman, European issues n°620, 25th Jan 2022 (page 1)
9: See GreenbergTraurig's go-to-guide for more details about US tariffs
10: See the EU AI Act on the European Commission website (Jun 2024)
11: Read Europan Commission's press release on InvestAI (Feb 2025)
12: The AI Continent Action Plan is available for download here on the European Commission website (Apr 2025)
13: See page 1 of the AI Continent Action Plan. Link above [10]
14: Strategic Compass refers here to the EU Strategic Compass for Security and Defense. On the « EU Competitive Compass to regain competitiveness an secure sustainable prosperity », please see press release
15: See page 13 of the AI Continent Action Plan. Link above [10]
16: McKinsey report « Time to place our bets: Europe's AI opportunity », (Oct 2024) and aggregate survey by Odyssey
17: Draghi's report on The Future of Europe's competitiveness (Sep 2024)
18: Europe's €200 billion investment scheme ranks after the US (Stargate private program, $500 billion) and China (>$1 trillion over 20 years). In the UAE, although financial data about AI investments is more difficult to aggregate, Abu Dhabi's investment fund Alat alone plans to invest $100 billion in AI.
19: equity and grants
20: First 7 AI factories were chose in Dec 2024 and the remaining 6 in Mar 2025. In total, they span across 17 Member States
21: EuroHPC designates the private public joint undertaking for high performance computing
22: The ten strategic sectors are: health, technology, environment, education, manufacturing, finance, agriculture/food, cybersecurity, space/aerospace and public sector.
23: See EU InvestAI press release. Meta alone claimed to purchase 600,000 H100 processors in 2024.
24: 2024 unit price for Nvidia Blackwell. See Nvidia financial communication and CNBC article
25: See page 11 of the AI Continent Action Plan. Link above [10]
26: See page 14 of the AI Continent Action Plan. Link above [10]
27: See page 18 of the AI Continent Action Plan. Link above [10]
28: See page 21 of the AI Continent Action Plan. Link above [10]
29: See page 12 of the AI Continent Action Plan. Link above [10]
30: Read European Parliament study on the « One-In, Two-Out » principle
31: The Stargate program is a joint venture between OpenAI, Oracle, Softbank, Nvidia, and other private companies.
32: See Eurostat. Government gross debt to GDP ratio was 88.1% in the eurozone (Oct 2024)
33: Mhalla Asma, « Technopolitique », Ed. Seuil, page 165 (2024)
34: See page 2 of the AI Continent Action Plan. Link above [10]
35: See European Commission's website on the Cyber Security Act: CSA
36: See European Commission's website on the Cyber Resilience Act: CRA
37: See Quantum Flagship website
38: For example, EU invested a €65 million in quantum chips (Sep 2024)
39: Read the EU Chips Act
40: Read Les Echos, « *Semi-conducteurs: les raisons de l'échec européen* » (5 mai 2025)
41: See McKinsey report [15] and « Study on the critical raw materials for the EU », European Commission, (2023)
42: Based on McKinsey report [15] and Odyssey's interviews with cloud professionals
43: See for instance Nasdaq's article on TSMC. Most sources estimate TSMC's market share to range between 53% and 67%
44: Odyssey's aggregate data. A DoE report finds that data centers consumed 4.4% of US electricity demand in 2023.
45: Odyssey's aggregate data and McKinsey report [15]. See also IEA for US data
46: Amazon, Google and Meta pledge to triple global nuclear capacity by 2050
47: See EU Renewable energy targets .
48: See Techcrunch's article on « Paris-based AI startup Mistral AI raises $640 million » (Jun 2024). Mistral AI's shareholders include Lightspeed VP, Andreessen Horowitz, Nvidia, Samsung VIC, Salesforce Ventures, Cisco, and IBM among others
49: See McKinsey report « The economic potential of generative AI: The next productivity frontier», (Jun 2023), which quotes consumer goods, healthcare, and construction as the three industries with highest AI productivity potential by 2030.

# ODYSSEY

**Europe**
128 rue La Boétie
75008 Paris
France
+33 (0)1 82 28 00 60

**Americas**
275 Fifth Avenue
NY 10001
New York
USA

hello@odyssey.tech
www.odyssey.tech