Building European Defence Capabilities for a More Uncertain World

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By Giacomo Maria Bressa, Fabio Dal Pan, Andrea De Blasi, Diana Dimitrova, Marc Giesener, and Louis Watt

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After a period of relative stability, the world is now becoming more volatile and uncertain. As highlighted in Mario Draghi's recent report, pillars of stability in Europe such as resilient economies, robust public institutions and energy security are being challenged every week, due to both domestic and international concerns. This shift has major implications for defence and security institutions—including ministries of defence (MODs), alliances such as NATO, and industrial manufacturers—which must shift from discretionary operations to heightened readiness.

In response, European defence entities need to change their risk appetite. At the MOD level, the risk appetite needs to evolve with the changing defence environment. Industrial manufacturers must also adjust their risk appetite, becoming more proactive in proposing solutions and accepting more entrepreneurial risk.

Traditionally conservative in decision-making, MODs now need to adopt a more agile and anticipatory approach. This includes a greater willingness to share both the upside and downside risk with contractors, particularly when it comes to innovation and new commercial constructs. By embracing such risk-sharing, and balancing operational caution with a proactive stance that encourages experimentation and entrepreneurial risk, MODs can accelerate the adoption of cutting-edge technologies even when outcomes are uncertain, positioning themselves ahead of adversaries and crises.

At the same time, governments should communicate the importance of this evolving risk appetite to the public, creating a framework in which MODs are empowered to take these calculated risks without fear of undue political or public backlash. This alignment of political leadership and defence strategy will allow MODs to embrace innovation, foster stronger partnerships with industrial manufacturers, and respond to emerging threats more effectively.

We recognize that European defence entities have a new ambition in terms of scale, pace, and adaptability.

Scale: Force sizes across Europe have declined since the 1980s. There is a broad consensus among defence entities that capabilities must scale up dramatically, but significantly less clarity about how to accomplish this.

Pace: The diversity and immediacy of military tasks has increased, not only for current missions but also for missions of the future. MODs are operating at a faster tempo than before and will need to reach even higher levels of readiness and availability in the future. In addition, the defence industrial base must be able to increase its output to meet new demands—at a pace that it has not operated at for some time.

Adaptability: The uncertainty of the current environment calls for both scale and pace to be moderated, up or down, in line with emerging scenarios. For that reason, defence entities must be able to adapt more effectively. They must have greater transparency about force status and mission-critical readiness, and they must identify and mitigate a wider range of new risks as they emerge.

Improving the ability of European defence entities to adapt with scale and pace requires overcoming some specific challenges. Based on our work with MODs, defence manufacturers, and other stakeholders, defence enterprises can overcome these challenges by focusing on three main areas: strengthening command and coordination, boosting industrial capacity, and accelerating the pace of innovation.

Challenges in Six Main Areas

Our analysis shows that defence enterprise face six broad types of challenges in adapting to the current environment with scale and pace.

Challenge One

Weak coordination between government and industry.

High-performing defence enterprises have a tight bond between industry and government leaders, who are aligned about defence priorities over the coming 10-year period and have committed funding for at least three years. Relationships are truly strategic, acting in a trusted partnership which makes acquisition collaborative rather than transactional. And the entire defence enterprise can rapidly shift from peacetime readiness to escalation and wartime engagement, as needed.

However, this is the exception rather than the rule. Among most European defence entities, governments and industry are misaligned and unable to coordinate at both a strategic and tactical level—due principally to a fractured strategic planning process, volatile budgets, and poorly developed and communicated military requirements.

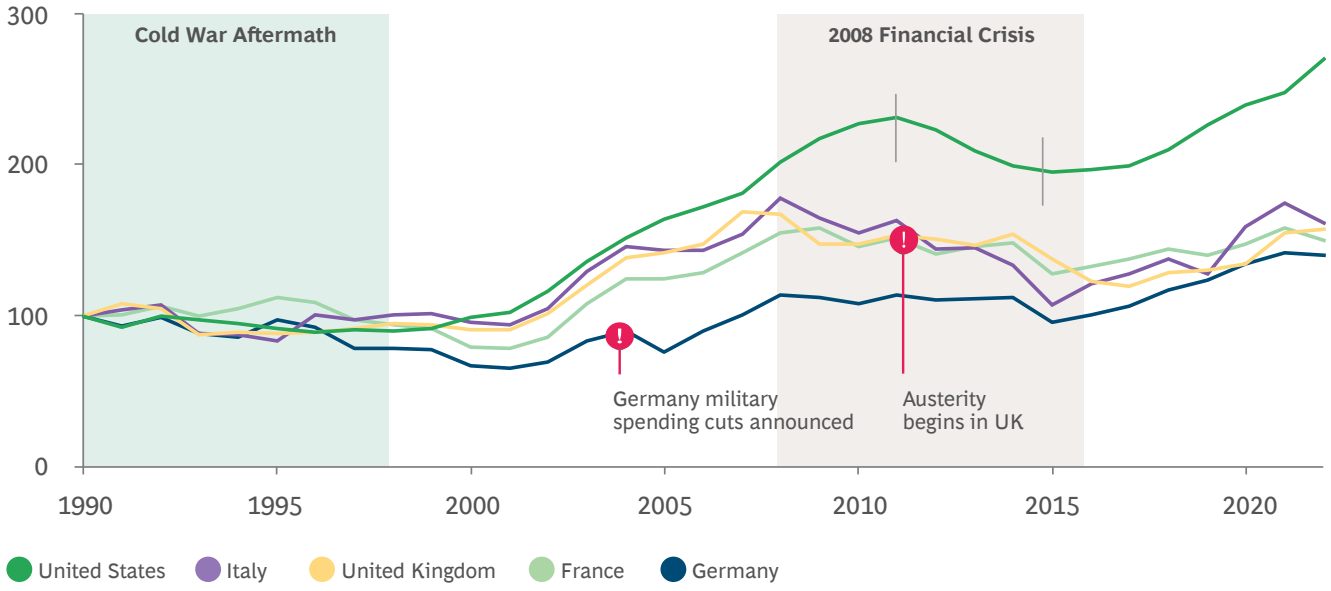
Moreover, political considerations about workshare can sometimes overshadow more fundamental questions about military capabilities.

Weak coordination between MOD and industry at both strategic and tactical level inhibits Industry to commit on long-term investments for scaling up capacity and reduces

Exhibit 1 - Low stability among European defence entities due to budget cuts to sustain social reforms

Budget instability prevents from making reliable long-term CAPEX investments

Defence spending index, 1990 = 100



Source: World Bank, BCG analysis.

Note: spend data is in absolute terms, not adjusted for inflation.

visibility on which programmes can be quickly deprioritized to unlock additional capacity from repurposed programmes.

In part, this is due to fiscal pressure and competing priorities. Governments have faced economic crises that required reallocating resources away from defence budgets to sustain social programmes. (See Exhibit 1.) As a result, this instability prevents the European defence industry, which is largely based on a "built-to-order" system, from making reliable long-term CAPEX investments to increase capacity and reduce waiting times. Furthermore, European defence entities have been outspent on military programmes by China since 2009, and the gap is continuing to widen. (See Exhibit 2.)

In addition, MODs and OEMs have competing priorities. Defence ministries tend to tightly control the technical and operational specifications for defence projects, rather than focusing on broader mission requirements—an approach that can stifle innovation and flexibility. Relaxing stringent specifications would allow industry players to take a more proactive role in proposing credible, mission-fit solutions that go beyond mere compliance with rigid requirements. At the same time, defence industry players have high non-recurring costs and are incentivized to prioritize efficiency by saturating existing capacity. As a result, European forces are oversupplied with nonessential equipment, lack critical tools, and do not have sufficient capacity for flexible adjustments. By fostering credibility and a stronger, more trust-based relationship between MODs and industry, OEMs could respond to evolving needs with solutions that are not only operationally effective but also tailored to emerging threats and mission requirements. This shift would help establish a different dynamic where innovation and practical utility are prioritized over rigid adherence to specifications.

Challenge Two

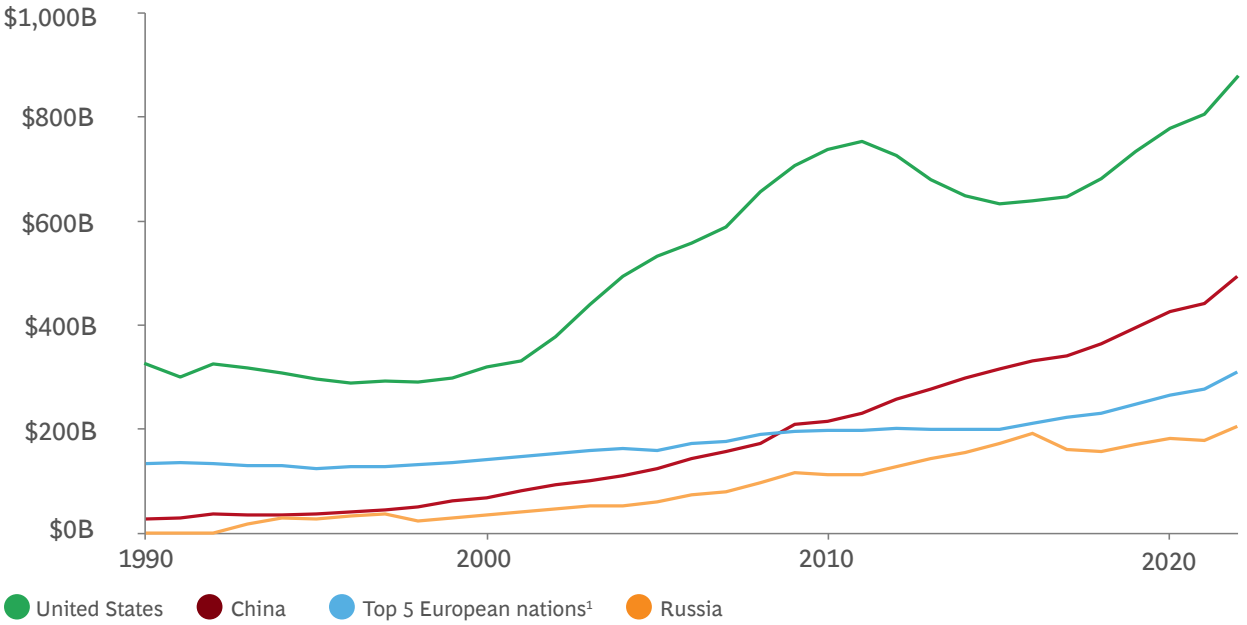
Weak coordination among European nations.

European nations face significant challenges in coordinating their defence strategies, both within NATO and at the regional level. This lack of effective coordination has led to fragmented and decentralized efforts in the procurement of major defence programs, resulting in a number of duplicated capabilities.

The complex web of more than 80 active alliances and defence cooperation agreements, each involving at least one European nation, only adds to the difficulty of forging a unified defence approach. (See Exhibit 3.) As a result, around 40% of defence spending across a wide range of different capabilities (both mass and cutting-edge) in Europe is acquired from outside the region, reflecting a clear absence of a consistent strategy in building regional sovereign capabilities. (See Exhibit 4.) Instead of pursuing a cohesive European defence framework, nations often resort to a disjointed mix of non-European solutions. This underscores the critical issue: the lack of strong strategic leadership necessary to steer Europe towards a more sovereign and self-sufficient defence posture in an increasingly uncertain global environment.

Exhibit 2 - European defence entities have been outspent on military programmes

China has outspent top 5 European nations[1] on military since 2009
Defence spending, PPP Adjusted, $Billions

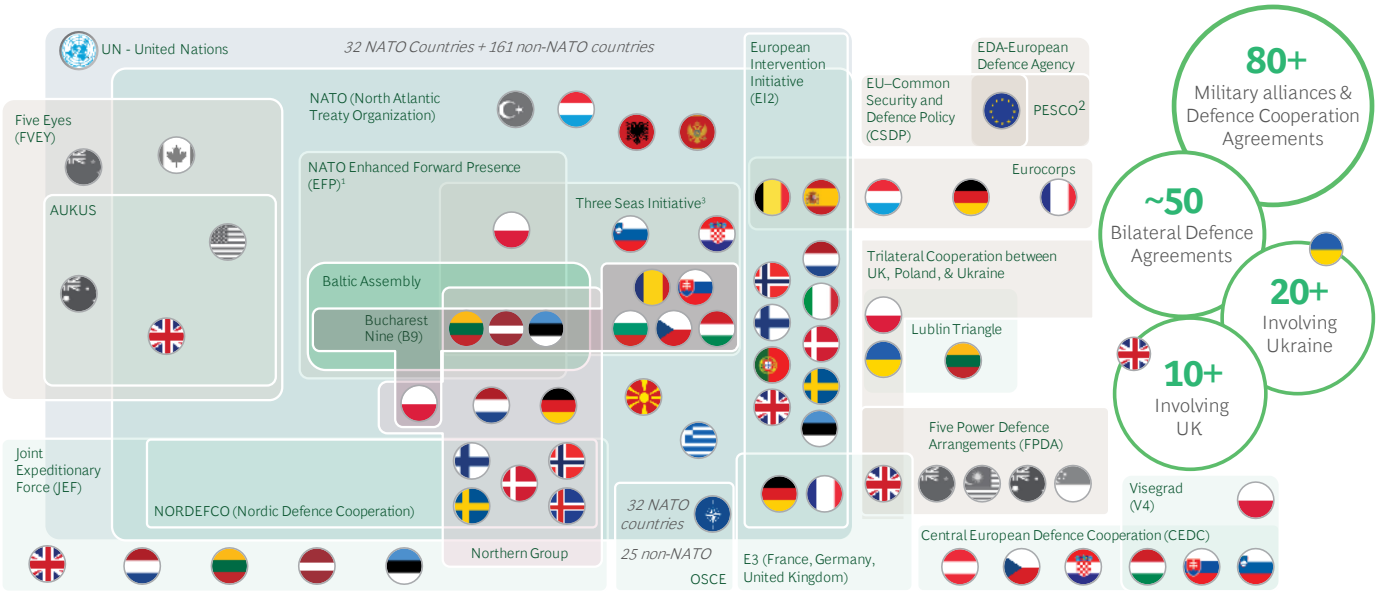


Source: Defence News, European Commission, European Central Bank, World Bank, OWID, BCG analysis

1. France, Germany, Italy, Spain, UK

Exhibit 3 – The complex web of active alliances adds to the difficulty of forging a unified defence approach

A complex web of security interconnections
Alliances, defence cooperation agreements and partnerships participated by at least one European nation



Note: Non-exhaustive.

1. NATO members contributing troops to these countries.

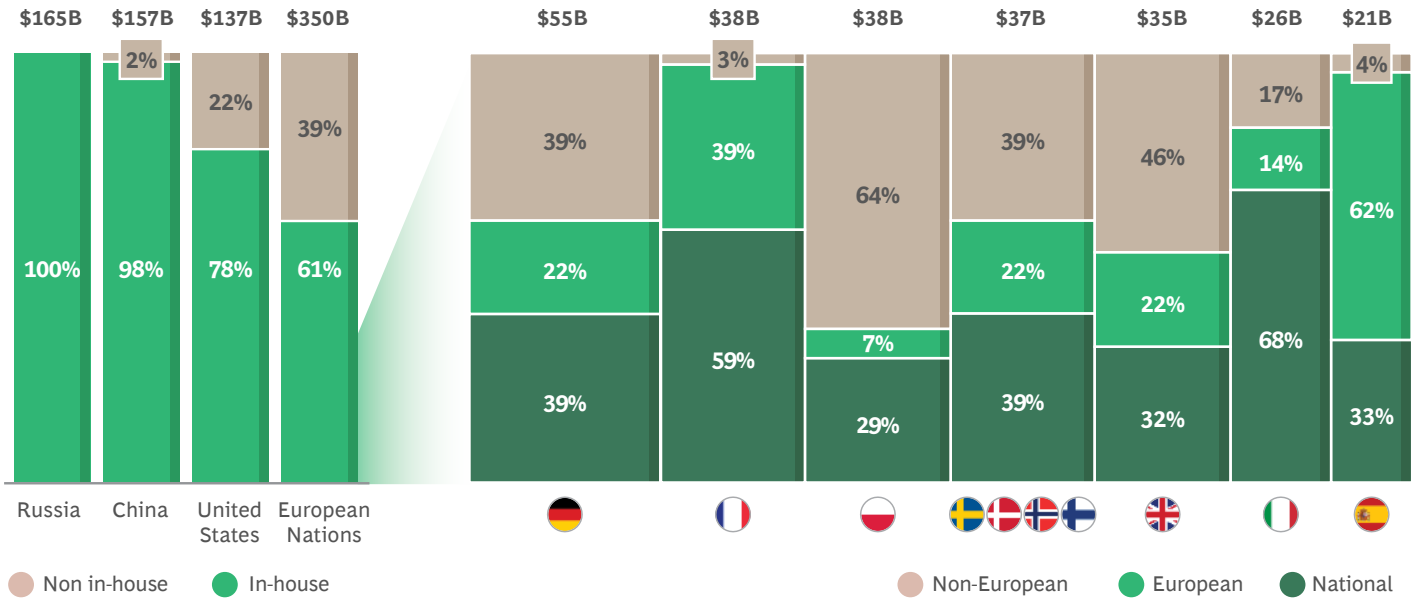
2. All EU countries Except Malta and Denmark.

3. Austria not represented, but part of the agreement.

Exhibit 4 - Lack of a coherent strategy at European level to develop sovereign capabilities

Platform acquisition spending - In-house vs Non in-house

Defence spending on equipment[1], forecast 2024-2034, PPP Adjusted, $Billions



Source: GlobalData, BCG analysis.

Note: Deep dive on the right-hand side for European nations is not exhaustive.

[1] Spending on disclosed defence platform acquisition, excluding joint programs. Includes Fixed Wings Aircraft, Rotorcraft, UAV, Artillery Systems, Land Vehicles, Missiles and Missile Defense Systems, Naval Vessels and Surface Combatants, Satellite, UMV, Submarines, UGV.

Challenge Three

Minimal insight into current readiness levels.

Ideally, defence industrial players, both sovereign and allied, are able to supply cutting-edge equipment to a highly skilled military to operate. Militaries then generate the combination of kit and people into deployable capabilities ready to fight and win. The mission capable rates (MCRs) of these capabilities are planned and continuously monitored, with resources directed to critical areas where remediation may be required.

Yet most military and government leaders often have minimal awareness of current readiness levels, leaving them unable to spot or rectify emerging issues. For example, on many defence assets, roughly 60% of the total lifecycle cost is sustainment, rather than the original acquisition cost. But without understanding real-world rates of readiness/MCR, the correct parts cannot be specified, contracted, or deployed to meet the target levels.

Some initiatives are in place to create greater transparency. For example, at the alliance level, the EU Capability Development Plan (CDP)—introduced in 2008 and most recently updated in 2023—provides a comprehensive overview of Europe's defence capabilities and identifies priorities for capability development. In 2023, priority capabilities were in the areas of cyber defence, space operations, air and missile defence, ground combat, maritime domain awareness, and strategic enablers like military mobility, sustainable logistics, and critical infrastructure protection.

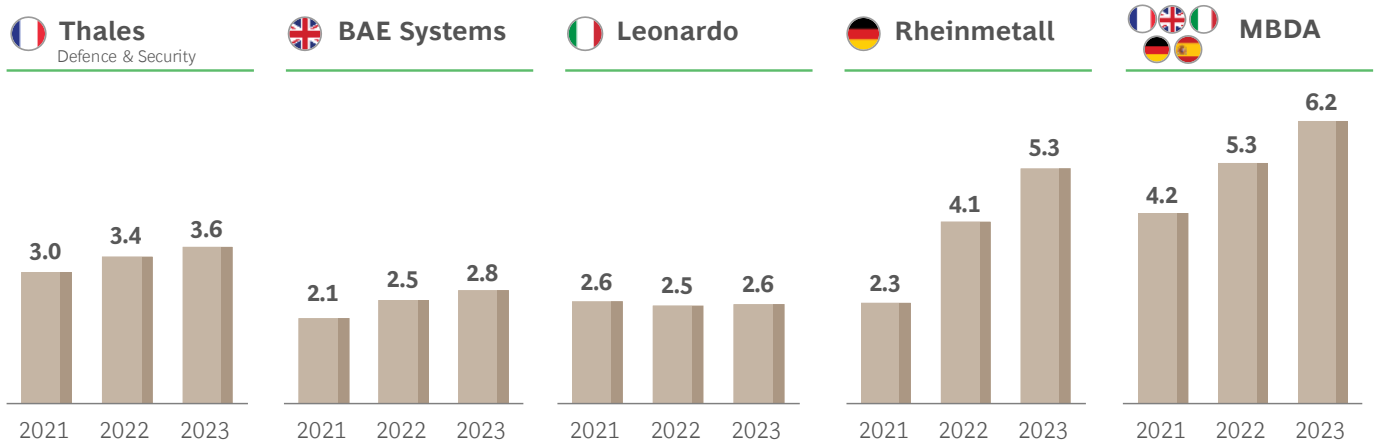
At the national level, the UK Defence Equipment Plan outlines the UK Ministry of Defence's investment strategy for the next decade, including detailed assessments of current capabilities and future needs. The plan includes a significant budget to enhance equipment readiness and address capability gaps.

However, at both the national and alliance level, there is limited transparency into a country's capabilities. While there is some view of areas severely lacking capability, there is limited visibility on the specific count of a certain platform available. Initiatives to build capability lack granular information, including integrated control point systems for real-time monitoring and assessment of defence capabilities.

Exhibit 5 – Defence industry does not have the kind of flexible production lines that allow them to scale up in response to new threats

Sudden spikes in demand have pointed towards production line saturation

Sales backlog ratio (order backlog/revenue)



Source: Annual reports, EDR News, BCG analysis.

Challenge Four

Inflexible industrial supply base.

In many European countries, defence manufacturers do not have the kind of flexible production lines that allow them to scale up in response to new threats. This is exacerbated by the lack of government-industry coordination discussed above. As a result, sudden spikes in demand have led to order backlogs, suggesting that production lines are already running at full capacity. (See Exhibit 5.)

Securing the physical resources required to sustain production is an essential task to be coordinated by government—often by finding common ties between defence and adjacent industries (or by coordinating with partner nations). What's needed is a different dialogue and a deeper understanding of the industrial implications of government requests to build specific capabilities.

Related, supply chains are often vulnerable to disruptions. Defence is a significant consumer of rare earth metals and critical minerals. Even some of the less-exquisite commodity items required—such as TNT, nitrocellulose, or semiconductors—are often sourced from unstable supplies in non-NATO regions, posing potential disruptions to sovereign security. For example, the EU relies on imports for 75% to 100% of its metals, with 19 critical raw materials primarily sourced from China.

The issue of inflexible capacity is particularly acute when new defence programmes are ramping up into full production.

- **Less than 40%** of new programmes have sufficient labour with the skills needed to meet ramp-up demand. The workforce is often understaffed and under skilled, with many experienced staff retiring and industries competing for scarce labour.
- **Only about 35%** of programmes effectively communicate and manage evolving requirements and scale forecasts with suppliers. Requirements and technology changes are not effectively communicated throughout the entire supply chain, causing suppliers to lag behind OEM timelines.
- **Less than 40%** of programmes have executive-level KPIs (such as on-time delivery, first-pass yield, or workforce productivity) that flow down to the shop floor during ramp-up. A&D programmes lack a common production goal that is clear, measurable, and directly aligned with customer requirements. This leads to a lack of true production status data.

Because of these issues, more than 75% of A&D programmes exceed scheduled timelines, and more than 40% run over budget.

Challenge Five

Lengthy and incremental innovation cycles.

Productive innovation is a complex interplay between academia, industry, government, and regulators, requiring strong governance and often direct intervention to deliver fieldable capabilities. When performing strongly, an innovation ecosystem can respond to real-world capability gaps on the front line in months or even weeks. This rapid fielding complements longer-term acquisition cycles in ways that can create a critical edge over the adversary, delivering technology to the front line in an affordable, responsive, and repeatable way.

Today, the innovation systems of many European nations are failing to keep pace with rapid changes in the threat environment. Length cycles are a result of issues across the entire innovation process, including limits on supplier access, fragmented funding, and the development of ideas into fieldable products for acquisition. Additionally, innovation is often delegated to the entrepreneurship of individual armed forces or specific functions, which operate with limited feedback loops and minimal ability to share successful solutions across the broader defence ecosystem. This siloed approach hampers collaboration and reduces the potential for cross-functional innovation.

As Exhibit 6 shows, MODs in a recent BCG analysis increasingly see innovation as a strategic priority and are more willing to work with start-ups and innovation accelerators. Yet this is not translating to results in the field.

- 88% of respondents report that linkages between innovation focus areas and mission strategies, goals, or needs have not been established sufficiently to yield tangible outcomes.
- 66% of respondents report not having an innovative culture that encourages risk taking and does not punish failure.
- 56% of respondents report a lack of implemented approaches, methods, and systems to source ideas from their end users.

Challenge Six

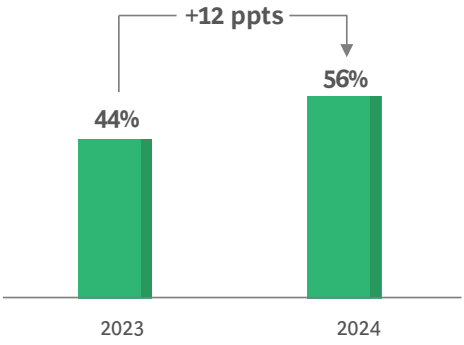
Inoperability with allied nations.

In a high performing alliance, each party plays to its strengths and collaborates to jointly build capabilities for the overall entity. However, countries inherently compete, with multiple sovereign and political agendas competing for space against the strategic objectives of the alliance. Many platforms have national variants that increase complexity without yielding really advantages in the field. For example, the US has one main battle tank, while European defence entities have 17. The discrepancy among destroyers and frigates is nearly as pronounced—four in the US, and 29 among European defence entities. (See Exhibit 7.)

The NH-90 helicopter is an extreme example. It was originally design in the 1990s for NATO forces with two variants: one for naval operations and another for transport. Due to individual MOD procurement processes, requirements diverged, to the point where there are an estimated 47 variants of the NH-90 in use today, including versions with different cargo holds, cockpits, and even engines. Despite its performance in operations, the expansion in variants has led to sharp increases in maintenance costs and production delays, leading Australia, Norway, and Sweden to cancel orders.

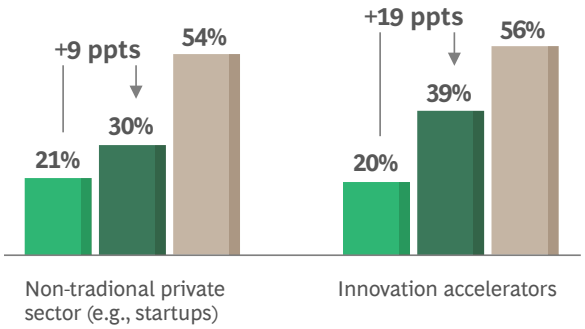
Exhibit 6 - MODs increasingly see innovation as a strategic priority

BCG research shows growing tendency among MODs to prioritise innovation…
% of respondents from MODs[1]



Innovation a strategic priority

…reflected in more work with startups and innovation accelerators…
% of respondents from MODs[1]



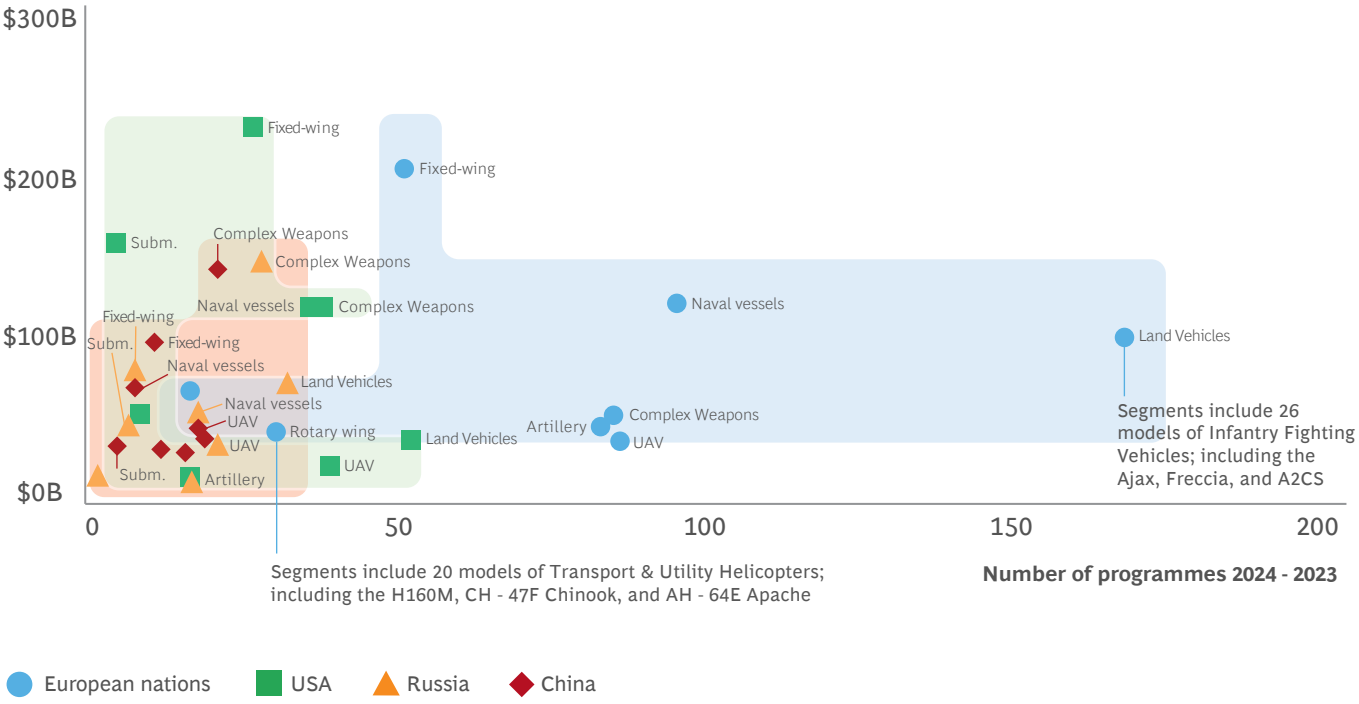
2023, currently working
2024, currently working
Desires greated collaboration

Source: Reuters, BCG Defence innovation.

[1] Survey based on interviews with officials from MODs in the EU and NATO.

Exhibit 7 - Europe has a higher degree of spend fragmentation across platforms and shorter production runs

Notwithstanding the lower budgets, European nations also service a higher number of competing platforms
Defence spending on equipment, forecast 2024-2032, PPP Adjusted, $Billions



European nations
USA
Russia
China

Source: GlobalData, OWID, BCG analysis

Note: PPP adjustments are on an individual country basis for Russia and China. For European nations average PPP for largest contributors taken and applied across the board (to account for outliers). Expected annual spend includes 'Indicative' and 'Aspirational' programmes; Top 2 most valuable to EU subsegments by platform type: Naval vessels include Frigate, Aux Vessel; Submarines include SSBN, SSP; Land vehicles include IFV, MBT; Artillery includes MRLS, SP Artillery; Complex weapons, including Platform MDS, AA Missiles; Fixed-wing aircraft include Combat Aircraft, Transport Aircraft; Rotary-wing aircraft include Transport Heli, Attack Heli; UAVs include MALE UAV, Tactical UAV;

Three Priorities to Improve European Defence Capabilities

Although these are significant barriers to overcome, they map to three main areas of activity, which MODs, defence primes, alliances, and other stakeholders should prioritize.

Priority One

Strengthen strategic command and coordination.

Industry and government must collaborate more effectively, sharing performance data and insights and aligning on overall strategic and tactical goals—with military capabilities as the primary objective. To that end, defence entities can take several steps to strength coordination and collaboration across the ecosystem.

- Establish a centralized and seamless control point, acting a nerve centre to provide MODs and industry with a view of existing baseline—such as mission capable rates, production rates, stock levels, and other key metrics—and drive informed decision making at military and industrial level.
- Develop long-term defense budget plans that include a committed baseline funding level, complemented by a flexible band that can be adjusted based on

economic conditions and shifting political priorities. By maintaining a consistent caseload for the industry, this approach offers the necessary certainty for long-term planning, while still accommodating changes in national and international circumstances.

- Design procurement models that can enhance coordination between MODs and industry. For example, the UK Ministry of Defence established the Complex Weapons programme, a consortium of companies including MBDA, Thales, Roxel, and QinetiQ. The goal of the consortium is to improve coordination between the MOD and industry by optimizing the supply chain and rationalizing inventory. In its first phase of the programme, this long-term strategic relationship with the industry has provided greater choice of military capabilities for the UK and Europe and also generated £2.6 billion savings for the MOD. As of mid-2024, the program is renewed with a 10-year planning horizon and a £6.5 billion planned investment.

- Design improved joint procurement planning and execution across alliances. Through MODs collaborating at forums like NATO NDPP, prioritizing the "greater good" over national interests, systems can be interoperable, requirements standardized, and procurement pooled ensuring joint benefits and coordination.

- Develop investment strategies to increase capacity—a go-to-market approach tailored to MODs' key industrial and security strategies, focusing on pre-emptively developing capacity to meet anticipated needs, including localization of capacity.

Priority Two

Boost industrial capacity.

Across alliances and individual nations, leaders can take several steps to boost industrial capacity in a coordinated, interoperable way.

- Set a North Star production target at the platform or sub-module level, and continuously measure progress. Establish three to five easily measurable, guiding KPIs (e.g., produced %, E2E production turnaround time) that are tracked and automatically updated, linked to a central command point, and cascaded down to the front line. To further keep teams focused on meetings these KPIs, MODs must make sure the North Star is contractually incentivized.

- Adopt best practices from the civil industry to enhance agility. Implement cost-plus practices and adopting advanced manufacturing and modular design to become more flexible in scaling capacity.

- Integrate suppliers to meet evolving requirements. Pull the most important suppliers into development requirements discussions early, ensuring they are intimately familiar with the programme's path to full production. Long-term and as programmes scale, OEMs need to establish supply chain control points and leverage AI to provide end-to-end visibility and material forecasting across the full value chain.

- Secure a resilient supply chain for critical components by consolidating vendor lists of high-performing suppliers and establishing contingency plans (such as call/option-like agreements).

- Looking at the mid- to long-term horizon, empower the workforce and minimize tribal knowledge. Review recruiting, hiring and retention processes to address risk of labour shortages during ramp-up. Improve readiness of current workforce by introducing GenAI tools (e.g. "copilot") providing on-the-floor assistance. Document routine procedures and cross-train to prevent overreliance on a highly skilled workers and risk of "brain drain" when those workers leave.

Priority Three

Accelerate the pace of innovation where it matters most.

While the importance of innovation is growing, European defence entities are unable to innovate effectively, primarily because processes tend to be slow and incremental. The tech industry teaches that the adoption of new products starts slowly then hits an inflection point of exponential growth. Incumbents typically defend their position and watch technology pass them by.

Defence primes can avoid this trap by embracing new business models. A good example is Anduril, a US defence technology company that specializes in autonomous systems. The company was founded in 2017 and has a model unlike that of legacy contractors. It self-funds most product development and attracts leading technology talent. Defense primes can learn from that model and rethink their approach to talent and leadership. They can also draw funding from new investors such as VCs, build low-cost distributed systems, and develop open architectures that allow new partners to join and contribute.

Other measures to accelerate innovation include the following:

- Utilize agile development, digital twins, and modern test and evaluation tools to boost innovation and decision agility and validate mature solutions.
- Review security policies for R&D sharing. Work to harmonize international regulatory frameworks to facilitate smoother knowledge-sharing and collaboration among allied nations, aligning policies, standards, and protocols.
- Where not already mandatory, facilitate startups' and SMEs' participation to the ecosystem by increasing direct access to MOD programmes and tightening collaboration opportunities with primes to allow access to high-value assets (e.g., testing facilities, engineering know-how).
- Bring engineers directly onto the manufacturing floor with their designs to observe and provide inputs constantly throughout prototype and initial production phases. Additionally, ensure a strong relationship between business development and engineering teams to avoid committing to requirements and timelines that may not be feasible and result in cost and schedule overruns.
- Tap into—and learn from—the VC industry. Venture backing encourages a high-risk, high-growth appetite and supports bets on immature but promising technology not fully developed in-house.
- Where applicable, increase the risk appetite to speed innovation—such as by relaxing constraints to accelerate product development timelines. For example, the Storm Shadow air-launched cruise missile and the HARM (High-Speed Anti-Radiation Missile) were both launched into Ukrainian platforms very quickly, overcoming the obstacles that often slow the implementation of some defence systems. MODs can accelerate innovation by relaxing some of the technical constraints that aim for perfection and sophistication, while still maintaining those that ensure safety.

The world is changing, and the defence sector must change as well. By focusing on the three measures we highlighted, MODs, manufacturers, and alliances can adapt in scale and pace to do more, move faster and respond more readily to rapidly evolving military requirements. In that way, they will emerge better equipped to fulfil their mandate—protecting their sovereign states in a more uncertain world.

About the Authors

Giacomo Maria Bressa is a Principal in the firm's Milan office. You may contact him by email at Bressa.Giacomo@bcg.com.

Fabio Dal Pan is a Managing Director and Senior Partner in the firm's Milan office. You may contact him by email at DalPan.Fabio@bcg.com.

Andrea De Blasi is a Managing Director and Partner in the firm's Milan office. You may contact him by email at DeBlasi.Andrea@bcg.com.

Diana Dimitrova is a Managing Director and Partner in the firm's London office. You may contact her by email at Dimitrova.Diana@bcg.com.

Marc Giesener is a Managing Director and Partner in the firm's Chicago office. You may contact him by email at Giesener.Marc@bcg.com.

Louis Watt is a Managing Director and Partner in the firm's London office. You may contact him by email at Watt.Louis@bcg.com.

For Further Contact

If you would like to discuss this report, please contact the authors.

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