Issues in European Defense Spending (I)

New defense technologies: The shift from platforms to software

→ Europe's move toward software-driven defense systems has raised long-term costs and deepened reliance on U.S. technology.

→ Europe's challenge is no longer the size of its defense budget, but in building domestic digital capacity and institutional structures that can turn software investment into tangible military power.

Introduction

Europe's growing investment in defense technologies is not translating into proportional gains in deployable military capability. The shift away from traditional hardware platforms toward AI, digital systems, and data integration has redefined the cost structure of defense and deepened reliance on U.S. technology.[1]

The surge in defense spending is not translating into proportional gains in deployable military capability

The new cost structure of defense

The shift toward software-intensive defense fundamentally alters defense cost structures. Traditional platforms involve high upfront procurement costs followed by relatively predictable lifecycle expenses. By contrast, AI-driven and digital systems require continuous investment.

Highly specialized talent in AI, cybersecurity, and data science is scarce and expensive. Computer infrastructure, particularly cloud services and high-performance processing, must be constantly maintained and upgraded. Data acquisition, storage, and management are ongoing requirements, while system integration across complex networks introduces additional layers of cost and technical risk. Digital integration and software capabilities are becoming dominant cost drivers in modern militaries.

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These are not one-time expenditures. They are recurring financial commitments that scale with operational use. As a result, defense budgets are increasingly absorbed by maintenance, updates, and integration rather than the acquisition of new hardware. Digital integration and software capabilities are becoming dominant cost drivers in modern militaries. And rising European defense spending has not consistently translated into equivalent capability gains, in part due to these structural shifts.

Rising dependence on U.S. technology

This transformation deepens Europe's dependence on external suppliers, capabilities, and ecosystems, particularly the United States, reinforcing both

cost pressures and strategic constraints.[2] Critical components of AI-enabled defense systems, including cloud infrastructure, advanced semiconductors, and key software platforms, are dominated by U.S. firms. There is no European substitute today for Palantir-class targeting and ontology software, Starlink-grade resilient communications, NVIDIA-class AI computing, or hyperscale sovereign cloud (AWS, Microsoft Azure, Google Cloud). This reliance increases long-term costs through proprietary ecosystems while limiting Europe's control over data governance, cybersecurity, and system resilience.

Ukraine benefits significantly from access to U.S. tech infrastructure, including cloud computing, data storage, and data transmission infrastructure.[3] Ukraine's drone armies are successfully pushing back against Russia, even though Russia has a decisive advantage in terms of expensive kit (fighters, bombers, missiles, etc.)[4]. It would suffer significantly if it lost access. Europe is in a similar boat. Building comparable infrastructure would require large amounts of chips, energy, and technology that neither Ukraine nor the EU has.

The relevant policy question is therefore not whether to buy from the United States, but on what terms. Framed honestly, autonomy is not a binary state but a negotiated dependency – one that Europe has, so far, negotiated weakly. Duplication across national programs and limited coordination continue to undermine efficiency. The result is a structural mismatch: increased spending flows into a system that is not optimized to convert resources into scalable, integrated capabilities.

Conclusion

Without reforms to procurement, industrial coordination, and technological integration, higher spending alone will not resolve the capability gap

The constraint on European defense is no longer primarily financial but institutional. Without reforms to procurement, industrial coordination, and technological integration, higher spending alone will not resolve the capability gap.

Policymakers will need to adapt institutions to the realities of software-driven defense to ensure that rising budgets translate into effective, deployable military power. Concretely, that means three things: shifting a meaningful share of national procurement budgets into joint, software-led programs run through the European Defense Agency or NATO frameworks; building EU-level reference architectures for command-and-control, data, and AI on which national systems must interoperate; and treating software, data, and digital talent as core defense assets – budgeted, audited, and reported alongside platforms.

Unless there are institutional reforms, more spending will continue to mean more opacity, not more capability.

Notes

[1] https://acquinox.capital/insights/space-and-defense-tech/the-economics-of-modern-defense-how-tech-innovation-is-remapping-global-military-spending

[2] https://www.kielinstitut.de/publications/news/despite-billions-in-spending-europes-military-build-up-risks-falling-short/#:~:text=In%20addition%20to%20joint%20procurement,systems%20into%20operation%20more%20rapidly.

[3] https://www.atlanticcouncil.org/content-series/the-big-story/the-coming-compute-war-in-ukraine/

[4] https://www.atlanticcouncil.org/blogs/ukrainealert/ukraine-is-winning-the-drone-war-with-strike-campaign-behind-russian-lines/