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Accelerating and Financing the Hyper-Digitalization of European Armies: A Cornerstone of Our Sovereignty

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Introduction

“Sovereign is he who decides in the exception,” wrote French sociologist and resistance fighter Julien Freund. He defines sovereignty as the capacity for independent action when danger arises—not merely as a matter of law. This concept links sovereignty to technical, technological, financial, logistical, informational, and mental preparedness before crises occur, and to the constitutional ability to concentrate decision-making in very few hands, based on reliable data and through a short chain of command at the critical moment.

So, historically, sovereignty has been a matter of scaling financial resources, technological equipment, recruited and trained personnel, and intelligence data. Today, increasingly, it is also a matter of real-time capability, digitalization, data sensors, immediate processing and validation of massive datasets, superiority in decision-making processes, and real-time communication capacities. All these elements are integral to the “capacity for decision in the exception” described by Freund, and today they are provided by software, multi-domain sensors, artificial intelligence, automation, drones, and quantum computing power. Not only by numerous , highly-qualified soldiers and officers. Our Armies cannot operate sovereignly in the 21st century without integrating these new technologies into their operational chains—what we call hyper-digitalization.

The challenging adaptation of a historical well-structured defense ecosystem

Historically, sovereignty led to a form of “soft power” exercised by the State and the armed forces over a trusted ecosystem of industrial partners. It relied on a clear vision of public and private partners involved in both the preparation phase and the operational maintenance phase, of their contractual arrangements, information sharing, and responsibilities. Since the second half of the 20th century, the armed forces and defense industry prime players have built genuine expertise together. While the inertia and length of defense programs are often criticized, one has to recognize the Defense industry—with the support in France of the DGA—has really created a true industrial excellence, defining the rules of collaboration between industry and the State.

However, the rapid digitalization of warfare equipment, of decision-making processes, of the intelligence and of the battlefield itself—as demonstrated in Ukraine—highlights how new actors in software, artificial intelligence, data processing, and equipment automation have become critical to the preparation and operation of our armed forces, and thus to our sovereignty. As “Le Grand Continent” notes in “Notes for a New Army”: “Technological opportunity precedes and defines capability needs and organizational structure.” This is a huge reversal: to create the conditions for superiority and strategic surprise, an armed force must organize broad technological monitoring and collaboration to seize opportunities of military superiority enabled by technological advances in a short timeframe. It must adapt its equipment integration chain—and thus its organization—to this ever-accelerating pace of innovation.

For example, the Rafale fighter took over 20 years to enter service. Such a timeline created a risk of rapid obsolescence for its embedded digital and software components. It is now crucial to separate long-cycle elements (hulls, engines) from short-cycle modules (software, sensors, AI) so that programs can accept components from companies that may not even exist at launch, and allow for frequent, agile updates. This is again a major shift from our historical process for selecting industrial partners for the armed forces.

The challenge of integrating innovation

A growing share of innovation now escapes the traditional contractual framework between industry and the armies, due to lengthy partner selection and technology qualification processes. New technologies, especially software-based, are not only generated by large industry players close to governments and the DGA, but also by young, innovative tech companies that have proven themselves in civilian markets and whose innovations are highly relevant to the battlefield. These companies do not meet the historical selection criteria of the DGA and of our industry: few years in existence, modest size, no desire to limit growth for immediate profitability, as they have access to private market funding. Those are considered weaknesses within traditional defense partner selection standards but are inherent to the DNA of AI, quantum, and software startups. Yet they are high-performing, and the civilian sector has learned to work and innovate with them; for example, Tesla, a software company applied to automotive, has transformed vehicle creation across the industry.

In defense, however, military procurement has relied on heavy, rigid contracts, often awarded to a few major industry players, excluding many innovative actors, especially startups and SMEs. In France, even the Defense Innovation Agency (AID) focusing on start-ups, research and innovation must follow complex procedures, which inevitably slows innovation integration.

Lessons from "New Space"

The "New Space" example is striking: SpaceX began as a commercial space launcher, funded by the powerful American venture capital industry. Aerospace-defense giants in the US and Europe failed to recognize the innovation brought by this new civil-sector actor, dismissing it as "just a startup" with no visible government experience. Yet, through legal battles, SpaceX gained access to US military markets and, in 20 years, became the global reference for both military and civilian space launches. The criteria used at the time by aerospace-defense giants to judge this new actor were clearly obsolete. But years later, where does Europe stand in this highly strategic sector in 2025? Is there also today a risk of European defense industry decline over 20 years, as seen in the space industry, and thus a knock-on effect on our armed forces' operational capabilities?

Similarly, is the French Army truly leveraging the superiority potential of these new innovative actors in the defense sector in France and Europe? Does it have access to them? How can it gain an advantage over adversaries by enabling rapid, effective collaboration enriched by the latest software-based technological advances, without undermining the existing and vital French defense industrial base ("BITD")? Can it serve as a testbed for integrating superior software solutions from outside our BITD, enhancing the operational capabilities of ships and sailors for the Navy, soldiers and thanks, pilots and fighters?

Positive developments

Several positive developments are worth noting in the evolving relationships between he European armed forces and young innovative companies. It is important to highlight and multiply these successes:

- **Deployment of data hubs** on the FREMM Provence and the Carrier Strike Group, with support from CSDIA-M, FRS NUM, DGA, and French startups specializing in cloud, AI, and cybersecurity. These enable real-time collection, processing, and visualization of operational data, integration of AI algorithms for decision support, improved multi-domain and multi-environment awareness (M2MC), predictive maintenance, and weak signal analysis. This has also been a strong motivator for involved sailors and partner company staff.

- **CENTURION program:** An innovation ecosystem established by Safran, Thales, and DGA, allowing SMEs to propose technological solutions for the armed forces while retaining their rights and benefiting from strategic and financial support.
- **Ukraine's example:** Rapid innovation and deployment demonstrated by the Ukrainian military, which adapted civilian drones, developed AI tools, and launched the Delta platform for real-time combat data sharing.
- **Brave1 program in Ukraine:** An agile approach where innovations are tested and deployed within months. In two years, Brave1 has supported over 3,600 technological solutions for the Ukrainian front. This frugal, responsive model contrasts sharply with Western cycles and is now part of a European dynamic via BraveTech EU, a joint initiative with the European Commission to strengthen defense innovation cooperation between Ukraine and the EU.

Quick focus on the French navy

The Navy must, as what happened in 2025 with On-Board Data Hubs, strengthen its autonomous digitalization. Cross-armies initiatives are valuable, but the weight of other branches can dilute Navy-specific needs. Both approaches are complementary, but the Navy must accelerate its own digitalization, offering tailored programs for startups. This includes opening access to defense data for AI training, facilitating co-development between the armed forces and young industrial actors, developing new contracting models, and establishing real-world experimentation environments.

The creation of the Rapid Acquisition Force (FAR) and reforms under the 2024-2030 Military Programming Law (LPM) are steps in this direction but must be generalized. This requires fostering a culture of co-innovation, with mixed military-industry teams modeled on Software Factories, encouraging dual-use companies, and supporting their access to civilian and foreign markets. Finally, a dedicated Navy task force for AI and cognitive warfare could accelerate experimentation with critical technologies in a startup-friendly mode.

Financing the French and European new-defense ecosystems

Financing this ecosystem of young innovative, dual-use companies is also crucial to create a powerful ecosystem of New Defense innovative companies in Europe able to augment the military superiority of our European armies. As a parallel, the remarkable growth of American new tech companies serving the armed forces—such as Palantir, SpaceX, Anduril, Shield AI—was made possible by massive private institutional investment directed by the venture capital industry, not only by Washington. This is even more crucial as the 2024-2030 Military budget (LPM) does not really increase the number of French Navy vessels: 15 frigates, 6 attack submarines, 18 modernized maritime patrol vessels, 1 next-generation aircraft carrier, 3 amphibious helicopter carriers, etc. And public debt levels limit the possibility of significant budget increases for many years.

The challenge is truly to excel in a phase of global digitalization and rising geopolitical tensions, without massive increases in public budgets. "The key for the Navy's leadership will be to be ready to fight tomorrow's wars with the same number of operational units, but 'augmented' by new architectures for our combat systems and major technological innovations (hypervelocity, directed-energy weapons, quantum sensors…),"

says ALNUM, The French Admiral responsible for the Navy digitization. What financial levers can the Navy use to benefit from these technological innovations that create information and decision superiority in naval warfare, given that European states and France have reached unprecedented debt levels?

The funding gap

Mapping French funds financing defense-serving startups reveals a heavy dependence on public money and a lack of private institutional capital. Most dedicated funds are managed by BPI and the European Investment Fund. The few private funds cannot compete with the American ecosystem or create the conditions for the emergence of European technologies serving our armed forces.

Several management companies plan to launch dedicated funds, but few target young innovative companies, as this requires venture capital expertise in technology, which is rarer in France and Europe. The gap between amounts raised in Europe and the US by defense startups over the past years (2022-2025) is telling : €3 to 5 bn per year in Europe vs. €15 to 20bn per year in the USA.

Toward a new financing model

The question of effective and powerful financing for a French ecosystem of young innovative companies serving the Navy and armed forces raises the issue of the roles of the State, institutional investors, major defense industry players, and the armed forces in this common objective. It is essential to direct institutional money—that is, investments from insurance companies, health mutuals, foundations, and pension funds—toward companies serving defense in Europe. For two decades, these institutions were limited in their ability to support any company exposed to the defense sector, seen as misaligned with dominant ESG criteria. Yet institutional money is the primary source of venture capital funding, whose job is to invest in young companies with high value-creation potential. For this reason, public money has been heavily solicited, via funds managed by BPI and the European Investment Fund, to invest in this sector.

An alternative scenario could be envisioned:

- **The State would intervene primarily through public procurement:** With the help of the DGA and new contracting models and proof-of-concept schemes, more public orders would flow into the ecosystem through State-client/startup-supplier relationships, without the lengthy sales cycles or selection processes that exclude young tech actors. In parallel, less public money would be invested as equity in this ecosystem. It is precisely the confidence in future revenues from the State-client that would allow private investors to trust the business models of startups and build an acceptable risk/return profile.

- **Venture capital firms would build dedicated teams and funds for this investment theme, breaking down historical silos:** These teams would include operating partners or strategic advisors from the military (recently retired if active-duty participation is not permitted), representatives of major defense industry players, and tech entrepreneurs who have succeeded in working with the armed forces. These teams, combined with professional tech investors, would reassure institutional investors of their understanding of defense specifics and fund management expertise. Thus, institutional investors would become significant financiers of the French defense-serving startup ecosystem for three reasons: (i) increased visibility of these companies' order levels thanks to modernized public procurement, (ii) the gathering of talent within thematic funds, previously siloed

(military, major industry, investment platforms), (iii) validation of defense-specific understanding thanks to military and industry experts alongside investors.

- **Industry players must devote most of their capital to producing defense equipment and services.** They cannot replace institutional investors. But, like the State-client, they have a strategic role in lending credibility to a new wave of institutional defense financing by sponsoring new financing initiatives. By associating executives with these funds, for example as members of strategic committees, they reassure institutional investors and enable a gradual transfer of expertise from the defense industry to venture capital. This should not be seen as a dilution of their expertise, but as an extension of risk and opportunity understanding from their sector to the institutional world, so that it finances an ecosystem of young innovative companies that will one day be partners in their programs.

- **Finally, our Armies can also carve out a new, more visible role within this effort to build a sustainable financing structure for French and European tech innovators.** As the end clients, they must get closer to startup suppliers: multiply real-world testing workshops with these companies, integrate Data/AI work with soldiers and developers into every deployment on the field, create a "Marine Tech" and "Army Tech" label after these workshops to help these companies win contracts with civilian firms that recognize the quality of products proven on the battlefield, facilitate the participation of tech- or finance-minded sailors in the strategic committees of these funds, invest modestly in these funds to gain venture capital experience, and become a force for recommending companies the armies want to see scale up.

"Money is the sinews of war"—it is not a sufficient condition (we will always need qualified sailors and fighters), but it is indispensable. Organizing the appeal of the European New defense tech sector to institutional investors with the help of VC experts and military experts is crucial given the state of European public debt. Armies have an opportunity to play a key catalytic role in this objective, alongside a State-client that guarantees but invests less as equity, industry players who share defense expertise via venture capital platforms to avoid industrial takeovers, and, ultimately, institutional investors for whom this new value proposition enables credible returns. Participating in this shift in defense startup financing will help make them more numerous, better funded, and thus better suited to our armed forces future victories and to European sovereignty.