Policy Paper

Rewiring the EU's AI Future: From Linear Regulation to Dynamic Ecosystem

Introducing a Dynamic AI Value-Chain Framework (DAVF)

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Team 37

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Introduction

Europe faces a critical choice in AI leadership. The European Union (EU) has set its ambition to become a global leader in Artificial Intelligence, yet it risks lagging behind. The EU captures only a weak share of global AI-start-up funding[1], faces regular losses of innovative firms, and confronts funding shortages that threaten its competitive position. To remain economically competitive, the EU must enable its firms to operate at the cutting-edge of AI development. As the Draghi report warns, the EU cannot remain trapped in the technologies of the previous century while its competitors move forward. The stakes extend beyond economics: if the EU fails to lead at the technological frontier, it forfeits its ability to shape safe, rights-preserving AI systems that embody its values.

The EU must become a technology-shaper rather than a technology-taker. Its laws and regulations must promote domestic AI ecosystems, start-ups, and technologies that embed EU values from the earliest stages of design and development to deployment.

Yet, the EU's ability to become a true technology-shaper is constrained by a regulatory framework built on an outdated understanding of how AI is produced. By treating the value chain as linear and redacted, the current model overlooks where risks actually arise and where innovation now occurs, limiting the EU's capacity to steer technological development. We address the structural shortcomings in the EU's current regulatory framework through the Dynamic AI Value-Chain Framework (DAVF) with the aim of replacing static, actor-blind rules with an adaptive, incentive-aligned system capable of driving both safety and technological leadership.

The EU's Current Approach

The core instrument of the EU's current AI governance strategy is the AI Act, drafted prior to the recent acceleration in general-purpose AI capabilities and therefore reflecting a markedly different technological context. The Act, scheduled to come into effect in 2026, is underpinned by the EU's objective to promote AI systems that are human-centric[2].

To this end, the Act categorises AI systems into one of four tiered risk categories based on their application or context of use. Unacceptable-risk applications are prohibited altogether (AI Act, II), while high-risk applications are subject to strict risk-reporting, mitigation, and oversight obligations (AI Act, III). Limited- and minimal-risk applications face either lighter or no new obligations under the Act. The Act's obligations therefore apply predominantly to high-risk AI applications[3].

Flaws of the Current System

Simplistic Model of the Value Chain

The EU AI Act, naively, adopts a linear model of the AI value chain, which only recognises two actors: providers and deployers (see Fig. 1). These two actors carry nearly all regulatory responsibility (Engler and Renda, 2022:4). This

[1] See Annex I for further elaboration

[2] See Annex II for definition

[3] See Annex II for definition

narrow categorisation ignores the multitude of actors that materially contribute to the development, integration and deployment of an AI system.

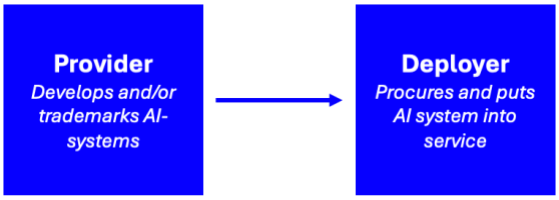

Figure 1: Current AI Value-Chain Structure. A Simplified and Incomplete Model

The Act further fails to regulate high-risk AI deployment upstream of the EU internal market. When a company in the EU procures an AI system from a third-country developer for high-risk use within the EU, both parties face regulatory requirements. However, when a third-country supplier in an EU-based company's value chain procures and deploys a high-risk AI system upstream (outside of the EU territory but within the supply chain), no regulatory requirements apply. By failing to adopt a comprehensive model of the value chain and to extend reporting requirements upstream of the EU market, the Act creates adverse incentives to offshore AI-dependent operations, redirecting funds and investment towards AI development in third-countries that do not share or uphold the EU's laws or values, resulting in three risks: reduced EU competitiveness, security vulnerabilities from unregulated upstream systems, and a failure to embed EU values in the emerging technologies.

Blanket Restrictions on High-Risk Deployers

The Act also severely restricts who can test and deploy AI systems in high-risk real-world settings. Despite a risk-based structure designed to encourage innovation by avoiding blanket restrictions,[4] the Act creates barriers for SMEs that will unintentionally entrench the dominance of large incumbent firms. Large firms can absorb the compliance costs, while smaller firms cannot access the testing environments needed to demonstrate compliance (Ayinaddis, 2025). Further, the Act requires informed consent of all subjects before their data is used to test or train high-risk AI (AI Act, VI: 60, 61). Feasible for small controlled applications, this requirement becomes prohibitively difficult at scale. Large public-sector datasets, particularly health datasets, are critical for the development of trustworthy and robust AI systems (OECD, 2016), but remain inaccessible for real-world testing due to existing consent requirements.

Persistent data-access barriers prevent public procurement from reaching its full potential as an innovation catalyst. As the Act fails to distinguish public authorities from private deployers, member states lack a clear mandate to open public datasets[5] for secondary use[6].
Its restrictive testing conditions deny governments the regulatory flexibility to co-create and validate AI systems in public-service environments through public procurement, which represents one of the EU's strongest demand-side levers for fostering innovation (OECD 2017), and yet this limits the experimentation, learning, and evidence base needed to inform public-value-oriented procurement strategies. Such strategies present a critical opportunity to embed EU values in technologies as they are developed (Mazzucato, 2020; Mazzucato, Spanó, & Wainwright, 2025), shifting from the Act's reliance on ex-post enforcement towards ex-ante value alignment through collaborative development.

[4] See annex II for definition

[5] See annex I for spending percentages

[6] See annex II for definition and context

Overlapping EU regimes compound these problems. Regulatory sandboxes, the General Data Protection Regulation (GDPR), and the European Health Data Space (EHDS) provide public-interest or research exemptions pathways (EHDS, IV.53; GDPR, II: 6.1.e), yet none override the Act's strict consent obligations. They, however, create additional layers of interpretive complexity, which it falls on member states to resolve. The result will be different interpretations by different states, creating inconsistent and fragmented testing pathways for firms seeking to validate AI models through real-world tests.

The result is a structural bottleneck: the EU's most valuable public datasets, testing environments, and demand-side instruments are largely inaccessible, reducing the bloc's ability to drive EU-value-embedded innovation and disadvantage the very firms EU policymakers aim to support.

The EU Should Adopt a Dynamic AI Value-Chain Framework (DAVF)

To become a technology-shaper, the EU must adopt a Dynamic AI Value Chain Framework (DAVF) to move beyond the narrow two-actor value chain and improve incentives for real-world testing and scale-up. The framework rests on three principles:

Principle 1: Shared & Proportional Responsibility: Obligations to be assigned across all actors shaping or deploying AI systems, not only those placing one on the EU market.

Principle 2: Accelerated Testing & Competitive Regulation: Establishment of EU-wide supervised testing pathways with access to quality datasets, making compliant real-world experimentation easier inside the EU than outside it.

Principle 3. Evolving and Investment-Ready: Regular reviews that update the framework and align compliance pathways with investment incentives, which strengthen the EU's AI scale-up environment.

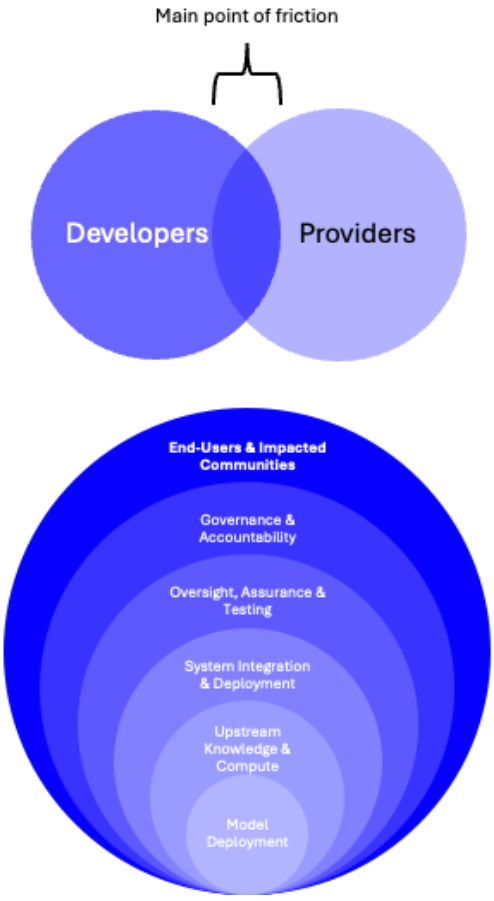

Figure 2: Current Linear View (flawed) vs. our Proposed DAVF view (solution)[7]

[7] See annex III for further DAVF elaboration and expanded figure

Implementation

The steps below enable DAVF while applying our three principles.

STEP 1: Establish a Dynamic AI Value-Chain Framework within the AI office

Expand the mandate of the EU AI Office to include a dedicated value-chains coordination function. This function will serve as a forum for member states' competent authorities to raise operational concerns, communicate best practice, and collaborate in real-time to ensure that enforcement remains case-sensitive and proportional, rather than blanket or case-blind. The AI Office promotes a new classification system of all actors in the value chain according to (1) their function and (2) their ability to mitigate risk. To ensure the framework remains responsive to technological change, the AI office establishes adaptive regulatory processes that evolve alongside AI progress. This combines fixed 18-24-month review cycles with clearly defined technological triggers[8] that require earlier reassessment (such as capability breakthroughs, safety incidents, or deployment shifts that materially change risk profiles). Insights from supervised testing environments and AI Office's horizon-scanning activities guide these revisions, reducing long-term regulatory uncertainty, which currently deters investment.

STEP 2: Open-Up Public Services

To address current barriers to validation and scale-up, the EU should instrumentalise state capacity and spending power. First, the bloc agrees on a unified interpretation of "public interest" and "research" exemptions (EHDS 6:1(e); GDPR, II:6.1.e) and replace fragmented national procedures with predictable, EU-wide standards for the approval of real-world testing of high-risk AI in public services.[9] These standards uphold individuals' rights to restrict access to their data (EHDS II:8) while giving governments a clear mandate to open up public datasets for controlled testing, enabling firms to generate the required evidence, speeding up validations, and reducing compliance uncertainty. Secondly, member states adopt public procurement strategies, structured around clear societal objectives, that prioritise EU-value-aligned AI start-ups and SMEs. Procurement creates stable early demand for trustworthy EU firms, serving as a predictable pathway from supervised testing to larger-scale deployment. Opening up government to both early-stage innovations and market-ready technologies, while prioritising value-alignment in procurement processes, enables the EU to become an AI market-shaper, leveraging state capacity to accelerate commercialisation, reduce reliance on third-country providers, and strengthen domestic AI ecosystems that embed EU values ex-ante, rather than relying on ex-post enforcement.

Step 3: Establishing Upstream and Downstream Incentive Pathways

DAVF to introduce a unified incentive system that replaces hard-to-enforce upstream oversight with market-based mechanisms that reward responsible behaviour across the entire AI ecosystem. Firms seeking access to EU sandboxes, procurement channels, and EU investment instruments must show compliance, proportionate transparency, and risk-mapping across technical partners. Tier-2 sub-providers, who often operate in non-cooperative jurisdictions, are to be compliant through commercially advantageous incentives, yielding responsible upstream

[8] See Annex IV for examples

[9] See Annex II for the definition and our seven high-risk industries.

practices.[10] A parallel incentive structure integrates validation, funding, and onshoring into a single, predictable scale-up pathway, aligning investment and retention incentives to ensure firms scale their AI systems inside the EU.[11] Ultimately, through integration of upstream responsibility with downstream investment and retention incentives, this mechanism reduces offshoring pressures by making EU-based development the lowest-risk route for firms, ensuring that key AI capabilities and high-value activities remain within the Union.

Future Developments & Next Steps

The EU's challenge is clear: a linear, ex-ante regulatory model cannot govern a non-linear AI ecosystem. This mismatch slows innovation, pushes development outside the Union, and ultimately weakens the EU's ability to shape human-centric AI, aligned with its own values. Our proposal, the Dynamic AI Value Chain Framework (DAVF), addresses this by replacing the narrow provider-developer lens with ecosystem governance grounded in three principles: shared and proportional responsibility, accelerated EU-based testing, and an evolving, investment-ready compliance model.[12] Adopting DAVF would materially reshape how the EU manages AI. Upstream proportional obligations and contractual pass-through duties reduce offshoring incentives without relying on unrealistic visibility over third-country actors. Mid-chain harmonised testing and procurement pathways convert the EU's public sectors into strategic lead users capable of stimulating domestic AI ecosystems. Downstream, linking sandbox validation to EU funding, data access, and fast-track conformity creates a cleaner, more competitive route from experimentation to deployment than firms currently find abroad. Together with dynamic review triggers, these mechanisms shift the EU from static rule-setting to active ecosystem leadership.[13]

If the EU chooses not to act, it risks remaining a technology-taker. With DAVF, it becomes a technology-shaper, able to safeguard rights, strengthen competitiveness, and anchor the EU's AI competitiveness.

[10] See annex IV for examples

[11] See annex IV for sandbox retention examples

[12] See Annex V for a feasibility analysis of DAVF.

[13] Potential future extensions of the DAVF conditional on initial success, can be found in annex IV, and will further strengthen its impact.