

EUCLORA Policy Brief v2.0 – January 2026

Building Europe's common operational cloud fabric for Cloud Efficiency and Sovereignty.

Executive Summary

Europe's digital sovereignty will not be secured through governance or regulation alone. It requires shared, measurable software efficiency – forming a common operational cloud fabric (the combined substrate and control layers) where identity, policy, telemetry, and automation evolve together across providers.

EUCLORA, the European Cloud Computing Research Alliance, will help establish Europe's common operational cloud fabric – the combined substrate and control layers – through InnoFabric, an open-source software framework designed to close Europe's cloud-efficiency and interoperability gaps. InnoFabric delivers shared operational cloud fabric capabilities across participating providers, unifying identity, policy, observability, automation, and telemetry while interfacing cleanly with each provider's underlying substrate and existing cloud and edge stacks. This enables providers to align operations without converging on a single platform, reduces duplicated engineering effort, and supports compounding efficiency gains across Europe.

By uniting research institutions, public operators, and industry around a shared operational cloud fabric, EUCLORA turns Europe's greatest strength – collaboration – into deployable capability. Like IMEC for semiconductors and Airbus for aviation, EUCLORA will pool Europe's fragmented expertise and shared building blocks into a common operational cloud fabric, enabling providers to adopt shared policy, identity, and operational standards across jurisdictions while retaining local sovereignty. This approach targets Europe's structural efficiency gap by reducing duplicated engineering effort, accelerating reuse, and creating a self-sustaining engine for sovereign infrastructure innovation. IMEC has been called “the most important company in the world that nobody knows” – a quiet yet decisive engine behind global chip progress. EUCLORA aims to play a similarly catalytic role for Europe's cloud, edge and open infrastructure software.

Europe's Efficiency Gap

The analysis underpinning EUCLORA identifies three interlinked efficiency gaps – infrastructure, capital, and perceived value – each rooted in fragmentation:

- **Infrastructure:** Multiple parallel operational cloud fabrics, duplicated R&D, and a low automation density drive Europe's cost per unit of compute materially above that of global hyperscalers.
- **Capital:** Without compounding efficiency, each euro of public funding yields isolated, one-off improvements rather than cumulative, reusable progress.
- **Perceived value:** Hyperscalers convert scale and operational maturity into user trust and developer gravity, creating self-reinforcing ecosystem effects that accelerate adoption and investment.

The outcome is systemic: higher energy use, a heavier climate footprint, higher personnel costs, and slower reinvestment. Governance federation alone cannot close this gap: while it connects providers, it can also multiply overhead across parallel systems unless Europe also pools shared building blocks and operational capabilities. Efficiency is not a secondary concern; it is the foundation of competitiveness in open economies – and a practical precondition for sovereignty.

Quantifying the Gaps

- **Infrastructure efficiency:** The report's model baseline puts EU-owned data centres at ~1.36 PUE vs ~1.15 hyperscale, with lower utilisation (EU 25 – 40% vs 55% hyperscale baseline) and far lower automation density, resulting in ~1.8× – 3.0× higher energy per unit useful compute – equivalent to ~22 – 33 TWh/year of avoidable consumption, worth ~€ 3.5 – 6.3 bn/year.

- Capital efficiency: In 2024, AWS reported ~USD 39.8 bn operating income (on ~USD 107.6 bn revenue). The report notes that AWS's operating income alone is ~40× the total revenue of one of the EU's largest cloud providers, illustrating reinvestment headroom that compounds over time.

Why Efficiency Is the New Sovereignty

Small percentage losses in efficiency scale into systemic waste – terawatt-hours of avoidable electricity, avoidable CO₂, and lower useful compute per euro invested, as quantified above. Power is becoming the binding constraint of the digital economy – and it is increasingly scarce. In an open market, customers and developers gravitate towards infrastructure that is both lower-cost and demonstrably efficient, reinforcing the advantage of platforms that can compound operational gains. In the coming decade, sovereignty will depend as much on optimising energy and capital efficiency as on producing more of either.

Hyperscalers achieved dominance not primarily by owning data centres, but by mastering the software that makes distributed fleets behave as one system.

EUCLORA's Mission

EUCLORA provides a path to measurable sovereignty by combining open engineering with quantitative accountability.

EUCLORA stewards InnoFabric – Europe's open-source framework for cloud and edge interoperability – so that its development directly reduces the structural efficiency gap identified in European infrastructure. InnoFabric provides Europe's common operational cloud fabric (the combined substrate and control layers) by aligning identity, policy, automation, and operational telemetry across participating providers.

Its mission is to:

- Develop and maintain InnoFabric as open-source reference code for shared operational cloud fabric across European cloud and edge operations, with functional implementations developed, tested and

validated through shared interfaces, conformance tests and telemetry models.

- Operate neutral test data centres running InnoFabric, where the open codebase and measurement model are validated under representative workloads and operational constraints.
- Define and maintain common efficiency metrics and benchmarks – including PUE, utilisation and automation density – so providers can measure, compare and systematically improve operational performance.
- Enable compounding progress through pooling and alignment: pool reusable building blocks and operational capability into a shared operational cloud fabric, then align them across providers and jurisdictions through common policy, identity, and operational standards – ensuring each project strengthens the next and delivers cumulative gains in efficiency and sovereignty.

Governance and Model

- Legal form: European AISBL foundation, headquartered in Brussels.
- Governance: Pan-European board spanning research, operators, industry and public authorities, with clear conflict-of-interest and transparency rules.
- Funding: Core EU programmes (e.g. Digital Europe, Horizon Europe) complemented by member contributions and in-kind capacity.
- Membership: Open, IMEC-inspired model – shared tools, shared costs, shared results – with tiered participation and IP/licensing aligned to open-source delivery.
- Execution: Coordinated pilot facilities operated by partner institutes and industry members, producing validated reference implementations, conformance tests and comparable metrics across sites.

Strategic Impact

- Pooling: Unites Europe's cloud research and industrial testbeds around shared InnoFabric reference code and shared measurement –

- reducing fragmentation and replacing parallel efforts with a coordinated ecosystem.
- **Compounding:** Turns one-off projects into cumulative gains by ensuring improvements to InnoFabric and its conformance tests are reusable across participants and deployments.
- **Accountability:** Defines common efficiency metrics (e.g. PUE, utilisation, automation density) so public funding can be tied to comparable, auditable performance outcomes.
- **Sustainability:** Embeds energy- and carbon aware optimisation and telemetry into the operational cloud fabric – the combined substrate and control layers – enabling continuous efficiency improvement in production.
- **Sovereignty:** Establishes an open, auditable and continuously improving European foundation for cloud, edge and open infrastructure operations.

Call to Action

Europe has done this before. When dependence in aviation threatened our autonomy, we built Airbus. When we faced the semiconductor gap, we created IMEC.

Today's strategic gap is in cloud and software infrastructure: the operational cloud fabric – the combined substrate and control layers – that determines cost, scalability, sustainability and trust. EUCLORA is Europe's next step: turning collaboration into measurable efficiency, and efficiency into sovereignty. Federation must be paired with pooling: shared building blocks and shared operations that reduce overhead rather than multiplying it.

To make this real, the EU should:

1. Endorse EUCLORA as the central R&D coordination hub for sovereign cloud and open infrastructure software, delivered through InnoFabric as shared open-source reference code and common measurement, so improvements compound across providers.
2. Integrate EUCLORA and InnoFabric with GAIA-X, EuroHPC, IPCEI Cloud & Edge and Digital Europe programmes to align standards, pilots and procurement signals.
3. Fund joint InnoFabric testbeds and an EU-wide efficiency measurement framework, enabling comparable metrics, conformance testing and validation under real workloads.
4. Recognise operational efficiency as a strategic capability, on a par with semiconductors, defence and energy – and treat it as a practical precondition for sovereignty.

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