



Soldiers assigned to 2nd Battalion, 22nd Infantry Regiment, 1st Brigade Combat Team, 10th Mountain Division, execute joint training event with NATO Allies during Northern Forest 23, at Rovajärvi military range and training area, Finland, May 28, 2023 (U.S. Army/Kasimir Jackson)

Embracing Change

A Sense of Urgency

By Philippe Lavigne

At the dawn of an ever-evolving geopolitical era, the North Atlantic Treaty Organization (NATO), the world's most powerful political and military alliance, faces a new reality. This article examines the issues facing NATO and suggests ways to modernize and adapt the Alliance to meet current and future security challenges. There are many complementary parallels to the U.S. Joint Warfighting Concept (JWC) and its implementation

across the spectrum of NATO warfare development. From the need to rethink defense strategy and capability development to expanding cooperation with new partners, this analysis highlights the steps needed to strengthen the Alliance's edge in a digital world. With a focus on innovation, agility, and multidomain capabilities, it aims to chart a solid path for NATO's transformation to ensure its relevance and resilience in the decades ahead.

Navigating the New Reality

In the fast-evolving global security environment, NATO faces several complex

situations that have reshaped the dynamics of international relations. The emergence of new global challenges has contributed to an uncertain and diverse security landscape.

Over the past 20 years, the rapid development of space, cyberspace, artificial intelligence, and autonomous weapon systems has opened new avenues for state and nonstate actors to project power and wage unconventional warfare. The threat of cyber attacks, disinformation campaigns, and the weaponization of emerging technologies has increased the importance of cybersecurity and raised concerns about the vulnerability of critical

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Soldiers with U.S. Army's 2nd Cavalry Regiment participate in live-fire drill during exercise Griffin Shock, in Bemowo Piskie, Poland, May 24, 2023 (NATO)



infrastructure and the resilience of our societies. These dynamics have intensified competition for influence, resources, and strategic advantage, leading to heightened tensions and rivalries. Russia, terrorist groups, and wider challenges such as China or Iran could take multiple strategic paths over the next 20 years.

During these challenges, Russia's brutal aggression in Ukraine on February 24, 2022, was a wake-up call. With this sudden return of war on European soil, countries have realized that a comprehensive, proactive, and cooperative approach to global security is now essential.

Fortunately, NATO Allies are ahead of the game. At the Madrid Summit 4 months later, they agreed to a fundamental shift in our deterrence and defense, with new propositions of plans to dedicate specific forces to defend any or all Allies, higher readiness, more stocks, and more prepositioned equipment. The refocusing of our posture on collective defense begins at the operational level, with regional plans, and continues throughout the capability process: new force model, force structure requirements, command and control, and infrastructure—constantly updated in the

light of lessons learned and, in particular, the Ukrainian ones.

Nearly 75 years after its founding, the Alliance is more relevant than ever. At Norfolk, the role of Supreme Allied Command Transformation is to ensure that NATO maintains its edge. And a big part of that is being best equipped to deal with what I call the new reality.

What's New in the New Reality? More, Faster, Everywhere

The basic nature of warfare and its principles—clash of wills, force, friction, the fog of war, and centers of gravity—have held true for centuries. As former Chairman of the Joint Chiefs of Staff General Mark A. Milley explains, the nature of war is unlikely to change, but its character continues to evolve and so must the Alliance's approach to warfare. The new reality is a highly dynamic strategic environment that we need to understand every moment and whose immediate trends we can deduce to confront them with our own strategic vision.

In warfare, I define this *new reality* as an unprecedented level of speed, intensity, and agility that is changing

the character of conflict and threatening traditional notions of security. It is characterized by three words: more, faster, and everywhere.

More refers to the proliferation and abundance of advanced technologies that are reshaping the global security landscape as well as the exponential growth of data fueled by the digital revolution. *More* also refers to conventional military capabilities, as Russia's war in Ukraine challenges the ability of our production models to support high-intensity attrition and consumption. *More* refers to the confirmed return of hard power as a credible and viable option for an expansionist Russia. In response, the Allies must have strong military capabilities that provide effective deterrence and defense.

A credible, modernized nuclear deterrent remains the cornerstone of NATO's security strategy, not only to deter aggression but also to underpin the Alliance's unwavering resolve to preserve peace and stability and to defend its members and their shared values.

For us, confronting more hard power also means having more conventional capabilities while maintaining an intelligent balance between offense and defense.

It also means being able to play the full range of available options, combining them in a mix of hard and soft power and managing the dynamics of escalation.

Faster emphasizes the speed at which actions and reactions occur in this new reality. Hypersonic weapons, for example, pose significant challenges to existing defense systems, reducing response times and compressing decision windows. The emergence of quantum computing offers unprecedented processing power, potentially enabling adversaries to break encryption, compromise secure networks, and disrupt critical infrastructure.

Everywhere reflects the expanding reach and impact of these new technologies, and the boundless and simultaneous consequences of the induced threats, in the wake of the deliberations on “hybrid warfare” that had led up to the Wales Summit in 2014. The traditional domains of land, sea, and air are converging and expanding into space, a new arena for competition and even confrontation. Furthermore, conflict zones are no longer confined to physical battlefields; they are extending into the information and cyber domains, where state-sponsored hacking, ransomware attacks, and disinformation campaigns can have far-reaching consequences. The interconnectedness of global systems, including transportation, energy, and communications networks, increases the potential for cascading effects and disruptions on a global scale.

So what can NATO do to face the new reality? Certainly, the combination of more advanced technologies, faster capabilities, and ubiquitous reach requires innovative approaches to security. In addition, for our democracies—those of NATO and its partners—there is the added challenge of addressing the ethical implications of emerging technologies and developing robust common decisionmaking mechanisms that can keep pace with the ever-increasing agility of potential adversaries, who do not play by the same rules.

Ultimately, this complex set of needs and capabilities must be condensed into a tool for managing escalation and de-escalation dynamics in service of political

leadership, so that NATO is able to manage the level of tension using all the levers at its disposal.

Multidomain Operations

In response to the evolving global security challenges characterized by the new reality of speed, intensity, and agility, NATO has recognized the need to adapt and maintain its edge by heading toward a multidomain operations (MDO)-enabled Alliance. This approach will enable NATO to effectively address multiple threats across the five operational domains of land, sea, air, space, and cyberspace, while synchronizing the military instrument of power (MIoP) with others. In short, Allied forces must become stronger and more agile, ready, mobile, and interoperable. Today’s conflicts and threats transcend traditional boundaries and require a multidimensional response. The introduction of MDO will give NATO greater credibility in deterring and defending. By integrating capabilities, information, and decisionmaking across domains and environments, NATO can project a more comprehensive and robust posture to shape and contest. MDO will also enable NATO to synchronize its efforts and exploit synergies among activities, with more agile and effective decisionmaking that presents political leaders with response options capable of creating dilemmas for adversaries.

To complete this multidomain approach, it is important that NATO constantly learns from what is happening. In Ukraine, for example, we have been impressed by the resilience that the men and women, both civilian and military, are demonstrating daily. Likewise, NATO recognizes the importance of building resilience, to anticipate, absorb, resist, adapt, and recover from shocks and disruptions. First, the Alliance must enhance its collective resilience by strengthening the strength of its individual members. This includes protecting critical infrastructure, improving cyber security, and fostering societal cohesion and preparedness. Then, we need to consolidate the Alliance’s

resilience by deepening NATO’s cooperation with members’ and partners’ organizations, industry, and academia. Tomorrow, NATO will have to strive for antifragility—that is, not only withstand adversity but also embrace change and thrive in an uncertain environment. We must turn challenges into opportunities. We must become an Alliance that uses these challenges and opportunities as catalysts for growth and adaptation.

NATO Warfighting Capstone Concept

Layered resilience is one of NATO’s five Warfare Development Imperatives, along with cognitive superiority, influence and power projection, cross-domain command, and integrated multidomain defense. These imperatives serve as the strategic pillars that guide NATO’s transformation efforts. They are set out in the NATO Warfighting Capstone Concept, a strategic document endorsed in 2021 by Allies at the highest level of political leadership.¹ *Layered resilience* describes the role that armed forces can play in each layer (military, civilian, and civil) of resilience. *Cognitive superiority* emphasizes the need for NATO to thoroughly understand the operating environment, including adversaries’ intentions to target the human brain and “hack” our perceptions and to deny them to do so. *Influence and power projection* involves positively shaping the operating environment while creating dilemmas for adversaries. *Cross-domain command* enables Alliance commanders to integrate capabilities across domains quickly and effectively, ensuring efficient decisionmaking and synchronized operations. And *integrated multidomain defense* emphasizes the protection of NATO’s integrity and freedom of action. By integrating defense capabilities and strategies across all domains, NATO aims to deter and defeat potential threats to its member nations, ensuring the Alliance’s ability to maintain security and respond decisively.

Taken together, these five Warfare Development Imperatives provide a comprehensive framework for NATO to



U.S. Navy F/A-18 Super Hornets and Greek F-16 Fighting Falcons conduct air-to-air training over Ionian Sea during Neptune Strike 2022, February 3, 2022 (U.S. Navy, courtesy French Armed Forces/Malauray Buis)

enhance its capabilities, adapt to emerging challenges, and ensure the security and resilience of its member states in the context of the new reality.

Implementation of the NATO Warfighting Capstone Concept requires extensive collaboration with nations, including deep cooperation with the United States, where the JWC's central idea of expanded maneuver and some of its key tenets, such as integrated command, agile control, global fires, information advantage, and resilient logistics, complement NATO's warfare development agenda.

In this respect, Allied Command Transformation (ACT)'s location in the United States, close to the Pentagon, is a major asset. For the past month, ACT's teams have been working with those of the Vice Chairman of the Joint Chiefs of Staff and have found many areas of commonality in concepts; experimentation; wargaming; lessons learned; doctrine, training, and education; and capability development.

Fluid and Agile: A New Approach

The new approach to NATO's transformation promoted by ACT aims to create a more fluid, "water-like" military instrument of power. Just as water adapts to any container, NATO's MIOp must have the inherent fluidity and flexibility to adapt and respond effectively to different contexts, threats, and tensions. This adaptability should enable the Alliance to navigate the dynamic and ever-changing nature

of international security. As water is incompressible because its molecules are close and strongly bonded, NATO's MIOp must draw on its unity and resilience to assert its presence and maintain its freedom of action. Just as water has formidable energy, from raging torrent to steam to sharp ice, the Alliance must project the protean strength and power necessary to ensure credible deterrence and defense. Finally, like the water that gives life, NATO's MIOp must foster growth, cooperation, and shared values. NATO must cultivate an environment that fosters cooperation, solidarity, and the common pursuit of progress. By nurturing these foundations, the Alliance can build resilience, cohesion, and trust among its members.

NATO will achieve its transformation by embracing digital transformation, which serves as a pathway to MDO. NATO's digital transformation will allow us to harness the power of technology, optimize the use of data, and foster collaboration among academia, the private sector, and member states and partners.

One of the critical challenges in this journey is the secure sharing of data. NATO is sitting on a formidable treasure trove—a vast amount of data produced by each of the Alliance's 31 nations, each of which manages it according to a proprietary logic that must be overcome if we are to make efficient use of it. NATO must establish robust protocols and frameworks to ensure the seamless, secure exchange of sensitive information. By implementing technologies that already exist in many nonmilitary domains—such

as data-centric security and quantum resistant encryption—NATO can protect the integrity and confidentiality of data while enabling optimal collaboration and information-sharing at all levels.

Alongside the benefits, however, there are also challenges associated with the vast amount of data generated in the digital age. NATO must contribute to debate on privacy, ethics, and governance. Finding the right balance between the use of data and the protection of individual privacy rights is crucial for democracies. NATO will engage further in the development of robust policies and frameworks to ensure responsible data management, transparency, and accountability in accordance with legal and ethical standards.

In the rapidly evolving technological landscape, there is a widening gap between the pace of technology development by the private sector (and its adoption by governments) and by the Alliance. To bridge this gap, NATO needs to manage innovation, particularly open innovation. We need to harness the knowledge, expertise, and capabilities of external actors—such as academia, industry, think tanks, and research institutions—to drive innovation within the Alliance. It will allow us to tap into a wider pool of ideas, technologies, and solutions that may not be readily available within the traditional defense industry framework.

We must foster a culture that embraces and encourages innovation at all levels of NATO's organization. This means nurturing a mindset that promotes



openness, curiosity, and continuous learning. The Alliance should probably scale up what has been initiated by the ACT Innovation Hub 10 years ago—an environment that encourages risk-taking and experimentation through an incremental approach. DIANA, our Defense Innovation Accelerator for the North Atlantic, provides a great opportunity for this endeavor. With this resolutely modern and motivating mindset, NATO can attract and retain talent and create an ecosystem conducive to the generation of new ideas and solutions.

Likewise, ACT experiments and advocates the need for a new approach to capability and, especially, software development. It is a bold and incremental approach supported by experimentation, wargaming, modeling and simulation, and value analysis, which addresses risk aversion.

By adopting an incremental approach, NATO can iteratively develop and refine capabilities, allowing for continuous feedback, testing, and improvement. By conducting experiments and simulations, the Alliance can assess the feasibility and effectiveness of potential capabilities, reducing the risks and costs associated with full-scale implementation. Wargaming helps identify vulnerabilities, test strategies, refine operational concepts, and assess potential emerging and disruptive technologies for new opportunities. Wargaming is also a powerful way to improve NATO's decisionmaking processes.

The objective is to maintain a virtuous circle of strategic foresight, concepts and doctrine, capabilities, and talents.

Strategic foresight allows anticipating emerging trends, risks, and opportunities in the global security environment. By analyzing geopolitical dynamics, technological advances, and societal changes, NATO can identify potential threats and develop proactive strategies to mitigate them. Strategic foresight provides a solid foundation for informed decisionmaking and the formulation of long-term goals and priorities.

Concepts and doctrine play a critical role in this virtuous circle by facilitating the exchange of best practices, aligning member states, and establishing common norms and standards for joint military action and beyond. This alignment ensures interoperability, enhances cooperation, and strengthens NATO's collective defense. Capabilities and talents are the practical manifestation of the virtuous circle. The Alliance must continually develop and maintain robust military capabilities, taking advantage of advances in technology and innovation. By encouraging investment in research and development, modernizing equipment and infrastructure, and improving training and education, NATO can ensure that its members have the tools and skills they need to stay ahead. By attracting and retaining skilled personnel and providing opportunities for career growth and advancement, NATO can capitalize on the talents of its human resources to better anticipate future challenges.

Despite a general increase in NATO defense budgets, and declarations by heads of state and governments indicating their determination to meet their

budgetary commitments, the Alliance's resources are limited. It is therefore important to conduct a value analysis to prioritize investments based on their strategic relevance, operational impact, and cost-effectiveness. Fostering a culture that tolerates calculated risk is equally essential. NATO has been able to take advantage of the peace dividends to create a robust, attractive organization with the utmost respect for rules of all kinds. Technology must now be used to allow us to move faster while maintaining these high standards. This is not an option but an imperative if we are to keep pace with technological developments. For example, software and hardware development require different approaches because of their inherent characteristics. Software development, often characterized by rapid iteration and frequent updates, benefits from agile methodologies and flexible development processes. Hardware development, on the other hand, may require longer lead times and stricter quality control measures. We should adapt accordingly, tailoring the development process to the specific requirements of each domain.

Developing partnerships with relevant actors who share the values of the Alliance, such as the European Union (EU), is paramount to positively influence the operating environment. The EU's role as a normative power is important in shaping international norms, values, and standards. With its emphasis on multilateralism, human rights, and the rule of law, the EU contributes to the promotion of a rules-based international order. By deepening



Meeting of NATO–Ukraine Council at level of heads of state and government, including Sweden; left to right: Turkish President Recep Tayyip Erdogan; Ukrainian President Volodymyr Zelensky; United Kingdom Prime Minister Rishi Sunak; and U.S. President Joe Biden, at NATO Summit in Vilnius, Lithuania, July 12, 2023 (NATO)

cooperation and coordination, NATO and the EU can leverage their respective strengths and capabilities to achieve common goals. Twenty-two countries are members of both NATO and the EU (23 members once Sweden joins NATO). Building a strong NATO-EU partnership also means addressing areas of potential overlap or duplication, ensuring complementarity, and avoiding unnecessary competition. Clear delineation of roles, responsibilities, and areas of specialization is essential to promote effective cooperation and synergy.

Partnership with the private sector is certainly promising: just look at what the private sector is bringing to Ukraine in terms of civilian and military capabilities, from Amazon Web Services to Starlink. NATO needs to give itself the means to be connected to private-sector innovation and research and development, so it can always know what is out there and train with it. The same logic applies to academia. For industry, it is a win-win partnership because—as ACT has been doing for several years—we enable them to test new ideas and capabilities in a real-world operational environment for rapid development that meets military needs while creating business opportunities.

Transformation and Interoperability

ACT’s area of expertise is interoperability. It is a much more complex concept than it appears. It starts with a common operational culture among Allies. A common operational culture ensures that NATO forces can work together seamlessly, regardless of their national backgrounds. It involves the development and adoption of common concepts and doctrines that guide military operations and processes. These common concepts provide a shared understanding of how Alliance forces should operate, enabling effective coordination and cooperation in joint missions and operations and fostering trust and predictability. Education and training are essential components in achieving interoperability. Allies invest in such programs to ensure that their personnel are familiar with NATO procedures, practices, and command structures. By providing standardized training and education, NATO enhances the ability of its forces to work together seamlessly. In addition to cultural aspects, interoperability encompasses technical compatibility. This means ensuring that Alliance forces can operate together at all levels, from common

munitions standards to securely federated capabilities that enable any NATO warfighter or decisionmaker, at any level, from any nation, in any domain, to share and consume any data with and from anyone else in near real time.

Interoperability requires the development and integration of compatible and complementary assets. However, it goes beyond capabilities to include processes and organizational structures and can be described as the development of an operational ecosystem that enables the creation of convergent effects from different assets. Wargaming and experimentation play a crucial role in ensuring the effectiveness and efficiency of the operational ecosystem. Wargaming allows NATO to simulate and test different scenarios and operational concepts, providing insight into the strengths, weaknesses, and interdependencies of the operational ecosystem. Wargaming is also an important means of developing our ability to manage escalation dynamics. Through experimentation, NATO can identify innovative approaches, validate concepts, and refine capabilities, fostering continuous learning and improvement.

The operational ecosystem must bring flexibility for NATO to rapidly

integrate new technologies and exploit emerging operational concepts. By fostering this interoperable operational ecosystem, NATO enhances its ability to operate across multiple domains. To support this ecosystem, we need to refine some of our tools and find new ones—for example, by adapting our processes, including procurement. The Alliance needs to be agile and responsive in the acquisition and integration of new capabilities and technologies. This means streamlining procurement processes and adopting new acquisition models that facilitate the rapid and efficient development and fielding of capabilities. The NATO Defense Planning Process (NDPP) is the vehicle for transforming NATO and developing its toolkit. The NDPP is a comprehensive and iterative process that guides Allies in the development of defense plans and capabilities. It ensures that NATO’s collective defense requirements are met through a coordinated and collaborative approach. The NDPP involves a series of steps and provides a framework for member states to align their defense efforts, share burdens and responsibilities, and enhance interoperability. Most important, NDPP is flexible enough to integrate new inputs and evolving situations, such as regional plans.

Embrace Change or Lose

Former Chief of Staff of the Air Force General Charles Q. Brown, Jr., makes frequent reference to the need to “accelerate change or lose.” For NATO, it captures the imperative of transforming to remain effective and relevant in the face of the new reality and turning challenges into opportunities. At the Madrid Summit in June 2022, heads of state and governments agreed to “expedite our digital transformation.” Since then, we have accelerated with the adoption of a *Digital Transformation Vision* in October 2022 and a *Digital Transformation Implementation Strategy* in July 2023.

While Ukraine is in many ways a war of the digital age, the war we are seeing in Ukraine is not the war NATO will face in the future. To move forward, we need to



U.S. Air Force HH-60 Pavehawk drops Swedish air force rangers onto landing zone in simulated rescue mission during exercise Aurora 23, Sweden, May 6, 2023 (NATO)

focus on accelerating interoperability, and we need to apply digital transformation to capability development to become agile. We also need to digitalize our people and our mindset, and we need to accept a little risk and learn to fail by developing our toolkit with innovation, experimentation, wargaming, modeling, and simulation.

These are critical tenets for NATO’s ability to navigate an increasingly complex global security environment as we move toward multidomain operations. By proactively embracing change and adapting to new challenges, the Alliance can

maintain its operational edge to ensure the collective security of its members and promote global peace and stability. JFQ

Note

¹The NATO Warfighting Capstone Concept approved by the Allies is a classified document. However, a nonclassified version was approved for public release in May 2023. See *NWCC: NATO Warfighting Capstone Concept* (Norfolk, VA: NATO Allied Command Transformation, May 2023), <https://www.act.nato.int/wp-content/uploads/2023/06/NWCC-Glossy-18-MAY.pdf>.