X. European Digital Independence: Building the EuroStack

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A Public-Interest Digital Industrial Strategy

As digital services increasingly underpin critical sectors—healthcare, energy, transportation, and public administration—the ability to control and govern these infrastructures becomes a matter of strategic importance. Relying on external cloud services and AI capabilities means that sensitive data and strategic assets remain vulnerable to foreign policies and legal frameworks, such as the US CLOUD Act,[190] which could mandate data access without European consent. This dependence on non-European providers fundamentally undermines data sovereignty, leaving Europe's strategic autonomy at risk.

This moment offers Europe a rare chance to reconquer its digital sovereignty. With a new Executive Vice President of the European Commission focused on technological sovereignty, security, and democracy, Europe can build the EuroStack:[191] independent digital infrastructure that includes cloud computing, advanced chips, AI, digital IDs, data spaces, and payment systems.[192] These digital assets are as crucial today as roads and electricity, providing the backbone for modern public services like healthcare, social welfare, and education. They must be treated as public goods, governed by European standards to serve collective interests rather than monopolistic enterprises.

Europe's reliance on imported digital technologies—over 80 percent of its digital services and products—has emerged as a major strategic vulnerability.[193] In the modern era, sovereignty extends beyond traditional geopolitical and economic concerns to include a critical digital dimension. True digital sovereignty now involves securing access to key

[190] For one summary, see Georgia Wood and James Andrew Lewis, "The CLOUD Act and Transatlantic Trust," Center for Strategic and International Studies, March 29, 2023, https://www.csis.org/analysis/cloud-act-and-transatlantic-trust.https://www.csis.org/analysis/cloud-act-and-transatlantic-trust.
[191] "Toward European Digital Independence: Building the Euro Stack," Digital Independence, accessed October 15, 2024, digitalindependenceeu.wordpress.com.
[192] Francesca Bria, "Open, Sovereign, Independent AI: Europe's Greatest Challenge," Medium, December 10, 2023, https://medium.com/@francescabria/open-sovereign-independent-ai-europes-greatest-challenge-6c8a899041ec.
[193] European Commission, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions State of the Digital Decade 2024," COM(2024) 206 final, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52024DC0260.

resources like lithium, semiconductors, data, and AI capabilities—the contemporary equivalents of coal and steel. Achieving this requires new forms of cooperation and governance to strengthen Europe's economic resilience and foster sustainable growth, especially in light of escalating geopolitical tensions and supply chain disruptions. Without decisive action, Europe risks shifting from its past dependence on oil and gas to a new dependence linked to digital infrastructures and critical raw materials.

To reduce its dependence on foreign cloud providers, Europe has initiated projects like Gaia-X, aiming—though with limited success—to create a cloud ecosystem that prioritizes data sovereignty and complies with European regulations.[194] Competing with the scale and reach of US hyperscalers remains a significant challenge. However, efforts to address this dependency have gained momentum, driven by post-pandemic government investment programs. The Digital Europe Programme, for instance, focuses on high-performance computing (HPC), cybersecurity, and digital skills development. Industrial collaborations through Important Projects of Common European Interest (IPCEI) have also targeted strategic sectors such as microelectronics and edge and cloud technologies.[195] Additionally, the Next Generation EU initiative has allocated over €800 billion of European common debt, with more than 20 percent dedicated to digital transformation and strengthening Europe's technological capabilities.[196] Yet, questions remain about how effectively these resources have been allocated and whether they are genuinely fostering independent European tech players, rather than deepening dependencies on existing tech giants.

Examining the deeper layers of the tech stack, particularly in critical semiconductors, remains a complex endeavor. Building domestic capacity in advanced chip production is essential for reducing Europe's dependence on foreign suppliers, though it remains a challenging goal. The rapid growth of AI has concentrated control over critical resources—data, computing power, and advanced chips—in the hands of a few dominant Big Tech firms. These companies shape the digital landscape and control market access, creating significant dependencies for industries, small and medium-sized enterprises (SMEs), public institutions, workers, and citizens alike.

To counter this concentration of power, robust antitrust measures and strategic investments in alternative solutions are essential. Policies like enforcing nondiscrimination rules—which guarantee fair access to digital services—and implementing structural separation to prevent companies from controlling both cloud infrastructure and AI applications can help curb their dominance. Additionally, publicly funded alternatives should prioritize AI development that addresses societal needs, safeguards workers' rights, and protects vulnerable groups from harmful applications. By creating

[194] Gaia-X, accessed October 12, 2024, https://gaia-x.eu. See also the interview with Francesco Bonfiglio in this collection.
[195] European Commission, "IPCEI on Next-Generation Cloud Infrastructure and Services to Boost Europe's Digital Decade," December 5, 2023, https://digital-strategy.ec.europa.eu/en/news/ipcei-next-generation-cloud-infrastructure-and-services-boost-europes-digital-decade.
[196] For the scoreboard on the investments, see European Commission, "Recovery and Resilience Scoreboard," accessed October 12, 2024, https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/digital.html.

independent options, developers can build their own AI models without relying on the existing AI oligopoly. This strategy promotes competition, preserves digital sovereignty, and drives innovation in key areas like climate action, healthcare, renewable energy, sustainable mobility, and education.

Europe's push for a green and digital future also faces significant challenges due to the environmental impact of AI and cloud computing. Data centers, crucial for training AI models, consume vast amounts of energy and water, putting pressure on power grids and complicating climate targets. The International Energy Agency (IEA) warns that global electricity demand from data centers could more than double by 2026.[197] In Europe, data centers already consume 2.7 percent of the continent's total electricity, with Ireland particularly impacted:[198] 20 percent of its national energy use is dedicated to data centers, exceeding the consumption of all residential buildings combined. [199]

Investments such as the $30 billion fund from Microsoft and BlackRock are only accelerating this unsustainable demand,[200] with data centers often strategically placed near nuclear plants to ensure stable power.[201] This expansion, however, puts additional strain on energy infrastructure, further complicating efforts to achieve a sustainable energy transition. Emissions from companies like OpenAI and Google have surged—nearly 30 percent for OpenAI since 2020 and almost 50 percent for Google between 2019 and 2023[202]—driven by the expansion of their data center operations. The use of renewable energy certificates and creative accounting practices by Big Tech often masks their true environmental footprint, revealing a need for greater transparency reporting on emissions, energy consumption, and water usage. To align digital infrastructure growth with Europe's climate goals, data centers and digital systems must prioritize decarbonization, resource efficiency, and sustainable management.

Independent Next-Generation Digital Public Infrastructures

[197] Matthew Gooding, "Global Data Center Electricity Use to Double by 2026 - IEA Report," Data Centre Dynamics, January 26, 2024, https://www.datacenterdynamics.com/en/news/global-data-center-electricity-use-to-double-by-2026-report.
[198] European Commission, "Green and Digital: Study Shows Technical and Policy Options to Limit Surge in Energy Consumption for Cloud and Data Centres," November 9, 2020, https://commission.europa.eu/news/green-and-digital-study-shows-technical-and-policy-options-limit-surge-energy-consumption-cloud-and-2020-11-09_en.
[199] Jude Webber and Malcolm Moore, "Ireland Struggles to Consolidate Role as Data Centre Hub," *Financial Times*, October 7, 2024, https://www.ft.com/content/9ab958bf-41dc-4d38-81e1-b311c9e57332.
[200] "Microsoft, BlackRock to Launch $30 Billion Fund for AI Infrastructure," Reuters, September 17, 2024, https://www.reuters.com/technology/artificial-intelligence/microsoft-blackrock-plan-30-bln-fund-invest-ai-infrastructure-ft-reports-2024-09-17.
[201] C Mandler, "Three Mile Island Nuclear Plant Will Reopen to Power Microsoft Data Centers," NPR, September 20, 2024, https://www.npr.org/2024/09/20/nx-s1-5120581/three-mile-island-nuclear-power-plant-microsoft-ai.
[202] Katie Bartlett, "Google's Carbon Emissions Surge Nearly 50% Due to AI Energy Demand," CNBC, July 2, 2024, https://www.cnbc.com/2024/07/02/googles-carbon-emissions-surge-nearly-50percent-due-to-ai-energy-demand.html.

Europe's digital future depends on its ability to build an independent digital ecosystem—what we call the EuroStack. At its heart, this effort is about reclaiming technological sovereignty and reducing dependence on US and Chinese Big Tech. Today, a few dominant companies control critical digital infrastructure, data flows, and computational power, shifting the balance of the digital world away from democratic values and toward corporate interests. Without a coordinated and ambitious EuroStack initiative, Europe risks remaining a passive consumer in the digital economy, vulnerable to the strategic interests and geopolitical shifts of others.

Realizing the EuroStack requires more than rhetoric; it demands a clear industrial policy and bold, targeted investments that support local innovation and create a digital ecosystem aligned with democratic values: privacy, transparency, sustainability, and accountability. As Mario Draghi has advocated for, a commitment of €800 billion is needed to bridge the innovation gap.[203] President von der Leyen's proposed Competitiveness Fund[204] and the €100 billion European AI initiative—similar to a CERN for AI[205]—are crucial as they aim to match the ambition of the US's $280 billion CHIPS and Science Act.

The European Technological Sovereignty Fund could be a first necessary step to accelerate EuroStack's development. This first effort should focus on developing a core Digital Public Infrastructure layer that includes a vital component for modern society, encompassing digital IDs, a digital euro, and data management and exchange systems. Digital systems have become vital to the delivery of essential services, including vaccine distribution, social welfare, healthcare, and education. These systems form the backbone of the European social model, which is rooted in the principles of social protection, rights, freedoms, equality, and solidarity—values developed in the aftermath of World War II. However, the digital transition is putting this model under strain, making it imperative to ensure democratic control of digital infrastructures.[206] Without such control, the integrity of Europe's welfare state and its commitment to serving the public good are at risk.

These infrastructures should be designed as independent, open platforms to prevent corporate dominance and ensure transparency. The EuroStack initiative could bring together a task force pooling expertise from national innovation agencies, Europe's most talented scaleups and industry leaders; and blend grants with equity investments to integrate virtuous national and EU initiatives into a cohesive "Europe Stack," supported by an independent governance framework. Grants should be targeted to increase risk

[203] Giovanna Faggionato, "Draghi Demands €800B Cash Boost to Stem Europe's Rapid Decline," *Politico*, September 9, 2024, https://www.politico.eu/article/mario-draghi-report-says-eu-must-spend-twice-as-much-after-wwii.
[204] "EU Executive to Propose Competitiveness Fund for Strategic Technologies," Reuters, July 18, 2024, https://www.reuters.com/world/europe/eu-executive-propose-competitiveness-fund-strategic-technologies-2024-07-18.
[205] Jacob Wulff Wold, "Von der Leyen Gives Nod to €100 Billion CERN for AI Proposal," Euractiv, July 25, 2024, https://www.euractiv.com/section/digital/news/von-der-leyen-gives-nod-to-e100-billion-cern-for-ai-proposal.
[206] Francesca Bria, "Europe's Clash with Big Tech is not about free speech, it's about upholding democracy and digital independence ," Medium, September 28, 2024, https://medium.com/@francescabria/europes-clash-with-big-tech-is-not-about-free-speech-it-s-about-upholding-democracy-and-digital-5fcb6f89889b.

capacity and offer patient capital for long-term projects, while unlocking private and institutional capital will be essential to scaling Europe's digital infrastructure. This funding strategy must also incorporate a gender and inclusion lens, ensuring that all Europeans can participate in and benefit from the broader digital ecosystem.

Collaboration among EU Member States and EU institutions is essential. Building shared, interoperable, digital public infrastructures can deliver next-generation services across Europe and offer true alternatives to monopolistic platforms. This includes fostering open, decentralized AI models and solutions tailored to Europe's strategic sectors, ensuring that essential digital tools do not remain tied to US-based cloud giants like AWS, Azure, or Google Cloud.

A part of this ambitious strategy could be reforming digital taxation to ensure that Big Tech pays taxes where they generate profits and collect data. These revenues should be reinvested into the European Technological Sovereignty Fund.The success of the EuroStack depends on a clear industrial policy with concrete goals, streamlined decision-making, and adaptable state aid rules.

Emphasizing open-source and privacy-enhancing technologies, data sovereignty, and interoperability is key to release dependency on proprietary systems and surveillance business models, based on the monetization and manipulation of personal data. Data should be treated as a public resource that generates public value while safeguarding privacy and rights. We need data intermediaries that prioritize the public interest, with mandates for data sharing and interoperability embedded in procurement processes.[207] It's also essential to include provisions for data access, transparency, and accountability regarding the use of data for AI model training in procurement contracts and public tenders or licensing.

Aligning the EuroStack with Europe's climate ambitions is equally vital. The rapid growth of AI-driven data centers has led to higher energy consumption and pressure on power grids. Integrating decarbonization, energy efficiency, and non-exploitative resource management into the EuroStack will ensure that digital progress does not come at the expense of environmental responsibility.

Moreover, the global dimension of the EuroStack's benefits is clear in a shifting geopolitical landscape. Such an architecture fosters collaboration with other regions and strengthens international digital cooperation, scientific exchange, and economic partnerships. It allows Europe to position itself as a partner in the codevelopment of global digital public goods, working alongside countries like Brazil, Taiwan, and India—nations

[207] Bria et. al., "Governing Urban data for the Public Interest", The New Institute, October 2023 https://thenew.institute/media/pages/documents/529e984d02-1698245881/the-new-hanse_blueprint_governing-urban-data-for-the-public-interest.pdf.

that are also building digital public infrastructures.[208] By developing the EuroStack, Europe can move beyond being perceived merely as a digital regulator, and instead become a true collaborator in shaping a fairer digital future. This partnership approach allows Europe to build alliances with the Global South and like-minded countries, creating new opportunities for shared technological advancement that benefits humanity and the planet.

Ultimately, the EuroStack is not just a technological project—it is a political one. It offers Europe the chance to shape a digital economy that aligns with democratic principles and serves the public good, instead of ceding control to a handful of powerful corporations. This is Europe's moment to seize control of its digital destiny and lead the way toward a more equitable, sustainable digital society.

[208] Luca Belli, "Building Good Digital Sovereignty through Digital Public Infrastructures and Digital Commons in India and Brazil," CyberBRICS, September 11, 2023, https://cyberbrics.info/building-good-digital-sovereignty-through-digital-public-infrastructures-and-digital-commons-in-india-and-brazil.